



# Literacy, social justice and inclusion: a large-scale design experiment to narrow the attainment gap linked to poverty

*SUE ELLIS and ADELE ROWE*

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**This paper describes the development and use of a tool designed to support educators to use a broad range of professional knowledge to enable inclusive literacy teaching that delivers social justice and narrows the attainment gap associated with poverty. The tool encourages teachers to formally recognise and act on a wide range of evidence about students as learners and to design their literacy curriculum and teaching according to this evidence. The research operationalised a Capabilities approach to inclusion and a design experiment methodology, working with 48 schools, 650 teachers and 12,783 students. A paired sample T-test showed a significant improvement in standardised age scores and that the ‘tail of underachievement’ shortened for all social groups. Goodman and Kruskal’s gamma showed a weakening of the relationship between poverty and attainment. This gives cause for cautious optimism that attainment gaps associated with economic disadvantage can be narrowed if educators act on a wider range of evidence in literacy teaching, and if education researchers develop and trial tools to support them.**

**Key words:** attainment gap, capabilities approach, literacy teaching, social justice, urban education.

## Introduction: poverty as an inclusion issue

International and UK education policies have increasingly focused educators on equity and inclusion for children living in poverty. In England, successive governments have sought to improve social mobility through schooling but progress has been slow, with significant variation across the country and the gap has widened for students who experience long-term disadvantage (Andrews *et al.*, 2017). In Scotland, the policy aim is to both raise general attainment and close the gap for students in poverty. Literacy, as a ‘gateway subject’ for other curricular areas, has been a key policy focus, internationally and in all four governments of the UK. Interventions have frequently drawn on the ‘five pillars’ of reading identified by the National Reading Panel of the USA: phonemic awareness, phonics, fluency, vocabulary/language development and comprehension (National Reading Panel (US) *et al.*, 2000). These cognitive elements of reading formed the backdrop for centrally designed, top-down curricular reform in the USA, Australia and England and created a rhetoric around evidence-based interventions in which systematic review and randomised controlled trial methodologies underpin ‘Teaching and Learning Toolkits’ which detail scaleable programmes and interventions that schools may adopt (Education Endowment Foundation, 2019; Education Scotland, 2019a).

However, it is not clear that such approaches help teachers frame a literacy curriculum that is emotionally, socially or intellectually inclusive. Capabilities-based theories of inclusion (e.g. Sen, 1979, 2005; Nussbaum, 2011; Reindal, 2016) focus on student voice and identity, looking beyond labels and programmes of content to a ‘capabilities’ approach in which the curriculum delivers self-respect, agency and wellbeing by enabling learners to achieve the ‘functionings’ (achievements) and ‘capabilities’ (capacity) to ‘do, and be, that which they most value’ (Sen, 1979). From a capabilities perspective, being literate is an important functioning, one that affords economically disadvantaged students the capabilities to achieve those key freedoms that matter to the student, but capabilities cannot be achieved in the absence of students’ self-respect, voice or agency. The problem is that many centrally designed literacy programmes impose levels of content-specification and standards of compliance and accountability which serve to weaken curricular coherence, student voice, agency and engagement. They result in a curriculum that is irrelevant to students’ lives and so cannot deliver the emotional, social or intellectual inclusion and empowerment required for self-respect. Almost three decades ago, Haberman (1991) suggested that content-driven teaching results in

economically disadvantaged children experiencing a ‘pedagogy of poverty’ with tightly controlled routines in which teachers give information, ask questions, test, assign seatwork, mark work, settle disputes and punish non compliance. He argued such pedagogies allow learners to ‘succeed’ without becoming more involved or thoughtful (1991, p. 292) and that ultimately they do not work:

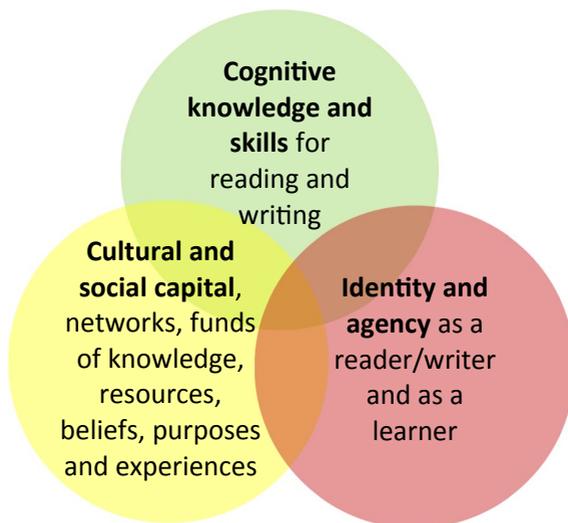
. . . Youngsters achieve neither a minimum level of life skills nor what they are capable of learning. The classroom atmosphere created by constant teacher direction and student compliance seethes with passive resentment that sometimes bubbles-up into overt resistance. Teachers burn out because of the emotional and physical energy that they must expend to maintain their authority every hour of every day. (1991, p. 291)

Today, children in poverty are still disenfranchised by pedagogies that confuse rigidity with rigour. Keys Adair *et al.* (2017) report children in one high-poverty school being shocked by videos of another school where the children were freely asking and answering questions, even while the teacher was present. Their own agency as learners was so constrained they were horrified at such behaviour. Carter Andrews *et al.* (2016) argue for a ‘humanizing pedagogy’, suggesting that high-stakes accountability and the lack of professional autonomy associated with randomised controlled trial methodologies make it hard for educators to address ‘the challenge of meeting the needs of more diverse learners’ (2016, p. 170).

However, advocates of a capabilities perspective still face the practical problem of how to ensure high-quality teaching and learning (Reindal, 2016). This paper reports on the impact of a design experiment study to support a responsive, bottom-up, ‘humanizing’ literacy curriculum that sought to foster pupil voice, agency and co-production. Central to this design-work was the *Strathclyde Three Domains Tool*, developed to facilitate educators in thinking about social class and literacy attainment as inclusion issues and to help them base actions on a wider range of evidence than simply cognitive knowledge and skills. The tool was developed and trialled with student teachers over several years (Ellis and Smith, 2017) and then, applied in a design experiment (McKenney and Reeves, 2013) with 650 qualified teachers working with 12,783 children aged 5–12 years in 48 schools in one Scottish local authority. This paper describes the tool and its impact on literacy attainment and on the attainment gap between students from economically disadvantaged homes and their more advantaged peers.

## The *Strathclyde Three Domains Tool* and its research base

The *Strathclyde Three Domains Tool* (Figure 1) combines three opposing theoretical perspectives on literacy learning: that literacy learning involves acquiring a set of cognitive knowledge and skills; that literacy is a social practice and learning involves helping readers to acquire the cultural norms around literacy that are assumed by schools; that literacy is entwined with identity and literacy learning involves a process of developing a positive identity as a learner, a reader and a writer. It is designed to prompt professionals to re-think the import they accord to these different kinds of evidence about literacy learners, acknowledging the importance of cognitive skills and knowledge for reading but placing alongside this, evidence of students' social and cultural capitals in relation to literacy and their identities as literate beings and literacy learners. Evidence in all three domains is important because research shows that all three are highly impactful on literacy learning. The aim is to help educators adopt more socio-culturally sensitive and individually responsive approaches to their literacy teaching. The paper first outlines some research about how these domains shape literacy learners and learning, then it describes the study and its impact on attainment.



**Figure 1.** The *Strathclyde Three Domain Tool* for literacy teaching and assessment

## The cultural and social capital domain

The *Strathclyde Three Domains Tool* upfronts differences in how literacy is conceptualised. The concept of literacy as a set of cognitive knowledge and skills that all people learn in similar ways contrasts with theoretical perspectives that conceptualise literacy as an ideological, cultural and practice (Street, 1984). As a cultural practice, everyday interactions shape the ‘what, how, where, when and why’ of family literacy, which results in different kinds of literacies and literate practices being enacted across different families and communities. Ethnographic studies document these, highlighting systematic differences in the nature, purpose and quantity of literate events and different contexts, artefacts, stories, texts and conversations (Heath, 1983; Barton, 2000). It is not simply that some people get more experience of literacy and others less; the research reveals real differences in how people think about texts, how texts order their thinking, and the kinds of literate practices and responses that are common and considered worthwhile across different communities, including differences in the unspoken beliefs and values about the nature, point and purpose of being literate. These differences influence children’s overt knowledge of school literacy but, crucially, they also dispose children to recognise and engage with school literacy in particular ways (Gregory *et al.*, 2004; Barton, 2000; Heath, 2008; Smith, 2010). The discursive intent, styles, skills and entitlement to voice an opinion that are often presumed in school literacy activities can unintentionally wrong-foot children from communities that do not habitually use or respond to texts in such ways at home (Lareau, 2011; Hiebert, 2017). Equity in literacy learning requires educators to recognise these differences and to ‘bridge’ them quickly and effectively by offering explicit encouragement, explanations, coaching and non-performative practise opportunities for ‘school’ ways of thinking and talking about texts. It also requires them to celebrate the knowledge and practises of home as a springboard for school learning.

Home and community experiences also shape the wider ‘funds of knowledge’ that students bring to reading and writing (Gonzalez *et al.*, 2005). This affects reading comprehension; it is obviously easier to understand and recall a text if you already have some knowledge of the topic (Luke *et al.*, 2011). The reading environment of the classroom needs to be one in which all pupils will encounter texts that speak to their background knowledge. Cognitively informed, skills-based comprehension pedagogies such as reciprocal reading (Palincsar and Brown, 1986) may be necessary but not sufficient for an equitable curriculum in which every student learns to feel like a successful reader.

Vivienne Smith (2010) explains that drawing on background knowledge is essential to promote good ‘habits of mind’ in readers but it also impacts a reader’s identity; when a reader brings substantial existing knowledge to the text, it changes the kinds of internal conversations they have about the text and positions the reader differently, both in relation to the text and to reading. Pat Thomson (2002) suggests that every child brings to school a ‘virtual schoolbag’ of experiences, knowledge and skills and the Queensland Government explains why these should matter to educators:

Some children are able to open their school bags when they get to school and make use of what is in there – such as knowledge of the English alphabet, book language, computer experience, and family genealogy. Other children may find that there is little or no way that they can make use of their knowledge and experience – bilingualism, non-English folk music, a family small business, sibling care and kitchen duties . . . The problem occurs when some children’s capacities, interests, knowledges and experiences count for little or nothing at school, in comparison to their peers. (quoted in Wenger, 2011)

Repositioning literacy as a cultural and social practice in school involves weaving it solidly into the overt and the hidden curriculum, with conversations, activities and texts that validate students from families who engage in a different slice of life by embracing the literacy practices and knowledge in their virtual backpacks. This asset-based disposition towards cultural difference works in two directions for teachers’ work: one, making positive efforts to celebrate and use the funds of knowledge and literacy practices of home; two, noticing and bridging thoughtfully when school practices may be less familiar to students. Both are important for a capabilities approach to literacy teaching.

Sociological research also indicates that patterns of childrearing bestow skills and expectations about adults that benefit middle class children. Lareau (2011) suggests that middle class parents approach childrearing as ‘concerted cultivation’. They actively coach their children in talking to adults and spend much time ferrying them to after-school sports activities, music lessons and clubs. From this, their children develop a sense of entitlement that adults will listen to them, help them and that when arrangements do not suit, they can seek changes. Lareau suggests that the ‘natural growth’ parenting style of working class and poor parents leads to more independent but less entitled behaviours. As a result, in school, middle class five-year-olds are more likely to ask their teachers for help than working class and poor children (Calarco, 2011). Pedagogies that actively foster agency and student voice by welcoming questions, suggestions, comments and requests

for help and re-explanation are, therefore, particularly important for a capabilities approach to literacy.

Such issues populate the ‘Cultural and Social Capital’ domain of the *Strathclyde Three Domains Tool*, but thnot a tick list of items to be addressed or a denial of the ‘everyday realities’ (Thomson, 2002) faced by schools educating disadvantaged students. Rather, they serve to encourage ‘teacher noticing’ (Simpson *et al.*, 2019). They broaden the professional knowledge and evidence-base for action, challenging literacy interventions to go beyond a cognitive knowledge and skills agenda and connect meaningfully with the knowledge, learning opportunities and networks of children’s lives.

## **The literate and learner identity domain**

Another strand of literacy research highlights students’ identities as readers, writers and learners. Identity is complex, shifting and malleable, forged by individual experience and social context but it can function as a ‘heuristic means to guide, authorize, legitimate, and encourage...behaviour’ (Holland *et al.*, 1998, p. 18). As such, it is a powerful determinant of how students think and act, both as literate beings and as literacy learners. Because identity is both positional and agentic, children and young people adopt and perform the roles and identities made available to them, but they are also active players who define and re-define their identity through their actions, discourses and relationships (Gee, 2000).

Teachers who recognise these dual identity processes can influence the literacy opportunities, resources and networks in class to create the necessary conditions for students to develop positive reader, writer and learner identities. When reading becomes part of the social fabric of the classroom, student-to-student networks locate and legitimate new texts and new ways of responding to them. Student-driven reading and writing networks develop mutually supportive spirals of positivity that can change social and organisational structures, power-relations and the wider ethos in class (Putnam, 2000). Fostering this ‘healthy’ learning ecology in class requires thoughtful attention to how students see themselves as learners and readers, with educators noticing how individuals are positioned by other students, the kinds of texts they want to read and be seen reading and the extent to which individual students are part of supportive social reading networks at school and home. It requires educators to proactively grow a ‘reading culture’ and to believe that sensitive intervention to promote positive identity

is a core teaching activity, not dependant on chance or personal home circumstance. Such educators need to be knowledgeable about children’s literature in order to locate books their students might enjoy (Marinak and Gambrell, 2016 ); they need to be insightful to create relaxed, non-performative opportunities for students to choose, recommend and discuss books informally and semi-formally (Chambers, 1993; Short *et al.*, 1999); be well-planned, to provide time to read, but not overly controlling because personal literate identities are born of choice (Moss and McDonald, 2004). They also need well-resourced classrooms, with desirable, high-quality books. The skilled teacher engages in a sensitive dance between supporting student-initiated and led experiences of reading and writing while creating and feeding demand through teacher-led activities and conversations (Allington, 2005; O’Sullivan and McGonigle, 2010).

Students’ identities as literacy learners are also important. Learner identity is forged from within but shaped by a range of social factors including how students are publicly and formally positioned as learners. Research studies capture some heart-breaking impacts on learner identity that arise from seating arrangements based on test scores and fixed group, setting and streaming arrangements (Scherer, 2016). Children from disadvantaged groups, including those in poverty, are disproportionately represented in ‘low ability’ groups and report feelings of shame, hopelessness and alienation that influence beliefs about their capacity to learn, the learning activities they choose, who they talk to and who they play with (Boaler *et al.*, 2000; McCarthy, 2001). Multiple studies show that ‘bottom groupers’ experience an educational diet of low expectations, simplified materials, explanations, tasks and language that enshrine difference, making it impossible for them to catch-up (Boaler, 2005; Mazenod *et al.*, 2019). Research on ‘growth mindset’ and resilience indicates that learners’ perceptions of their abilities can limit or empower their learning capacity and attainment (Boaler, 2005).

Knowing that literacy learning is not simply a cognitive matter should prompt policy and curriculum advice communities to explicitly value interventions that consider literacy attainment in more than cognitive terms. Yet policy and curriculum advice, internationally and in the four governments of the UK, consistently and explicitly details only the cognitive knowledge and skills. This leaves teachers unsupported in recognising and responding to wider evidence-sets.

The *Strathclyde Three Domains Tool* seeks to offer support for thinking about literacy in terms of cultural and social capital, personal and learner identity as well as cognitive knowledge and skills. It is grounded in an understanding that

teacher professional knowledge is a dynamic ‘landscape of practice’ (Wenger-Trayner *et al.*, 2014), a theory that suggests professionals learn during practical engagement by aligning knowledge from various knowledge communities (e.g. school communities, the psychology, anthropology, sociology and linguistics research communities, policy, regulatory and curriculum advice communities) to create a meaningful moment of practice. Using this approach, we envisage the ‘problem’ of professional knowledge as one of orchestrating different kinds of evidence from a range of research perspectives rather than simply understanding and applying one kind of cognitive research knowledge. In this dynamic process, The *Strathclyde Three Domains Tool* offers intuitive validity (Kahneman, 2011) facilitating educators to explicitly capture and use a wide evidence-base to determine ‘what works, for whom, in which circumstances, and why’.

## Research aims and methodology

The data reported in this paper are drawn from a larger design experiment into how educators enact understandings of literacy teaching and learning. We were interested in whether use of the *Strathclyde Three Domain Tool* could impact on attainment, particularly the attainment of high-poverty students.

In the study, we used the *Strathclyde Three Domains Tool* with Scottish educators ( $n = 650$ ) working in 48 schools with 12,783 students aged five to twelve years. The study was split into three phases (see, Table 1). Phase One involved the School Principal ( $n = 43$ ) and a class teacher from each school ( $n = 48$ ). They undertook four half-day professional developments on the *Strathclyde Three Domains Tool* and were given specific pedagogical advice about possible actions to address the things they noticed (about classes and individuals) in each domain. Short investigatory tasks helped them use the *three domains* to scope the ‘lived experiences’ of economically disadvantaged students in their own schools/classrooms. These were:

1. Asking a low-attaining 10-year-old to describe how reading was taught in the early stages of school and his/her experience of reading at home and school, then and now.
2. A ‘school/classroom walk’, noting how the use of classroom space, wall displays, resources, content and organisation of book corners and the tasks and timetables supported learning in each domain.
3. Engaging with to two low-attaining six-year-old children as they read their school ‘reading book’, checking the level of challenge, the range of cues and

**Table 1.** Staff development and implementation timeline

<i>Academic year/term</i>	<i>Phase</i>	<i>Staff development activity</i>	<i>Staff involved</i>
Year 1/Term 1	1	Four Professional Development sessions (half-day) with associated reading and tasks	School Principals One Classroom teacher
Year 1/Term 1	2	Literacy Clinics; professional discussions	School Principals One Classroom teacher
Year 1/Term 2	3	Three Professional Development sessions with professional readings and with tasks designated by the School Principal	All staff
Year 1/Term 3		Teachers trial ideas and activities, and report-back; individual school development programmes	All staff
		Articulate aims and a theory of change	Local authority of-ficers; researchers; School Principals
Year 2 August–June		Schools begin systematic roll-out supported by local authority of-ficer and research team	All staff

*Note: There were five Schools where the School Principals did not attend due to: long-term absence; temporary post-holder who moved on; or the school awaiting appointment of a Principal.*

strategies used, the affordances and constraints it offers for different kinds of thinking around comprehension and their beliefs about the point and purpose of reading.

In addition, classroom teachers were asked to try-out any pedagogies or activities they thought might enhance the educational experiences of students in their own classroom and report back to their headteacher.

Phase Two lasted seven weeks and involved the headteachers and classroom teachers using the tool for individual- and class-based teaching. They worked in *Literacy Clinic* teams (Ellis and Smith, 2017), using the *Strathclyde Three Domains Tool* to teach one high-poverty, low-attaining reader. The purpose of the Clinic experience was to build participants' understandings and experience in three areas: first, to recognise what 'evidence' in each domain actually looks like and respond to it in asset-based ways; second, to experience navigating across

domains, balancing different kinds of evidence and noticing how responding to assets in one domain can cause ripple effects in others; third, to prompt questions about how well the existing curriculum and pedagogy had served this particular student and what might have been done differently. In the Clinic, each educator taught their child weekly for 30 minutes, using the *Strathclyde Three Domains Tool* as a rubric to prompt and organise their observations, actions, speculations and discussions. Team members communicated between sessions and discussed this work and its wider implications for their school fortnightly with researchers. At the end of Phase Two, almost all educators had a clear sense of the tool and had scoped changes that might be important for their own school. At this point, a theory of change (Dyson and Todd, 2010) was developed to guide wider roll-out of the project. This involved the research team, senior local authority leaders, quality improvement officers and headteachers.

Phase Three was the wider roll-out. A total of 650 teachers had three half-day professional developments, one on each domain, delivered ‘en mass’ in quick succession. There was space during the sessions for headteachers to discuss those ideas and changes most relevant to their own school. Thereafter, the *Strathclyde Three Domains Tool* was used as an organiser for internally driven development in each school. The headteachers directed teachers to try particular activities and report back in school-based professional development meetings, the staff audited and supplemented resources, interviewed students and modelled pedagogies for each other. They built the *Strathclyde Three Domains Tool* into the school routines and systems, using it to frame student progress meetings, classroom visits and reflective discussions. Phase Three was organised as a ‘trial and experiment’ period (which began immediately after the large-scale inputs and lasted until the end of the academic year), followed by a ‘a full roll-out’ period, which was supported by formal school plans detailing how the roll-out would progress from the beginning of the new academic year.

Changes in pupil attainment were measured in two ways. Nineteen schools conducted GL Assessment’s NGRT (age-standardised tests on children ( $n = 3,727$ ) aged 7–13 years using linked A and B tests taken nine months apart (i.e. the beginning and end of the ‘full roll-out’ academic year). This was a purposive sample representing a range of school sizes and poverty profiles (measured by SIMD, the percentage of free school meal entitlement and percentage of families receiving school clothing allowance). Statistical analysis of this data allowed us to examine the impact on attainment for the intervention cohort across the year. We also used an existing authority-wide G, the *Progress Test in English* (PTE) (short form) test

, which was conducted annually in June (the end of the Scottish school year) for all pupils aged 8–9 years ( $n = 1,784$ ) and aged 12–13 years ( $n = 1,774$ ). This data allowed us to compare the attainment of the intervention cohort with historical data on the attainment of previous cohorts in all schools across the local authority.

## Results and analysis

The results show a rise in literacy attainment across all social groups. Table 2 shows the standardised age scores for pupils aged 7–13 years ( $n = 3,727$ ) at the start and end of the roll-out year. The average Standardised Age Score (SAS) increased from 96.4 at the start compared with 101.0 at the end. A paired sample T-test shows that this increase is significant at the 99% confidence level ( $p$  value  $< 0.01$ ), meaning it is unlikely to have happened by chance.

We then looked at whether some age-groups had made more progress than others. Table 3 breaks down the attainment results for each year group. The improvements in average scores were significant at the 99% confidence level for all stages of schooling but that the largest mean difference was in Primary 3 (7.5) and the smallest in Primary 6 and Primary 7 (2.9).

The PTE data echo these patterns. Table 4 compares data at the end of the roll-out year with attainment data from previous years for Primary 4 students (aged

**Table 2.** Within-cohort differences between NGRT average standardised age scores

<i>Mean SAS NGRT A</i>	<i>Mean SAS NGRT B</i>	<i>N</i>	<i>Mean difference</i>	<i>Paired sample T-test</i>	<i>p Value (two-tail)</i>
96.4	101.0	3,727	4.6	30.7	0.00

**Table 3.** Differences between NGRT average standardised age score by stage

<i>Stage</i>	<i>Mean SAS NGRT A</i>	<i>Mean SAS NGRT B</i>	<i>N</i>	<i>Mean difference</i>	<i>Paired sample T-test</i>	<i>p Value (two-tail)</i>
P3	89.3	96.8	734	7.5	20.4	0.00
P4	95.3	100.5	695	5.1	15.1	0.00
P5	96.5	100.7	950	4.2	16.1	0.00
P6	99.6	102.3	671	2.9	9.0	0.00
P7	101.9	104.7	677	2.9	8.1	0.00

**Table 4.** Differences between PTE average standardised age scores at 8–9 years and 12–13 years.

	<i>Mean SAS</i> <i>2015–2016</i>	<i>N</i> <i>2015–2016</i>	<i>Mean SAS</i> <i>2016–2017</i>	<i>N</i> <i>2016–2017</i>	<i>Mean</i> <i>difference</i>	<i>Independent</i> <i>samples</i> <i>T-test</i>	<i>p</i> <i>Value</i> <i>(two-tail)</i>
8–9 years	100.3	1,872	102.6	1,784	2.3	4.4	0.00
12–13 years	97.2	1,740	98.3	1,774	1.1	2.3	0.02

8–9 years) and the Primary 7 (aged 12–13 years). An independent-samples T-test showed the increase in the average standardised age scores to be statistically significant at the 99% confidence level ( $p$  value  $< 0.01$ ) for Primary 4 students and at a 95% confidence level ( $p$  value  $< 0.05$ ) for Primary 7 students. The smaller shift among older students is consistent with the NGRT results (see, Table 3) and may be because the older children had more entrenched, harder to shift, attitudes from longer experience of a less-satisfying literacy curriculum or progress.

## Attainment of poverty and non-poverty cohorts

We were interested in the attainment gap between children living in poverty and those who were not. Poverty is difficult to capture; families can move in and out of poverty and there is no single reliable measure, so we examined results for two poverty measures: an area-based measure, the Scottish Index of Multiple Deprivation (SIMD) quintiles and we also used receipt of school clothing grant as a more direct measure of family income. We could not use free school meal entitlement as a measure of poverty because Scotland has universal free school meal provision until children are in Primary 3 (7–8 years).

The results show a clear relationship between deprivation and attainment. Table 5 shows incremental increases in the average standardised age scores of children from quintile 1 (i.e. those from the 20% most deprived areas) to quintile 5 (those from the 20% most advantaged areas). All children had made more progress than expected and all differences were statistically significant. The average size of improvement appears to be broadly consistent for all levels of deprivation, although it may have been slightly larger for children in quintile 3.

We then looked to see if the average gains of children living in poor areas were different from those of the children in more advantaged areas. To assess this, we looked at the strength of the association between SIMD and attainment as measured by stanine group. We ran Goodman and Kruskal's gamma, a non-parametric

**Table 5.** Differences between NGRT average SAS by SIMD quintile

<i>SIMD quintile</i>	<i>Mean SAS NGRT A</i>	<i>Mean SAS NGRT B</i>	<i>N</i>	<i>Mean difference</i>	<i>Paired sam- ple T-test</i>	<i>p Value (two-tail)</i>
1 (20% most deprived)	91.1	95.6	873	4.5	14.1	0.00
2	94.4	98.8	707	4.4	12.3	0.00
3	96.1	101.2	755	5.1	16.1	0.00
4	100.1	104.5	596	4.4	12.4	0.00
5 (20% least deprived)	101.5	105.8	781	4.3	13.7	0.00

**Table 6.** Differences between NGRT average SAS by clothing grant eligibility

<i>Clothing grant</i>	<i>Mean SAS NGRT A</i>	<i>Mean SAS NGRT B</i>	<i>N</i>	<i>Mean difference</i>	<i>T (paired sample T-test SPSS)</i>	<i>p Value (two-tail)</i>
Yes	89.3	94.2	607	4.9	12.6	0.000
No	97.8	102.3	3,120	4.5	28.1	0.000

statistical measure that summarises the overall strength and direction of the association between two ordinal variables (Gans and Robertson, 1981). The gamma numbers show a positive association between SIMD and attainment at both data points: at the start (Gamma = 0.293) and afterwards (Gamma = 0.279). However, the smaller gamma afterwards suggests a slight weakening in the relationship between SIMD and reading attainment over the course of the school year. This allows cautious optimism that the attainment gap was narrowed.

Table 6 compares the attainment of children claiming clothing grant with those who were not. The broad pattern mirrors that for SIMD: those on a clothing grant had lower average attainment than those with no clothing grant, with both groups showing statistically significant gains ( $p$  value < 0.01). The average difference in standardised age scores between NGRT A and B is slightly larger for those claiming clothing grant (4.9 versus 4.5), suggesting that, within a broadly similar pattern, there were slightly larger gains among those receiving school clothing grants.

## Shortening the tail of underachievement

We wanted to know if the increases in attainment gains were from high-scoring or low-scoring children and whether the pattern of shift was different for those in poverty and those who were not. We are interested in this because literacy is a gateway subject for other curricular areas. A shorter ‘tail of underachievement’ is good news because it indicates that a greater percentage of children have sufficient literacy skills to participate fully in the curriculum.

To find this out, we split data according to the five stanine categories of the normal curve (Low; Below average; Average; Above average and High) and determined the percentage of students’ scores in each stanine group. We did this for students on clothing grant and for students who were not on a clothing grant. Table 7 shows how the percentage of scores was distributed for the NGRT A test (before roll-out) and Table 8, the distribution of scores for NGRT B (nine months later).

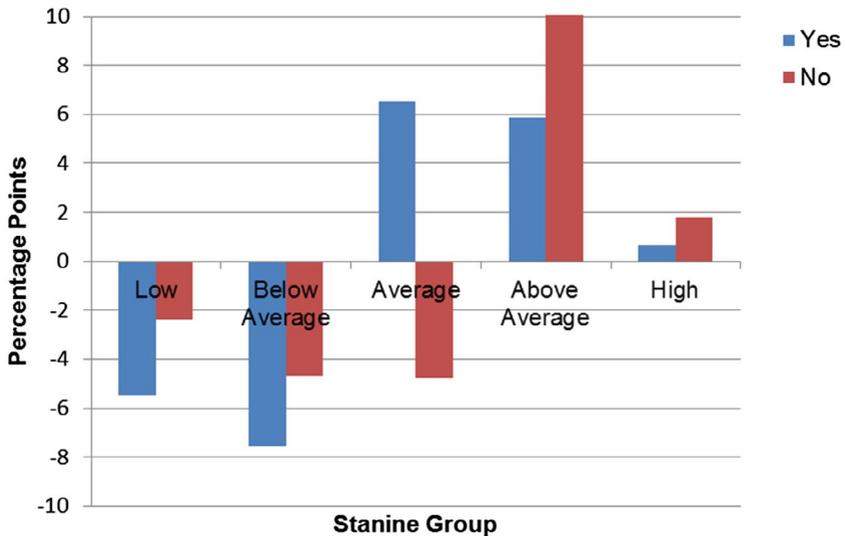
Figure 2 provides a graphic representation of the shifts (i.e. the simple difference between NGRT B% minus NGRT A%). There are two bars for each stanine, representing students getting clothing allowance (Yes) and not getting clothing

**Table 7.** NGRT A standardised age scores: percentage in each stanine group by clothing grant eligibility

<i>Clothing grant eligibility</i>	<i>Low</i>	<i>Below average</i>	<i>Average</i>	<i>Above average</i>	<i>High</i>	<i>Total (n)</i>
Yes	16.9%	31.4%	45.4%	6.0%	0.3%	100% (617)
No	6.4%	18.7%	57.9%	15.6%	1.4%	100% (3,110)
Total	8.1%	20.8%	55.8%	14.0%	1.2%	100% (3,727)

**Table 8.** NGRT B standardised age scores: percentage in each stanine group by clothing grant eligibility

<i>Clothing grant eligibility</i>	<i>Low</i>	<i>Below average</i>	<i>Average</i>	<i>Above average</i>	<i>High</i>	<i>Total (n)</i>
Yes	11.4%	23.9%	51.9%	11.9%	1.0%	100% (607)
No	4.0%	14.0%	53.1%	25.7%	3.2%	100% (3,120)
Total	5.2%	15.6%	52.9%	23.5%	2.8%	100% (3,727)



**Figure 2.** Percentage point difference in NGRT stanine groups by eligibility for clothing grant

The literacy attainment gap associated with poverty is a thorny issue, one that affects all schools. The root causes of poverty are not of schools’ making and ‘gap talk’ has been positioned as an example of how political and policy communities unfairly load broad, complex problems onto teachers, specifying reductivist solutions and unreasonably short timescales which make it impossible for them to succeed (Lingard, 2011). However, this is not good reason for teachers to ignore the relationship between literacy attainment and poverty. Teachers want all students to be successful and are particularly mindful of those who, for various reasons, are disadvantaged and most in need of help. They know that poverty is an inclusion issue and that attainment is just one outcome measure. They know that literacy is important: Sen’s capabilities perspective (1979) suggests students need functionings to realise their capabilities. The challenge is to raise literacy attainment by operationalising an approach that values self-respect and inclusion and empowering every student as a literacy user, regardless of his or her home circumstances.

This paper has explored two arguments in relation to this: what kind of knowledge do teachers need to support inclusive and equitable literacy teaching for students living in poverty and what kind of tools could help them use this knowledge to raise attainment. At a macrolevel, the knowledge argument is simple: if

the biggest factors that impact on educational attainment are social class, race and gender, then we need to prioritise those sociological, anthropological and social psychology knowledge domains that can inform complicated decisions in these areas. Only then is it possible to explore inclusion properly and work out how pedagogies, classroom routines and school systems might be operationalised differently.

At a microlevel, it is obvious that students' out-of-school lives and histories sculpt what they believe, what they know and how they think and that this inevitably shapes what they 'take' from school literacy lessons. Also, that the beliefs and knowledge students bring to class should be used in asset-based ways to inform curriculum content and design. It also seems obvious that how students feel about themselves, how they are positioned as literacy learners, their individual interests and aspirations to read particular kinds of texts, their membership of particular social networks and their visions of the kind of readers or writers they want to become, will influence their learning in school. Yet there is much in schools to distract educators from such obvious points. Interviews with some of the teachers engaged in this project (Ellis *et al.*, 2018, p. 48) showed searing honesty about how their professional noticing had been skewed to focus almost entirely on the cognitive domain. One said:

I immediately identified the cognitive domain. That's what I focussed on. Didn't pay attention to the other two, certainly not consciously. Not in planning or teaching. I may have been aware of children who didn't go to library or parents not getting so involved but I didn't do anything with that information. I didn't really think about it.

This design experiment reinterpreted the 'professional knowledge problem' as one of orchestration and alignment of different forms of knowledge rather than one of 'depth of knowledge'. The *Strathclyde Three Domains Tool* serves to make this breadth of knowledge visible. The data reported in this paper indicates that it impacted positively on attainment, including lower-attaining students, with a slight narrowing of the gap for those in poverty. However, we are aware that attainment is just one narrative to emerge and there are others (Ellis *et al.*, 2019). This is the nature of design experiment research (McKenney and Reeves, 2013).

The rise in overall attainment was prompted by a fall in the percentage of scores in the 'Low' and 'Below average' stanines, and an increased percentage of 'Average' (for students in poverty) and 'Above average' scores (for both groups,

although the larger increase was for non-poverty students). This shortened ‘tail’ of achievement is an important success story; literacy is a gatekeeper for other curricular areas and whether rich or poor, students who struggle to read are disempowered (Heath, 1983, 2008; Davies and Rizk, 2017; Goudeau and Croizet, 2017).

However, narrowing the literacy attainment gap associated with poverty is also important. In England, Andrews *et al.* (2017) report that the gap between disadvantaged 16-year-old pupils and their peers only narrowed by three months of learning over nine years of national policy interventions. The time between the two attainment measures in this design experiment was just nine months but there is still some evidence that the attainment gap was narrowing: the average size of improvement in NGRT scores for students claiming school clothing grant was slightly larger than for those not claiming it; the Goodman and Kruskal’s gamma statistic also suggested a slight weakening in the relationship between SIMD and attainment. Although there is still inequality the contextualised approach to change does seem to have impacted positively on students from poorer families. HMIE inspectors also found this, praising this ‘innovative approach to improving...attainment in literacy’ and noting the ‘very positive impact across the authority [with] raised attainment in reading and writing, and a narrowing of the gap between the least and most deprived groups’. Their report also recognises the ‘positive effect on the ethos of schools’ and the ‘strong influence on other areas of the curriculum [such as] aspects of numeracy.’ (Education Scotland, 2019b, p. 8).

This is still early days. Educators will inevitably face challenges specific to each stage of the school development cycle. In the same way that literacy students need active and nuanced nurturing, so too do literacy teachers. We make no claims for long-term success. Further research cycles will be required to understand how the attainment narrative plays out as the professional knowledge, leadership, staff development and policy narratives are woven into the development, maintenance and renewal rhythms of schooling. The evidence in this paper simply indicates a promising start that is worth continuing.

The project benefitted from the initial framing, funding and leadership provided by the local authority’s Poverty Commission (Renfrewshire Council, 2014), which drew on expertise from universities, the Joseph Rowntree Foundation, Shelter, Police Scotland, Children in Need, Child Poverty Action Group and the Trussell Trust. It took place in Scotland, where curriculum content is advisory and devolved rather than mandatory and centralised and where all public services,

from housing to education to health, are obliged to collaborate, and must report progress against a common set of national outcomes to ensure they all focus on the common purpose: to create a more successful country; give opportunities to all; increase wellbeing; create sustainable and inclusive growth; reduce inequalities and give equal importance to economic, environmental and social progress. This, therefore, is a particular landscape for teaching, education policy and research; other education systems have different landscapes with different constraints and affordances (Thomson and Hall, 2008). But in all these landscapes, schools have and always will have, an important part to play in delivering equity and enacting the human values that underpin a capabilities approach: self-respect, social justice and inclusion. Locating the professional knowledge required for this, and scoping ways to support educators to use this knowledge in ways that empower students in poverty, is an important role for education researchers, knowledge-brokers and policy makers. The *Strathclyde Three Domains Tool* is one specific contribution, explored in one specific context. It will almost certainly be enacted differently in other contexts. To this extent, it offers some promise and some hope.

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## Ethics

Ethical approval was obtained from Strathclyde University School of Education Ethics Committee (April 2015).

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## Correspondence

Sue Ellis  
School of Education  
University of Strathclyde  
Lord Hope building (level 5)  
Glasgow, Scotland  
Email: [sue.ellis26@btinternet.com](mailto:sue.ellis26@btinternet.com)