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Ireland's National Assessments of Mathematics and English Reading 2021:
A focus on achievement in urban DEIS schools

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Preface

This report provides in-depth information on the achievement of primary pupils in DEIS Urban Band 1 and Urban Band 2 schools in the *National Assessments of Mathematics and English Reading 2021* (NAMER '21). The current report is one of two initial reports from NAMER '21. It is intended to be read in conjunction with Kiniry et al. (2023) who provide more detail on the purpose of the national assessments, the administration of NAMER '21, and overall achievement in reading and mathematics.

A key purpose of the current report is to compare the average achievement of primary pupils in Urban Band 1 and Urban Band 2 schools with that of primary pupils in Urban Non-DEIS schools. In this way, findings contribute to monitoring progress towards targets under the *DEIS Plan 2017* (Department of Education and Skills, 2017a) which refer to reducing the percentages of lower achievers in DEIS schools and increasing the percentages of high achievers, in reading and mathematics.

Primary pupils in Ireland also participated in the *Progress in International Reading Literacy Study* (PIRLS) in 2021. Findings from PIRLS are published alongside those of NAMER; see Delaney et al. (2023) for Irish results. NAMER and PIRLS provide important insights about primary pupils' achievement and experiences following the disruption to education systems caused by COVID-19.

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Executive Summary

Overview of NAMER '21

- NAMER '21 was carried out in Spring 2021 by the Educational Research Centre on behalf of the Department of Education,[1] under the guidance of a national advisory committee. Administration of NAMER '21 was postponed by one year due to the COVID-19 pandemic.
- The wider context in which NAMER '21 took place should be borne in mind when interpreting the findings of the study. There is considerable international evidence of learning loss in reading and mathematics amongst primary school pupils during the period of the COVID-19 pandemic. There are also findings of a widening attainment gap between pupils from socio-economically disadvantaged backgrounds and their peers. Numerous reviews in Ireland and elsewhere have noted that younger children, children from marginalised families and those from lower SES backgrounds were most negatively affected by COVID-19-related school closures.
- Pupils that participated in NAMER '21 had experienced remote learning and teaching in January and February 2021 as well as an extended period of school closures/remote learning between March and June 2020.
- In NAMER '21, reading achievement at Second class and mathematics achievement at Sixth class were assessed. Pupils, teachers and principals also completed questionnaires. Response rates of schools, pupils, principals and teachers were high, resulting in high quality data.
- Over 10,000 pupils in 188 primary schools participated. Of participating schools, 58 were DEIS Urban Band 1 schools and 30 were Urban Band 2 schools. The numbers of Urban Band 1 and Urban Band 2 schools participating in 2021 represented an increase over the corresponding numbers of DEIS schools in NAMER '14 (13 Urban Band 1 and 12 Urban Band 2 schools). An increased number of Urban DEIS schools was included in 2021 in order to support more reliable estimation of the achievement levels in these schools. Appropriate weights were applied when conducting data analysis to account for the percentages of pupils in DEIS schools in the population and the impact of oversampling.
- Findings from NAMER '21 do not show significant gains in overall achievement since NAMER '14; however, a sustained level of performance has been maintained and there are some limited examples of small improvements although these are generally not statistically significant. Findings show that in Ireland, the achievement gap between DEIS and Non-DEIS schools has not widened between 2014 and 2021. These findings are to be welcomed in the context of international evidence of learning loss and the particular impact of COVID-19 on pupils from disadvantaged backgrounds.

1 The name of the Department changed in October 2020 from the Department of Education and Skills (DES) to the Department of Education (DoE). DoE is used when referring to the Department in this report, except in citations where DES is retained for accuracy.

Key findings: Achievement in Second class English Reading

- Overall performance on Second class English reading was broadly similar in 2021 and in 2014. For each of the three school groups examined (Urban Non-DEIS, Urban Band 1 and Urban Band 2 schools), there were no significant differences between 2014 and 2021 in the mean scores for Overall reading, Vocabulary or Comprehension. That is, average levels of Overall reading, Vocabulary or Comprehension in 2021 did not differ significantly from those in 2014 in any of the school contexts considered.
- As in 2014, findings from 2021 show that Second class pupils in Urban Non-DEIS schools had a significantly higher mean score in overall reading (265.4) than their counterparts in Urban Band 1 schools (236.9). The effect size associated with this difference was large (d = 0.60).
- The achievement gap between average reading scores in Urban Non-DEIS schools and Urban Band 1 schools reduced somewhat between 2014 and 2021, although the change was not statistically significant. This follows a small increase in the mean reading score of pupils in Urban Band 1 schools between 2014 and 2021.
- In NAMER '21, pupils in Urban Non-DEIS schools also significantly outperformed their counterparts in Urban Band 2 schools on the reading test; the effect size associated with this difference was substantial (d = 0.28).
- In 2021, as in 2014, Second class pupils in Urban Band 2 schools achieved a significantly higher mean reading score than pupils in Urban Band 1 schools (d = 0.34). There was a small (non-statistically significant) reduction in mean scores in Urban Band 2 and Urban Non-DEIS schools in 2021 compared to 2014.
- As in earlier National Assessments, the percentage of very low achievers in reading (defined as Below Level 1 on the reading test) was significantly higher in Urban Band 1 schools (12.9%) than in Urban Non-DEIS (5.0%) or in Urban Band 2 schools (7.1%).
- In 2021, nearly one-in-three Urban Band 1 pupils (30.3%) performed At Level 1 on the reading test, compared to about one-in-four in Urban Band 2 schools (22.1%) and one-in-six in Urban Non-DEIS schools (16.7%).
- In NAMER '21, 43.2% of Second class pupils in Urban Band 1 schools had reading scores At or Below Level 1, a value which is very similar to the corresponding percentage in 2014 (43.9%). On the basis of the available data, there is limited evidence of progress towards the target set out in the *DEIS Plan* (Department of Education and Skills, 2017a), which aimed to reduce the percentage of low achievers in reading in Urban Band 1 schools to 40% by 2020.
- In NAMER '21, 25.0% of Second class pupils in Urban Band 1 schools had reading scores At or Above Level 3. The target for high achievers in Urban Band 1 schools specified in the *DEIS Plan* was 25.0% (Department of Education and Skills, 2017a). Although the percentage of Urban Band 1 pupils At or Above Level 3 (25.0%) in NAMER '21 does not represent a statistically significant increase over the corresponding percentage in 2014 (17.7%), the target for high achievers in Urban Band 1 schools set out in the *DEIS Plan* appears to have been met.

- In 2014, there was a 31% gap between the percentage of high achievers (i.e., those At or Above Level 3) in Urban Non-DEIS schools and the corresponding percentage in Urban Band 1 schools. By 2021, this gap had narrowed significantly to 23% as a consequence of the increase in high achievers (At or Above Level 3) in Urban Band 1 schools from 18% to 25%.
- Just 4.1% of pupils in Urban Band 1 schools, 7.4% in Urban Band 2 schools, and 14% in Urban Non-DEIS schools had reading scores at Level 4 – the highest level of reading proficiency.

Key findings: Achievement in Sixth class mathematics

- Average performance in Sixth class mathematics was broadly similar in 2014 and 2021. For each of the three school groups examined (Urban Non-DEIS, Urban Band 1 and Urban Band 2 schools), there were no significant differences between 2014 and 2021 in the mean mathematics scores. That is, average levels of mathematics in 2021 did not differ significantly from those in 2014 in any of the school contexts considered.
- As in 2014, findings from 2021 show that in mathematics, Sixth class pupils in Urban Non-DEIS schools significantly outperformed their counterparts in Urban Band 1 schools, with mean scores of 262.3 and 233.3, respectively. The effect size associated with this difference was large (d = 0.59).
- The gap in average achievement between Urban Non-DEIS and Urban Band 1 schools was very similar in 2014 and in 2021 (about 30 points in both cycles).
- In 2021, the difference between the mean mathematics score of pupils in Urban Non-DEIS schools (262.3) and those in Urban Band 2 schools (251.9) was not statistically significant (d = 0.21). There was some evidence of a slight narrowing of the achievement gap between Urban Non-DEIS and Urban Band 2 schools between 2014 and 2021. Although not statistically significant, a 2-point drop in the mean mathematics score of pupils in Urban Non-DEIS schools combined with an 11-point increase in the mean score of pupils in Urban Band 2 schools resulted in a small narrowing of the achievement gap.
- In 2021, there was a statistically significant gap between the mean mathematics scores of pupils in Urban Band 2 schools and Urban Band 1 schools, with a significantly higher mean score achieved by pupils in Urban Band 2 schools. The effective size associated with this difference can be interpreted as substantively important (d = 0.35).
- In NAMER '21, the percentage of pupils in Urban Band 1 schools (16.7%) with mathematics scores Below Level 1 was considerably higher than the corresponding percentages in Urban Non-DEIS schools (5.9%) or Urban Band 2 schools (8.2%). The skills of pupils at this level are not fully assessed by NAMER as pupils Below Level 1 have very low skills in mathematics relative to other Sixth class pupils.
- Almost one-third of pupils in Urban Band 1 schools (31.9%) had mathematics scores At Level 1 in 2021. The corresponding percentages were somewhat lower in Urban Band 2 schools (26.4%) and Urban Non-DEIS schools (20.2%).

- In NAMER '21, 48.6% of Sixth class pupils in Urban Band 1 schools had mathematics scores At or Below Level 1, just slightly lower than the corresponding percentage in 2014 (49.9%). On the basis of the available data, there is limited evidence of progress towards the target set out in the *DEIS Plan* (Department of Education and Skills, 2017a), which aimed to reduce the percentage of low achievers in mathematics in Urban Band 1 schools to 42% by 2020.
- In NAMER '21, 22.4% of pupils in Urban Band 1 schools had mathematics scores At or Above Level 3 – a value which remains below the target of 27%.
- Between 2014 and 2021, there has been some limited narrowing in the gap between Urban Non-DEIS schools and Urban Band 1 schools in the percentages of high achievers (i.e., those At or Above Level 3). Although not statistically significant, the 25.1% gap in 2014 dropped to 20.3% in 2021 as a result of a very slight reduction in the percentage of high achievers in Urban Non-DEIS schools (from 42.7% to 42.6%) and a small increase in the percentage of high achievers in Urban Band 1 schools (from 18.6% to 22.4%).
- Level 4 represents the highest proficiency level on the mathematics test. Just 5.3% of pupils in Urban Band 1 schools, compared to 11.1% in Urban Band 2 schools and 15.1% in Urban Non-DEIS schools, had mathematics scores at this level in 2021.

Key findings: gender differences in performance[2]

- In Urban Band 1 schools and in Urban Non-DEIS schools, Second class girls achieved a significantly higher mean reading score than Second class boys. The effect sizes associated with these gender differences were 0.15 and 0.23, respectively, and similar to the gender difference in the overall sample.
- In Urban Band 2 schools, there was no significant difference in the mean reading scores of Second class boys and girls.
- Across all participating pupils in NAMER '21, there was a statistically significant gender difference in favour of boys in mean mathematics achievement at Sixth class. In Urban Non-DEIS schools, Sixth class boys had a significantly higher mean score than Sixth class girls in overall mathematics, with a difference of 7.8 scale points between the two groups (d = 0.15). Mean gender differences in Urban Band 2 schools were more marked, with a difference of 15 points in favour of boys (d = 0.32).
- The mean mathematics achievement of Sixth class boys and girls did not differ significantly in Urban Band 1 schools (d = 0.11).

2 The NAMER '21 pupil questionnaire asked pupils to indicate if they identified as "girl", "boy" or "other". Owing to the very small numbers of pupils identifying as "other" gender, mean scores are provided only for those pupils identifying as "girl" or "boy".

Looking across reading and mathematics

- Reading and mathematics were assessed at different grade levels (Second and Sixth classes, respectively), limiting the generalisations that can be drawn about achievement across the two domains. Nonetheless, findings support some broad observations.
- Findings show a persistent achievement gap between pupils in DEIS schools compared to those in Non-DEIS schools. This is particularly pronounced when comparing the average achievement of pupils in Urban Band 1 schools with that of pupils in Urban Non-DEIS schools. These findings underscore the need for continued provision of additional supports, particularly for pupils in Urban Band 1 schools.
- It is to be welcomed that the difference in average mathematics achievement of Sixth class pupils in Urban Non-DEIS schools and those Urban Band 2 schools was not statistically significant. In contrast, in NAMER '14 Sixth class pupils in Urban Band 2 schools had a mean score in mathematics that was not significantly different to the mean score of pupils in Urban Band 1 schools.
- Findings from NAMER '21 show that in Urban Band 1 schools, nearly half of Sixth class pupils had mathematics scores At or Below Level 1 and over two-fifths of Second class pupils had reading scores At or Below Level 1. In Urban Band 2 schools, over one-third of Sixth class pupils had mathematics achievement At or Below Level 1 and more than a quarter of Second class pupils had reading achievement At or Below Level 1. Thus, there is a continued need for ongoing support for low achieving students in disadvantaged contexts.
- In both Urban Band 1 and Urban Band 2 schools, percentages of low achievers in reading were somewhat lower than the percentages of low achievers in mathematics. Findings from other studies also show a relative strength in reading for pupils in Ireland.
- There was a statistically significant difference between the mean reading score of pupils in Urban Non-DEIS and Urban Band 2 schools (13.1 point difference); the corresponding difference in mathematics (10.4 points) was not statistically significant. The effect sizes associated with these were similar (d = 0.28 and d = 0.21, respectively), emphasising the importance not only of focusing on statistical significance but also on the substantive interpretation facilitated by effect sizes.
- Sixth class boys in Urban Band 2 schools achieved a mean mathematics score (260.1), close to the mean mathematics score of boys in Urban Non-DEIS schools (266.1). The gap between the two was somewhat larger for girls (14 points), although the overall mathematics score in Urban Band 2 schools was not significantly different from that in Urban Non-DEIS schools. There may be merit in focusing further on the engagement and achievement of girls in mathematics in Urban Band 2 schools.
- In Urban Band 1 schools, there was somewhat greater variation in mean scores across mathematics content areas than in Urban Band 2 or Urban Non-DEIS schools. Mean scores across content areas ranged from 233.1 on Number & Algebra to 244.9 on Shape & Space. Mean scores on Measures and Data were 239.3 and 240.4, respectively. There was also some variation in mean scores across mathematics process areas in Urban

Band 1 schools. It may be useful for future research to examine these findings in more detail, to explore the relative strengths and weaknesses in mathematics of Sixth class pupils in Urban Band 1 schools.

- Findings outlined in this report show no evidence of a decline in average reading or mathematics scores between 2014 and 2021 in Urban Band 1 or Urban Band 2 schools – findings that are to be welcomed following disruptions to education caused by COVID-19.

Acronyms and Abbreviations

BC	Bonferroni correction
CI	Confidence interval
COVID-19	Coronavirus disease (COVID-19) pandemic
CPD	Continuing Professional Development
CSL	Centre for School Leadership
d	Cohen's *d*, or standardized mean difference, measure of effect size
DEIS	Delivering Equality of Opportunity in Schools
DoE	Department of Education (formerly Department of Education and Skills [DES])
ERC	Educational Research Centre
HP Index	Pobal HP Deprivation Index
HSCL	Home School Community Liaison
IEA	International Association for the Evaluation of Educational Achievement
ILSA	International large-scale assessment
IRT	Item Response Theory
NAs	National Assessments
NAMER '09	The National Assessments of Mathematics and English Reading 2009
NAMER '14	The National Assessments of Mathematics and English Reading 2014
NAMER '21	The National Assessments of Mathematics and English Reading 2021
NEPS	National Educational Psychological Service
OECD	Organisation for Economic Co-operation and Development
PDST	Professional Development Service for Teachers
PIRLS	Progress in International Reading Literacy Study
PISA	Programme for International Student Assessment
PLC	Primary Language Curriculum
PMC	Primary Mathematics Curriculum
SE	Standard error
SED	Standard error of the difference
SES	Socio-economic status
TIMSS	Trends in International Mathematics and Science Study

CHAPTER 1
Introduction

Nationally and internationally, education policy places a strong emphasis on supporting equity in education (Department of Education, 2022a; Department of Education and Science, 2005; OECD, 2020). This area has received increased attention since the onset of the COVID-19 pandemic (e.g., OECD, 2020; OECD, 2022). Detailed consideration has been given in the literature to the distinction between "equity" and "equality" (e.g., Espinoza, 2007) and the need for an explicit definition (Appels et al., 2022) but in general terms, a key aim of policies in this sphere is to reduce the association between academic performance and individual pupil background, particularly socio-economic status (SES). In Ireland, educational disadvantage is defined in Section 32(9) of the Education Act (Government of Ireland, 1998) as "the impediments to education arising from social or economic disadvantage that prevent students from deriving appropriate benefit from education in schools".

Attempts to improve equality of outcomes, equality of opportunity and/or equality in school experiences provide a basis for the many policy responses to educational disadvantage in Ireland. Since the 1970s, various supports have been provided to schools in Ireland serving learners from disadvantaged backgrounds, often beginning in a limited geographic area (Holland, 1979; Kellaghan & Greaney, 1993) or on a pilot basis (e.g., Ryan, 1994). For a review of earlier programmes, see Weir et al. (2004) and Carroll (2022). Aspects of the earlier programmes were consolidated into *Delivering Equality of Opportunity in Schools* (DEIS) in 2005 (Department of Education and Science, 2005) which was further updated with a new *DEIS Plan* published in 2017.

The remainder of this chapter is divided into three sections. The first describes the DEIS programme in more detail, focusing on the implementation of DEIS at primary level, given the scope of NAMER '21. It also summarises selected findings from work on the evaluation of DEIS. The second section describes the achievement of pupils in DEIS schools in recent national assessments and selected international assessments where analyses have been conducted by school DEIS status. The third section outlines the structure of the remainder of this report.

About DEIS

The *DEIS Plan 2017* sets out the vision for intervention in the area of social inclusion in education policy. It outlines a range of targets related to achievement in literacy and numeracy; pupil retention rates; pupil wellbeing; progression to further and higher education; teacher education; parental engagement; and community links (Department of Education and Skills, 2017a). It sets out five goals:

- To implement a more robust and responsive Assessment Framework for identification of schools and effective resource allocation;
- To improve the learning experience and outcomes of pupils in DEIS schools;
- To improve the capacity of school leaders and teachers to engage, plan and deploy resources to their best advantage;
- To support and foster best practice in schools through interagency collaboration; and
- To support the work of schools by providing the research, information, evaluation and feedback to achieve the goals of the plan.

At primary level, DEIS schools are allocated to one of three bands: Urban Band 1 which comprises DEIS urban schools with the highest levels of concentrated disadvantage; Urban Band 2 which comprises Urban DEIS schools with high levels of concentrated disadvantage; and Rural DEIS which comprises rural schools experiencing high levels of concentrated disadvantage. There is variation in the supports provided to DEIS schools according to their DEIS band (a full list of available supports is shown in Table A1.1). An important support for Urban Band 1 schools is the provision of more favourable staffing schedules to support reduced class sizes. A key support for both Urban Band 1 and Urban Band 2 schools is the provision of the Home School Community Liaison (HSCL) service.

Literacy and numeracy targets for DEIS schools outlined in *DEIS Plan 2017* (Department of Education and Skills, 2017a) were originally devised as part of the interim review of the *National Strategy: Literacy and Numeracy for Learning and Life: 2011-2020* (Department of Education and Skills, 2017b). At primary level, these aim to increase the percentages of pupils in Urban Band 1 schools performing at the highest levels in reading and mathematics and to reduce the percentages of pupils performing at the lowest levels. Targets are set on the basis of performance in the National Assessments of Mathematics and English Reading 2014 (NAMER '14).

Although not directly relevant to the findings presented in this report, a major extension of the DEIS programme has taken place since the administration of NAMER '21. The first goal of the *DEIS Plan 2017* refers to the implementation of a more robust and responsive assessment framework for the identification of schools for DEIS (Department of Education and Skills, 2017a). Under this goal, a new identification process was introduced in 2017 which involved the use of centrally-held data from the Primary Online Database (or its equivalent at post-primary level – the Post-Primary Online Database) and the HP deprivation index derived from the Census (Department of Education and Skills, n.d.). At that time, a total of 79 schools (66 primary, 13 post-primary) were identified for DEIS using the new process; a further 30 primary schools moved from Urban Band 2 to Urban Band 1. A refined version of the 2017 identification process was finalised in early 2022 (Department of Education, 2022a), resulting in an extension of the DEIS programme to 322 additional schools, with a large majority of these at primary level.[3]

As part of a wider programme of work on the evaluation of DEIS at primary level, the achievement of pupils in a sample of DEIS schools was monitored longitudinally between 2007 and 2016. Reading and mathematics proficiency tests were administered to Second, Third, and Sixth class pupils in 120 Urban DEIS schools in 2007, with repeated assessments in 2010, 2013 and 2016.[4] There was evidence of positive gains, with an increase in pupils' reading and mathematics achievement across all grade levels from 2007 to 2010, from 2010 to 2013, and from 2013 to 2016. Nonetheless, the average achievement in English reading and mathematics of pupils attending DEIS schools was significantly lower than that of the nationally representative sample on whom the test was standardised and pupils in Urban Band 1 schools typically performed less well than those in Urban Band 2 schools (Kavanagh et al., 2017; Weir et al., 2011; Weir & Denner, 2013).

Evaluation work exploring the nature of disadvantage in rural areas found that the achievement of pupils in Rural DEIS schools increased over time (from 2007 to 2010), and that pupils' performance approximated the national norms for both reading and mathematics in primary schools (Weir & McAvinue, 2013). Further analyses showed that the differences between pupils in rural and urban schools were not accounted for by school size or level of deprivation in the area. The association between pupil home environment and achievement was found to be stronger in urban compared to rural areas (Weir et al., 2009; Weir et al., 2015). However, longitudinal follow-up of Rural DEIS schools was challenging due to school amalgamation and a lack of testing co-ordinators, and the evaluators proposed embedding into the NAs the continued monitoring of the achievement of pupils in Rural DEIS schools (Weir & McAvinue, 2013).[5]

A review of DEIS identified as a limitation the lack of a control group in earlier DEIS evaluation work focusing on academic achievement in DEIS schools (Smyth et al., 2015). The authors of the review note that without a control group, it is difficult to establish whether any improvements were due to the DEIS programme or to improvements that occurred across all schools. They note that NAMER '14 could be used as a reference point, and on the basis of NAMER '14, the achievement gap between DEIS and Non-DEIS schools did not show marked reduction over the

3 This extension comprised 42 new Urban Band 1 schools, 81 new Urban Band 2 schools, 161 new Rural DEIS schools, and 38 new DEIS post-primary schools. A further 39 primary schools were reclassified from one DEIS band to another (e.g., Urban Band 2 to Urban Band 1 or DEIS rural to an Urban band).

4 Achievement tests used in the evaluation of DEIS differ from tests used in NAs, and as such results may not be directly comparable (Weir et al., 2017).

5 It should be noted that for NAMER '21 a decision was made that pupils in DEIS rural schools should not be oversampled for the main study. Oversampling was confined to pupils in DEIS urban schools (Band 1 and Band 2) only.

period examined (Smyth et al., 2015). The next section provides further detail on the performance of pupils in DEIS schools in NAMER '14 and selected other assessments where analyses have been conducted by school DEIS status.

Findings from national and international assessments on the achievement of primary pupils in DEIS schools

In Ireland, the reading and mathematics achievement of primary school pupils is monitored in various ways, including by teachers who use formal and informal modes of assessment to monitor progress,[6] at school level through monitoring pupil attainment as part of the School Self-Evaluation process (Department of Education, 2022b), and by the Department of Education (DoE) through analysis of aggregated results on standardised tests.[7] NAs and international large-scale assessments (ILSAs) are designed to measure performance at the system-level. They support the monitoring of trends in pupil achievement and in the case of ILSAs, permit cross-country comparisons in average levels of achievement. A key advantage of NAs and ILSAs is that these studies typically gather large quantities of contextual data from participating pupils, parents, teachers and school principals which support a more nuanced understanding of achievement results (e.g., see secondary analyses in Ireland such as Clerkin et al., 2017, 2020; Delaney et al., 2022; Perkins et al., 2020). The remainder of this section describes the achievement of pupils in DEIS schools in previous NAs and then outlines some relevant findings from recent ILSAs conducted at primary level.

National Assessments

National assessments of English reading and mathematics for Irish primary school pupils began in 1972. NAMER '09 represented a transition point in the assessments, with a change in grade levels to pupils in Second class and Sixth class (previously First and Fifth), a new requirement for all pupils to complete both domains of assessment, and development of new frameworks and questionnaires (Eivers et al., 2010a; Eivers et al., 2010b). Achievement scales developed for NAMER '09 were set to have a mean of 250 and a standard deviation of 50.

Pupils attending schools in the DEIS programme have been represented in NAs since 2009 in line with their proportions in the population; for more detail on sample selection for 2009, see Eivers et al. (2010a). However, this means that of pupils sampled for NAMER '09 or NAMER '14, the percentages in DEIS schools were comparatively small; e.g., in 2014, less than 10% of pupils were in Urban Band 1 schools and less than 10% were in Band 2 schools (Shiel et al., 2014). As a result, there is greater uncertainty about the extent to which estimates of achievement are generalisable to the population of pupils in DEIS schools than would be the case if larger samples were involved. In practice, this means that estimates from 2009 and 2014 for pupils in DEIS schools have comparatively large standard errors but nonetheless, previous NAs have provided useful indications of the performance of pupils attending schools in the DEIS programme.

Findings from NAMER '09 show significant differences in pupil achievement associated with school DEIS status. At Second class, pupils in Urban Band 1 schools obtained significantly lower mean scores in English reading and mathematics than pupils in Urban Non-DEIS schools, Rural DEIS schools, and those in Rural Non-DEIS schools. The mean English reading and mathematics scores of Second class pupils in Urban Band 1 schools did not differ significantly from those of pupils in Urban Band 2 schools (Eivers et al., 2010b).

6 For further information, see e.g., https://ncca.ie/en/primary/assessment/

7 Standardised testing did not take place in 2020/2021 due to school closures as a result of COVID-19 but was resumed in 2021/2022; see Circular 0018/2021. See also Circular 0018/2022 regarding Standardised Testing in 2021/2022 and subsequent years (Department of Education, 2022c).

Also in NAMER '09, findings at Sixth class show that the mean reading and mathematics scores achieved by pupils in Urban Band 1 schools were significantly lower than those obtained by pupils in Urban Non-DEIS schools and those in Rural Non-DEIS schools. In line with findings at Second class, mean reading scores and mean mathematics scores of Sixth class pupils in Urban Band 1 schools did not differ significantly from those of pupils in Urban Band 2 schools.[8] NAMER '09 provided a baseline against which achievement in subsequent assessments can be compared (Clerkin & Gilleece, 2010).

In NAMER '14 a significant achievement gap between pupils in DEIS schools compared to those in Non-DEIS schools was also evident.[9] At both Second and Sixth classes, pupils in Urban Band 1 schools scored significantly lower on average in reading than pupils in other school types (Urban Band 2, Urban Non-DEIS, Rural DEIS, Rural Non-DEIS). In mathematics, Second class pupils in Urban Band 1 schools obtained a significantly lower mean score than pupils in all other school types. At Sixth class, the mean mathematics score of pupils in Urban Band 1 schools was significantly lower than that of pupils in all other school types, except Urban Band 2 schools (Shiel et al., 2014).

There was an overall national improvement in average reading and mathematics scores between 2009 and 2014. In line with overall national trends, improvements of a similar magnitude were evident in DEIS schools. Focusing on improvements in Second class reading between 2009 and 2014, a larger increase in average achievement was noted in Urban Band 2 schools compared to Urban Band 1 schools or Urban Non-DEIS schools. In Urban Band 2 schools, Second class pupils achieved a mean reading score that was 27 points (about half a standard deviation) higher in NAMER '14 compared to NAMER '09 (Shiel et al., 2014). At Sixth class, the improvement between 2009 and 2014 in mean mathematics scores was somewhat larger in Urban Band 1 schools compared to Urban Band 2 or Urban Non-DEIS schools. However, despite the improvement in DEIS schools, with limited exception, due to the overall improvements in schools generally, there was no reduction in the gap between pupils in DEIS urban schools and those in other school types.

International Assessments

In recent years, Fourth class pupils in Ireland have participated in both the *Progress in International Reading Literacy Study* (PIRLS; Mullis et al., 2017a; Mullis et al., 2017b; Mullis et al., 2023) and the *Trends in International Mathematics and Science Study* (TIMSS; Mullis et al., 2020). Pupils in Ireland demonstrated very strong reading skills on average in PIRLS 2016; just two countries (the Russian Federation and Singapore) had mean scores that were significantly higher than that in Ireland. No EU or OECD country obtained an overall mean score that was higher than Ireland's in 2016. In addition, there was a significant improvement in Ireland's mean reading scores between 2011 and 2016 (Eivers et al., 2017).

Irish pupils also demonstrated very strong performance on average in PIRLS 2021, although the administration of this cycle differed from that of previous cycles due to the COVID-19 pandemic. In Ireland and 13 other countries, PIRLS was administered half a year later than planned to pupils at the start of Fifth grade (Fifth class in Ireland); as previously noted, PIRLS is typically administered to pupils in Fourth grade (Delaney et al., 2023).

Ireland's strong performance in PIRLS 2016 was maintained in PIRLS 2021. There was a significant improvement in average reading achievement in Ireland between 2016 and 2021 (an 11 point increase), although maturation effects may at least partially explain this gain (Delaney et al., 2023). In PIRLS 2021, pupils in Ireland achieved a mean reading score that was significantly higher than that of most other countries. Singapore (where pupils were tested at Fourth grade)

8 At Sixth class in 2009, differences in mean reading and mathematics scores between pupils in Urban Band 1 schools and those in Rural DEIS schools were not statistically significant although this is likely a function of the large standard errors associated with estimates for Sixth class pupils in Rural DEIS schools (see Table 5.27; Clerkin & Gilleece, 2010).

9 Authors of the NAMER '14 report advise caution in interpreting the outcomes due to the small numbers of pupils in DEIS schools selected to participate (Shiel et al., 2014).

was the only country to achieve a significantly higher mean score than Ireland. The mean score of pupils in Hong Kong (also tested in Fourth grade) did not differ significantly from that in Ireland.

Findings from TIMSS show that there was a significant improvement in the mathematics and science achievement of Fourth class pupils from 2011 to 2015, most notably among lower-achieving pupils (Clerkin et al., 2016). In the most recent cycle of TIMSS, conducted in 2019, primary school pupils in Ireland achieved a mean score which was significantly above the TIMSS scale centrepoint.[10] Just seven other participating countries had a mean score which was significantly above that in Ireland (Mullis et al., 2020). There was no change in average mathematics achievement at primary level in Ireland between 2015 and 2019 (Perkins & Clerkin, 2020).

Secondary analyses of national data from the joint administration of PIRLS and TIMSS in 2011 examined achievement differences between pupils in DEIS and Non-DEIS schools (Cosgrove & Creaven, 2013). Findings showed statistically significant "raw"[11] differences in the average reading achievement of pupils in Urban Band 1 schools compared to those in Non-DEIS schools and a similar difference between the average reading achievement of pupils in Urban Band 2 schools compared to those in Non-DEIS schools. In contrast, there was no significant difference in the average achievement of pupils in Rural DEIS schools compared to those in Non-DEIS schools. On the basis of results from multilevel modelling, the authors note that none of the measures relating to school socio-economic context, including DEIS, were significantly associated with achievement once detailed information on pupil characteristics were taken into account. Findings of subsequent analyses highlighted the important role of informal parental involvement in pupils' learning, suggesting that aspects of parental involvement may at least partly mitigate some of the effects of socio-economic disadvantage (Gilleece, 2015).

Findings from PIRLS 2016, based on a limited sample of pupils in DEIS schools, showed that pupils in both Urban Band 1 schools and Urban Band 2 schools achieved mean reading scores that were significantly lower than those of pupils in Non-DEIS schools (Delaney et al., 2022).[12] The mean score of pupils in Urban Band 1 schools was lowest and was about half a standard deviation lower than that of pupils in Non-DEIS schools, a gap described by the authors as "both statistically significant and meaningfully substantial" (p. 17). The mean achievement of pupils in Rural DEIS schools did not differ significantly from that of pupils in Non-DEIS schools; however, the authors advise that no conclusions about performance in Rural DEIS schools should be extrapolated from this due to the particularly small numbers sampled from this category. Findings from multivariate analyses of PIRLS 2016 data show that class-average SES was significantly associated with achievement in both paper-based and computer-based reading, having controlled for individual pupil factors (Gilleece & Eivers, 2018). Consistent with the pattern observed in PIRLS 2016, the average performance of pupils in Urban Band 1 and Urban Band 2 schools in PIRLS 2021 was significantly lower than that of pupils in Non-DEIS schools by 56 and 40 points, respectively (Delaney et al., 2023).[13]

10 Performance in TIMSS is reported with reference to a scale that was set to have a centrepoint of 500 which represents the mean (average) from when the study was first conducted in 1995.

11 'Raw' differences refer to differences between DEIS and Non-DEIS schools in the absence of any statistical adjustments for other variables such as individual pupil socio-economic status.

12 Delaney et al. (2022) note that relatively small numbers of pupils within each DEIS category were sampled for PIRLS 2016 which results in wider margins of error associated with estimates for these groups. While mean PIRLS achievement by school DEIS status is reported, this caveat is noted.

13 In PIRLS 2021, the majority of participating pupils attended Non-DEIS schools (78.3%), with 10.9% in Urban Band 1 schools, 6.9% in Urban Band 2 schools and 3.9% in Rural DEIS schools.

Report Aims

The design of NAMER '21 incorporated an increased sample of pupils in urban DEIS schools to enable more robust comparisons of the achievement levels of pupils in Non-DEIS and DEIS schools than had previously been possible. The aims of the report are as follows:

- To provide evidence on the current standards of English reading and Mathematics across pupils in Urban DEIS schools.
- To provide a broad indication of the specific strengths and weaknesses in pupils' knowledge and skills in English reading and mathematics in Urban DEIS schools through an initial examination of content areas and process skills.
- To compare pupil performance in Urban Band 1 schools with targets specified in the *DEIS Plan 2017*.
- To monitor trends in DEIS pupil achievement since the last cycle of NAMER in 2014.

Chapter 2 provides an overview of the methods and procedures used NAMER '21. Readers interested in more detail are advised to consult Kiniry et al. (2023). Chapter 3 outlines the English reading achievement of Second class pupils in Urban DEIS schools and makes comparisons between mean achievement levels in Urban DEIS schools and Urban Non-DEIS schools. Chapter 4 describes mathematics achievement at Sixth class. Chapter 5 places the results in context, summarises key findings and draws some conclusions.

CHAPTER 2
Methods and Procedures

This chapter provides some summary information on the methods and procedures used in the administration and analysis of NAMER '21. More detailed technical information on test development, sampling, and administration are provided in the main NAMER '21 Performance Report (Kiniry et al., 2023) and readers interested in further detail are advised to consult that report. This chapter gives an overview of NAMER '21; outlines what was assessed; indicates who participated (sample and response rates); describes how the study was conducted; and provides information on the analysis conducted and guidance on the interpretation of findings.

Overview of NAMER '21

The NAs are undertaken by the Educational Research Centre (ERC) on behalf of the DoE, guided by a national advisory committee. The NAs examine pupil achievement in English reading and Mathematics and are based on the Irish primary school curriculum. The purpose is to describe broad population characteristics, not those of individual pupils, teachers or schools.

NAMER '21 is the ninth in the series of NAs conducted in Ireland which typically take place about every five years. NAMER '21 was due to be administered in the Spring of 2020 but as a consequence of the COVID-19 pandemic, this was postponed to the Spring of 2021. This resulted in a seven-year interval since the last NA cycle conducted in 2014. The decision to postpone the NAs was taken jointly by the Department of Education (DoE) and the ERC, balancing the need to gather up-to-date data on achievement with the burden placed by the assessments on participating pupils, teachers and schools. A key factor influencing the delayed administration was the extent to which in-person learning had been impacted by school closures in the academic years 2019/2020 and 2020/2021. Pupils that participated in NAMER '21 had experienced remote learning and teaching in January and February 2021 as well as an extended period of school closures/remote learning between March and June 2020 (see Delaney et al., 2023 and Kiniry et al., 2023 for further discussion).

To facilitate the administration of NAMER '21, a number of modifications were made to what had been planned for 2020. The aim was to sufficiently minimise the burden on participating pupils, teachers and schools to allow the assessments to proceed whilst recognising the considerable loss of data which occurred as a result. The adaptations made to the study design were done in such a way as to ensure that the study still produced sufficiently accurate estimates of achievement. Priority was given to achievement tests over background questionnaire data.

The key modifications were:

- A reduction in the number of tests administered to pupils with each domain assessed at one grade rather than at two. Second class pupils took the English reading test only and Sixth class pupils took the Mathematics test only.
- Questionnaires were administered to pupils, teachers and school principals. No parent/care-giver questionnaires were administered which differs from previous NAs. This results in an important loss of data on pupil home background, limiting subsequent analytic possibilities.

What does NAMER '21 assess?

NAMER '21 assesses English reading at Second class and mathematics at Sixth class. The frameworks underpinning the current assessments build on those from previous NA cycles (Eivers et al., 2010a; Eivers et al., 2010b). The framework for English reading underpinning NAMER '21 was updated with reference to the curriculum changes introduced through the Primary Language Curriculum (PLC; Department of Education and Skills, 2019). It aims to assess reading literacy through the assessment of Vocabulary knowledge and reading Comprehension. Reading Comprehension is emphasised in the reading framework and the majority of items on the test assess reading Comprehension.

English reading is defined as follows:

> Reading literacy enables the reader to engage with, comprehend, use, and respond to written language in varied forms. A reader can construct and extend meaning through the dynamic interactions between their existing knowledge, the information suggested by the written language, and the context of the reading situation.

Four reading process skills are assessed:

- Retrieval: focus on, and retrieve explicitly stated information;
- Infer: make inferences about how pieces of information relate to each other;
- Interpretation and Integration: interpret and integrate ideas and information; and
- Evaluation: examine and evaluate text from a personal perspective or a more critical viewpoint.

Table 2.1 shows the distribution of items by process skill. Two reading purposes are used for classifying texts in the assessment: i). reading for literary experience (10 passages; 64 items) and ii). reading to acquire and use information (10 passages; 69 items).

Table 2.1: Numbers of items for NAMER '21 English reading tests by component and process skills

Component	Process skills	Number of Items
Vocabulary	Core reading skills	20
Comprehension	Retrieve	57
	Infer	42
	Interpret & Integrate	38
	Evaluate	2

NAMER '21 drew on the Primary Mathematics Curriculum (PMC) (Department of Education and Science, 1999) that defines mathematics as:

> the science of magnitude, number, shape, space, and their relationships and also as a universal language based on symbols and diagrams. It involves the handling (arrangement, analysis, manipulation, and communication) of information, the making of predictions, and the solving of problems through the use of language that is both concise and accurate

The PMC has five content areas: Number; Algebra; Shape and Space; Measures; and Data. The cognitive mathematical skills in NAMER '21 can be classified as Applying & Problem Solving; Implementing; Integrating & Connecting; Reason; and Understanding & Recalling. Table 2.2 shows the distribution of NAMER '21 mathematics test items by content area and mathematics process skills.

Table 2.2: Numbers of NAMER '21 mathematics test items, by content area and mathematics process skills

Mathematics process skills	Content areas			
	Number & Algebra	Shape & Space	Measures	Data
Apply & Problem Solve	18	4	25	2
Implement	16	8	5	1
Integrate & Connect	4	0	2	2
Reason	21	14	1	11
Understand & Recall	9	7	0	0

Who took part in NAMER '21?

Sampling

For the first time in the NAs, the 2021 cycle involved an oversampling (i.e., drawing a larger sample for a subpopulation) of pupils in urban DEIS schools in order to gather more reliable estimates of the English reading and mathematics achievement of pupils in these schools than had previously been possible. To achieve a sufficiently large effective sample size,[14] the initial sampling plan for NAMER '21 allowed for the sampling of a total of 320 schools, of which 80 would be Urban Band 1, 80 Urban Band 2, 80 Rural DEIS and 80 Non-DEIS schools. In light of costs and logistics, a subsequent decision was taken to select 60 Urban Band 1 schools, 30 Urban Band 2 schools and 80 Rural DEIS schools. On further review of costs and logistics, a decision was made by the DoE[15] in October 2019 that Rural DEIS schools should not be oversampled for the NAMER '21 main study.

For NAMER '21, 195 primary schools were selected to participate. In common with other large-scale assessments, a two-stage sampling process was employed. First, a representative sample of schools was selected; then intact classes were selected within these schools. Up to two Second and two Sixth classes were selected in each school. Sometimes a 'half-class' was selected (e.g., multi-grade Second-Third). Private (fee-paying) schools and special schools were excluded.

Schools were stratified (categorised) according to enrolment size, DEIS status, school type (junior/senior/vertical), area/language of instruction (Gaeltacht school, Gaelscoil, Ordinary School), and the proportion of female pupils. In total, 150 vertical schools, 23 junior schools, and 22 senior schools were selected. The second stage of selection was at the class level. The ERC received information about participating schools from the DoE. For each school, up to two intact classes were selected at each grade level. In practice, this meant that in small and medium-sized schools, all pupils at the target grade levels were selected.

14 The effective sample size takes into account the sample size as well as the design effect associated with the clustering of pupils within schools; for a relevant introduction, see Rutkowski et al. (2010).

15 As previously noted, the name of the Department changed from the Department of Education and Skills to the Department of Education in late 2020. When referring to the Department in this report, DoE is used throughout except in citations, where DES is retained for accuracy.

Response rates

Schools:

Of the 195 selected schools, 188 took part in the main study. Table 2.3 shows the breakdown of participating schools by DEIS status. Of participating Non-DEIS schools, 50 were Urban Non-DEIS schools and 45 were Rural Non-DEIS schools. Of participating DEIS schools, 58 were Urban Band 1, 30 were Urban Band 2 and 5 were Rural DEIS. The focus of this report is on pupils in Urban Band 1, Urban Band 2 or Urban Non-DEIS schools.

Table 2.3: Number of NAMER '21 schools by DEIS status

	Number of Schools	Non-DEIS	Urban Band 1	Urban Band 2	Rural DEIS
Sampled	195	100	60	30	5
Participated	188	95	58	30	5

Seven sampled schools did not take part for the following reasons:

- 1 school was excluded because there were no pupils enrolled in either Second or Sixth class at the time of study administration.
- 3 schools refused to participate in the study.
- 1 school did not participate due to COVID-19 issues at the time of testing.
- 1 school did not participate due to a critical incident in the school at the time of testing.
- 1 school returned the NAMER '21 materials uncompleted.

Principals and Teachers:

Very high percentages of participating principals and teachers completed the relevant questionnaire materials. A total of 185 of 188 principals responded to the school questionnaire, representing an unweighted response rate of 98.4%. Very high percentages of Second class (unweighted 96.6%) and Sixth class (unweighted 98.9%) teachers completed the teacher questionnaires.

Pupils:

Response rates were high at both Second and Sixth class and in both English reading and Mathematics (Table 2.4). Pupil absence was 6.2% at Second class and 7.1% at Sixth class. Very small numbers of pupils were exempted from participation by their class teachers or refused to take part. Pupils could be exempted from NAMER '21 if in the professional judgement of the teacher, participation by the pupil would create upset for the pupil (or their classmates) or create major logistical difficulties. Teachers were advised that there were four main reasons why pupils might be excluded, although it was not necessary to exclude any pupil falling into these categories:

- a specific Learning Disability (e.g., severe dyslexic difficulties),
- a moderate or severe General Learning Disability,
- a physical disability (e.g., visual impairment),
- limited proficiency in English (e.g., less than one year of instruction through English).

Table 2.4: Response rates for NAMER '21 - unweighted

Number of pupils	Second class	Sixth class
Total enrolled	5670	6036
Absent	354	432
Exempt	104	75
Refused	11	13
Test data (with or without Questionnaire)	5201	5516
Test data only (no Questionnaire data)	157	120
Participant (Test & Questionnaire data)	5044	5395

For NAMER '21 a participant is defined as a pupil who completed both the relevant test (English reading at Second; Mathematics at Sixth) and the pupil questionnaire. The total number of pupils classed as participants was 5044 at Second class and 5396 at Sixth class and all analyses were conducted using data from these pupils. Table 2.5 shows the number of pupils at each grade level classed as participants by school DEIS status.

Table 2.5: Number of participants in NAMER '21 by DEIS status and grade level - unweighted

DEIS status	Second class	Sixth class
Urban Non-DEIS	1676	1862
Urban Band 1	1421	1503
Urban Band 2	986	1016
Rural DEIS	*68*	*65*
Rural Non-DEIS	*893*	*949*
Total	5044	5395

Sampling weights

Sampling weights were calculated prior to the analysis of the test data. Weights are necessary since schools (and therefore pupils) were sampled disproportionately with regard to their overall presence in the population. Weighting also applies a correction to account for non-response (e.g., pupil absence on the day of testing) and ensures that the contributions of certain groups of pupils are not over- or under-represented in the data and therefore do not bias findings. Sampling weights feed into the scaling of test data, and the analysis and reporting of data from the questionnaires.

How was NAMER '21 conducted?

Test administration

Pupils were required to complete paper tests of English reading literacy (Second class) and Mathematics (Sixth class). School coordinators for the NAMER '21 were responsible for organising and overseeing the assessments in each school. Inspectors from the Department of Education oversaw testing in approximately 20% of schools.

- For pupils in Second class, there were four different English reading test booklets (A, B, C, and D) and teachers ensured that each pupil completed only one of the booklets. The first section of the test was a vocabulary section containing 20 items, followed by two comprehension sections. Test items at Second class grade were all presented in multiple-choice format.
- For Sixth class pupils, there were eight booklets of the mathematics test (A, B, C, D, E, F, G, H) each of which had two sections with 25 items in each. Pupils were allowed to use calculators for the second section, and permitted to do rough work on the test paper.

- In Irish-medium schools, bilingual tests were provided, and pupils chose to respond in Irish or English.

Administration of each of the tests by teachers in a class setting took approximately 90 minutes, including time for distribution of materials, going through directions and sample questions, a short break between sections and collection of materials. The administration window was May 4th to 14th 2021. Schools returned all materials to the ERC by the end of June 2021.

Scaling of test data

NAMER '21 data were projected onto the same scales and subscales as those used in NAMER '09 and NAMER '14 using Item Response Theory (IRT) scaling. Further technical information on this process is provided in the NAMER '21 performance report (Kiniry et al., 2023). Mean percent correct scores and IRT scale scores were calculated for English reading at Second class and Mathematics at Sixth class. As well as an overall test score, scores were created for the reading components (Vocabulary and Comprehension) and process skills, and the mathematics content areas and process skills.

Analyses in this report

The main aim of this report is to describe the English reading and Mathematics achievement of pupils in Urban DEIS schools (Urban Band 1 and Urban Band 2) and to compare average levels of achievement with those of pupils in Urban Non-DEIS schools.

Throughout this report, mean scores for the overall NAMER '21 national sample are provided for reference only. These scores are *not* used in significant testing of differences by DEIS status as the scores of pupils in DEIS schools contribute to the score for all pupils. Rather, tests of significance use mean scores of pupils in Urban Band 1 schools, Urban Band 2 schools and Urban Non-DEIS schools.

Due to the small number of participating Rural DEIS schools in NAMER '21, performance scores in English reading and Mathematics are provided (*in italics*) for reference only; the statistical significance of any differences between mean scores of these and other pupils is not examined.[16] The achievement of pupils in Rural Non-DEIS schools is not a focus of the current report; again, some information is provided (*in italics*) for reference only. These findings are presented for consistency with reporting on earlier NAs.

The test scores of pupils in NAMER '21 were placed on the same scales as used in NAMER '14, allowing for direct comparison between NAMER '21 and NAMER '14. Trend analysis of achievement across NA cycles in Urban DEIS and Urban Non-DEIS schools examines how the achievement gap between DEIS and Non-DEIS schools has changed over time. The National Center for Education Statistics (NCES) in the USA provides a useful guide to understanding changes in achievement gaps over time, noting that there are several different ways that achievement gaps can change (National Center for Education Statistics, 2011). For example, the achievement gap may narrow if the average scores of both groups improve, but the score of one group improves more than the other. Alternatively, the gap may narrow if the average score of the higher performing group declines, while the score of the lower performing group does not change. It is therefore important to examine changes in the achievement gap in the context of changes to the mean scores of the two groups under consideration. For further information, see NCES (2011).

Results reported in this volume (e.g., mean scores, percentages) are "weighted". As described earlier in this chapter, the purpose of weighting is to ensure that the contributions of certain groups of

16 The recruitment of a larger number of DEIS Rural schools for the National Assessments would be required to provide more reliable estimates of the performance of pupils in these schools.

pupils are not over- or under-represented in the data and therefore do not bias findings. The IEA International Database Analyzer V5.0.5, a software programme specifically designed for large scale educational assessments with clustered samples, was used for analyses.[17]

Throughout this report, the "reference group" in comparisons is denoted with an asterisk and refers to the value against which all others are compared. Where the value associated with a particular group is statistically significantly different from that of the reference group, this value is highlighted using bold font. Results of statistical significance testing are shown in Appendix Tables which accompany the main tables in each chapter.

Where contextual variables are categorical (e.g., gender), comparisons are used by computing the difference between the mean score on the scale of interest of pupils in the first group (e.g., females) and the mean score of pupils in the second group (e.g., males).

Note for charts in this report that represent percentages, Y axes start at 0. For charts with scale scores, the Y axes start at 100. In some tables, due to rounding (or missing data), percentages do not always add to 100.

It should be noted that Chapters 3 and 4 present the results of bivariate analyses. Such analyses consider the association between two variables but do not account for the potential influence that a third variable (e.g. pupil SES) may play in this relationship. The joint (multivariate) relationships between variables and achievement are not considered in this report.

Literacy and Numeracy targets

One element of the analyses conducted for this report involved comparing NAMER '21 achievement to 2020 targets presented in the *DEIS Plan 2017* (Department of Education and Skills, 2017a) and in the *National Strategy: Literacy and Numeracy for Learning and Life* (Department of Education and Skills, 2011, 2017b).

Table 2.6 shows the targets set out specifically for Urban Band 1 schools and these will be considered in this report. The targets reference reducing the percentages of pupils (at both Second and Sixth class) performing 'At or Below Level 1' (i.e., minimum level) by at least 5 percentage points, and increasing the percentages of children (at both Second class and Sixth class) performing 'At Level 3 or higher' (i.e., at the highest levels) by at least 5 percentage points.

Table 2.6: Targets for Urban Band 1 schools

Level	Grade	NAMER '14 Results	New targets set for 2020 following Interim Review
Reading: At or Below Level 1	Second Class	**44%**	**40%**
	Sixth Class	47%	40%
Reading: At or Above Level 3	Second Class	**18%**	**25%**
	Sixth Class	21%	27%
Mathematics: At or Below Level 1	Second Class	52%	45%
	Sixth Class	**50%**	**42%**
Mathematics: At or Above Level 3	Second Class	21%	30%
	Sixth Class	**19%**	**27%**

Note: English reading was not administered at Sixth Class and mathematics was not administered at Second Class due to the adaptation made to NAMER '21. As such, targets in grey cannot be examined with the current data.

17 IDB Analyzer www.iea.nl/data-tools/tools

How to interpret the analyses in this report?

The following notes on NAMER '21 scales and statistics can be used to interpret the results reported in the remainder of the report:

NAMER '21 scale scores & proficiency levels

Scale Scores: Scale scores take into account not only the number of items answered correctly by each pupil but also the unique characteristics of each test item, as well as other information (e.g., contextual data). In NAMER '09 mean scores on all scales and subscales in English reading and mathematics were set to 250 points, and standard deviations to 50. Scores achieved by pupils participating in NAMER '14 and NAMER '21 were projected onto the same scales and subscales as those used in NAMER '09 using Item Response Theory (IRT) scaling.

Proficiency Levels: Proficiency levels describe the skills that pupils falling within certain score ranges can demonstrate. There are four proficiency levels, with Level 4 representing the most complex skills and Level 1 the most basic. There is also a 'Below Level 1' category for pupils who did not show the competencies required for the simplest assessment tasks. Proficiency levels are based on mastery of skills, meaning that pupils are consistently able to demonstrate the skills at their proficiency level and the levels below, but are not consistently able to demonstrate the skills exemplifying the levels above them.

In NAMER '09, pupils were assigned to proficiency levels on the overall reading and mathematics scales in Second and Sixth classes, such that, for each domain, at both class levels, 10% of pupils were assigned to Level 4 (the highest level), 25% to Level 3, 30% to Level 2, 25% to Level 1, and 10% to 'Below Level 1' (Eivers et al., 2010b). The score benchmarks used in 2009 were also used in NAMER '14 and NAMER '21.

Statistical Terms

Standard Error (SE): Estimates (e.g., mean scores and percentages) presented in this report are based on the sample of pupils selected to take part in NAMER '21. However, it is unlikely that the 'true' value (e.g., the overall English reading mean score of all pupils in Ireland) would be exactly the same as the estimate calculated from our sample. Some variation or 'error' around estimates is to be expected. Thus, each estimate has a standard error, which provides information on how accurately the estimate found in our sample is likely to reflect the 'true' value in the population. The 'true' population value is likely to be found in an interval that is about two standard errors on either side of the obtained estimate, 95% of the time with a similar sample and assessment design.

Statistical Terms (continued)

Confidence Intervals (CI): Confidence intervals provide a range of values within which a statistic of interest is expected to fall. It is expected that the population statistic would fall within this range in 95% of samples of this size.

To compute the confidence intervals around an estimate, the following formula is used:

$$CI = x \pm SE * t$$

Where x is the observed value (e.g., mean score or percentage), SE is the standard error around this estimate and t is the critical value which is based on the survey design and the significance level.

Statistical Significance: A statistically significant difference between groups is one that a statistical test has established is unlikely to be due to chance. The criterion, or *alpha level* (α), of .05 (5%) implies that only observed statistics with less than a 1 in 20 chance of occurring are interpreted as statistically significant.

When simultaneously comparing the differences between multiple groups, it is likely that some of them may emerge as significant at the .05 level just because of chance and not because they are truly significant in the population. If the total number of comparisons approaches 20, it follows that at least one of the relationships identified as significant using the .05 alpha level is likely to be incorrectly identified. Therefore, where multiple comparisons are carried out, the criterion for testing each comparison is adjusted to maintain the overall alpha level and protect from Type I error (false positive); i.e., incorrect rejection of the null hypothesis that there is no statistically significant relationship between two variables.

Alpha levels have been adjusted by applying the Bonferroni correction:

$$\alpha_{adjusted} = \frac{\alpha}{n}$$

where α is the original alpha level (i.e., .05) and *n* the total number of comparisons.

It should be noted that the Bonferroni correction is considered to be a conservative approach to protecting from Type I error. This approach was also used in analyses of the previous National Assessment data.

Effect Sizes: An effect size is a standardised measure of the strength of a relationship between two variables. If both variables have interval or ordinal scales, then the effect size is the correlation coefficient. If one variable describes membership in a group and the other has an interval or ordinal scale, then the effect size is the difference between two means that is expressed in standard deviation units.

Effect sizes associated with mean differences in this report were computed using Cohen's *d* (Cohen, 1988). Based on benchmarks suggested by Cohen (1988), for mean differences, an effect size of 0.2 can be interpreted as small, an effect size of .5 is medium, and an effect size of .8 is large. However, these benchmarks should not always be interpreted rigidly, because even small effect sizes can have large consequences in some contexts. This report uses the What Works Clearinghouse (2014) criteria for interpreting effect sizes. Mean differences with effect sizes of 0.25 or higher can be considered substantively important, whether or not the underlying difference is statistically significant. Effect sizes greater than 0.50 are considered large.

CHAPTER 3
Second Class English Reading Achievement

The focus of this chapter is on the English reading performance of Second class pupils in Urban DEIS schools compared to those in Urban Non-DEIS schools. Firstly, the chapter describes achievement in English reading, outlining mean scores overall and by content and process areas. Secondly, the chapter outlines the percentages of pupils with scores at various proficiency levels. In the third section, gender differences in reading achievement are described. The fourth section examines trends in reading achievement over time. As part of the trend analysis, changes over time in mean scale scores are considered; progress towards national targets is examined; and changes over time in the percentages of pupils at each proficiency level are presented.

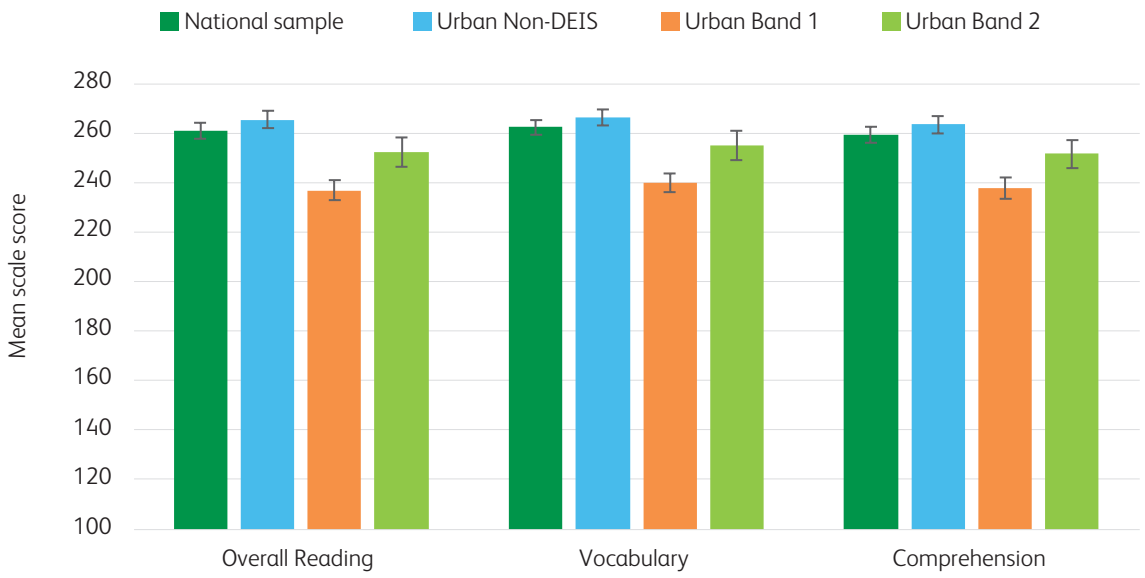
Overall performance in English reading

In NAMER '21, Second class pupils in the overall national sample achieved a mean English reading score of 260.8 (Figure 3.1). Significant differences in mean reading achievement were associated with school DEIS status, with pupils in Urban Non-DEIS schools outperforming their counterparts in urban DEIS schools. Gaps between the mean scores of pupils in Urban Non-DEIS and pupils in Urban Band 1 schools were typically about twice as large as those between pupils in Urban Non-DEIS schools and Urban Band 2 schools.

Pupils in Urban Non-DEIS schools had a significantly higher mean score in overall reading (265.4) than their counterparts in Urban Band 1 schools (236.9). The effect size associated with this difference was large (d = 0.60). Pupils in Urban Non-DEIS schools also had a significantly higher mean score (265.4) than their counterparts in Urban Band 2 schools (252.3); the effect size associated with this difference was substantial (d = 0.28).

Pupils in Urban Band 2 schools had a significantly higher mean score in overall reading (252.3) than pupils in Urban Band 1 schools (236.9). The effect size associated with this difference was 0.34 and can be interpreted as substantively important (Table A3.1). Standard deviations were similar across the three groups with a value of 45.6 across pupils in Urban Band 1 schools, 46.0 in Urban Band 2 and 48.5 in Urban Non-DEIS schools (Table A3.5).

Figure 3.1: Mean English reading achievement scale scores overall and by reading content area, national sample and by DEIS status



Error bars represent 95% confidence intervals.

The two content areas of the English reading test were Reading Vocabulary and Reading Comprehension. Across all pupils participating in NAMER '21, the mean Reading Vocabulary score was 262.6; the corresponding value for Reading Comprehension was 259.2 (Figure 3.1).

Turning to differences between pupils in DEIS and Non-DEIS schools, pupils in Urban Non-DEIS schools had significantly higher mean scores on both content areas (Reading Vocabulary and Reading Comprehension) than pupils in Urban Band 1 schools and pupils in Urban Band 2 schools. There was a difference of about 26 points between the mean Vocabulary score of pupils in Urban Non-DEIS schools and those in Urban Band 1 schools; this represents an effect size of 0.53. The corresponding effect size associated with the difference between the mean Vocabulary score of pupils in Urban Non-DEIS schools and those in Urban Band 2 schools was 0.23 (Table A3.1).

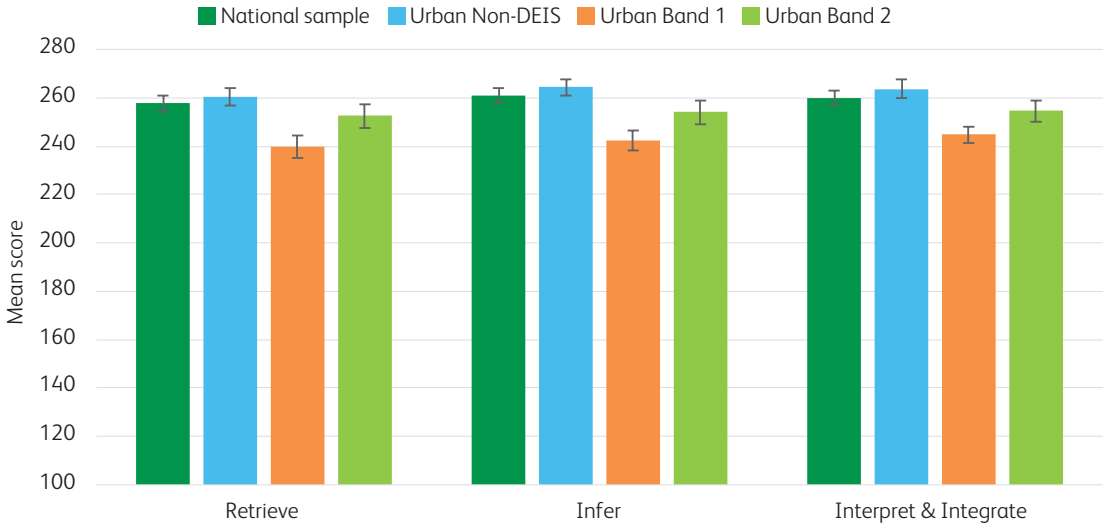
For Comprehension, the effect sizes were very similar with an effect size of 0.56 associated with the gap between the mean Comprehension scores of pupils in Urban Non-DEIS schools and those in Band 1 schools. An effect size of 0.25 was associated with the difference in mean Comprehension scores of those in Urban Non-DEIS schools and those in Urban Band 2 schools (Table A3.1).

Pupils in Urban Band 2 schools had significantly higher Vocabulary and Comprehension mean scores than their counterparts in Urban Band 1 schools. The effect sizes associated with these differences were 0.30 and 0.31, respectively (Table A3.1).

Performance by reading process skill

Reading performance can also be categorised by three process skills: Retrieve, Infer, and Interpret & Integrate. In NAMER '21, Second class pupils in the overall national sample achieved mean scores for Retrieve, Infer, Interpret & Integrate of 257.8, 260.9, and 260.1, respectively (Figure 3.2; Table A3.2).

Figure 3.2: Mean process skill scores in English reading, national sample and by DEIS status



Error bars represent 95% confidence intervals.

The average performance of pupils in Urban Non-DEIS schools was significantly higher on each of the process skills than that of pupils in Urban Band 1 or Urban Band 2 schools. Effect sizes ranged from 0.41 to 0.46 for the gaps between Urban Non-DEIS and Urban Band 1 and can be considered substantively important (Table A3.2). The effect sizes for differences between the mean scores of pupils in Urban Non-DEIS and Urban Band 2 schools were smaller, ranging from 0.17 to 0.22.

Pupils in Urban Band 2 schools had a significantly higher mean score on each of the reading processes than pupils in Urban Band 1 schools. The effect sizes associated with these differences ranged from 0.21 to 0.28 (Table A3.2).

Proficiency Levels

Proficiency levels represent clusters of skill sets and provide descriptions of the types of tasks that pupils at different levels of performance can consistently complete successfully. Table 3.1 describes the skills that Second class pupils at each reading proficiency level can be expected to demonstrate. In summary,

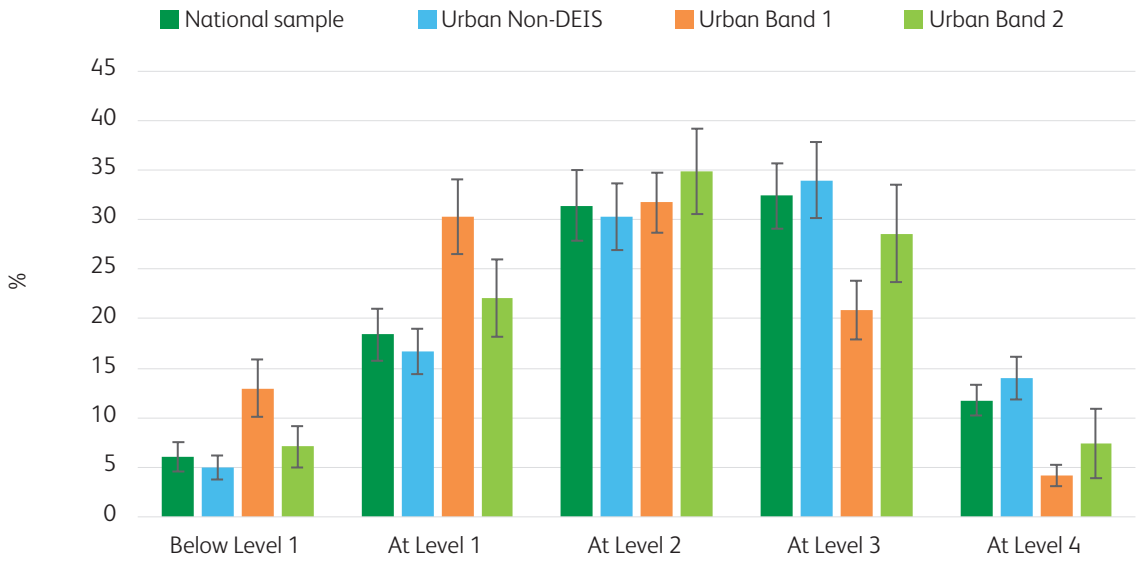
- pupils who do not reach Level 1 are not consistently able to successfully display the reading skills assessed by the simplest items on the test;
- pupils performing at Level 1 are expected to consistently be able to complete only the most basic tasks; and
- pupils performing at Level 4 are expected to consistently complete the most complex tasks expected of their grade level.

Table 3.1: English Reading proficiency level cut points and descriptors

Level & score range		What pupils can typically do
4	↑ 320+	As well as succeeding on lower proficiency level skills, pupils at Level 4 can retrieve complex information (e.g., the information needed is located in multiple parts of the text). They can link multiple pieces of information to draw inferences. They can integrate text-wide information in order to identify the main themes in a text. As well as using discrete or explicit information, they can use the text as a whole to interpret character behaviour.
3	319 ↕ 269	As well as Level 1 and 2 skills, pupils can process texts at a whole-text level, in order to retrieve information. They can make basic-level inferences, sometimes linking one or two discrete pieces of information. They can infer word meanings if the context provides clear clues.
2	268 ↕ 225	As well as Level 1 skills, pupils can retrieve explicitly stated information where the wording of the question and the text differ. However, the information sought must be specific to a small section of text. They can make low-level inferences, including character motives, if the required information is explicitly stated in a specific section of the text.
1	224 ↕ 187	Level 1 pupils show basic reading skills. They can retrieve simple, explicitly stated, pieces of information, when there is a direct match between the wording of the question and the text. They are most successful on tasks that require comprehension of smaller units of text, such as sentences. They can perform some very basic interpretation and integration of text (e.g., identifying the theme of a text, where the theme is explicitly stated in the text).
<1	< 187 ↓	Pupils with reading scores below proficiency Level 1 have a less than 62.5% chance of correctly answering a Level 1 question. Their reading skills are very low, relative to other 2nd class pupils and are not properly assessed by the National Assessment.

Figure 3.3 shows the percentages of Second class pupils with reading scores at various proficiency levels on the English reading scale, by school DEIS status. Further detail is provided in Table A3.3.

Figure 3.3: Percentages of pupils at each English reading proficiency, national sample and by DEIS status



Error bars represent 95% confidence intervals.

In Urban Band 1 schools, about one-in-eight pupils (12.9%) had English reading scores Below Level 1, about two-and-a-half times the corresponding percentage in Urban Non-DEIS schools (5.0%). The percentage in Urban Band 1 schools was also considerably (and statistically significantly) higher than that in Urban Band 2 schools (7.1%). In Urban Band 2 schools, the percentage of pupils Below Level 1 (7.1%) was not significantly different from that in Urban Non-DEIS schools (5.0%).

Almost one-third of pupils (30.3%) in Urban Band 1 schools had reading scores at Level 1 (Figure 3.3). These pupils were able to demonstrate basic reading skills only. The percentage of pupils at Level 1 in Urban Band 2 schools (22.1%) was lower than that in Urban Band 1 schools (30.3%) and was not statistically significantly different from the percentage at this level in Urban Non-DEIS schools (16.7%).

The percentages of pupils at Level 2 were broadly comparable across the groups with approximately one-third of pupils performing at this level in each school type (Urban Band 1 31.8%; Urban Band 2 34.8%; Urban Non-DEIS 30.3%).

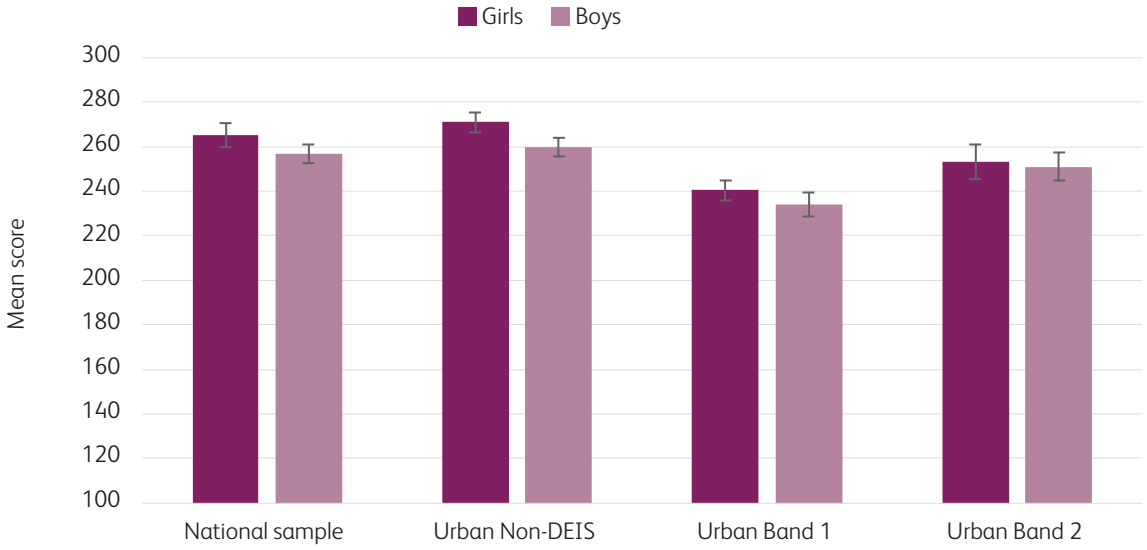
Turning to the higher proficiency levels, pupils in Urban Band 1 schools were significantly less likely than their Non-DEIS counterparts to have reading scores in this range. About one-fifth of pupils in Urban Band 1 schools (20.9%) compared to over one-third in Urban Non-DEIS schools (34.0%) had reading scores at Level 3; the corresponding value in Urban Band 2 schools was 28.6% (Figure 3.3).

Level 4 represents the highest level of reading proficiency. In Urban Band 1 schools, just 4.1% of pupils had reading scores at this level compared to 7.4% in Urban Band 2 schools and 14% in Urban Non-DEIS schools (see Table A3.3 for further detail).

Gender differences in English reading

In the overall national sample, Second class girls (265.1) had a significantly higher mean reading score than Second class boys (256.8), although the difference between the two groups was comparatively small (8.3 scale points with an associated effect size of $d = 0.17$).[18] Mean scores in reading by gender and school DEIS status are shown in Figure 3.4.

Figure 3.4: Mean pupil achievement in overall English reading by gender, national sample and by DEIS status



Error bars represent 95% confidence intervals.

Similar to the overall pattern, girls had significantly higher mean scores in overall reading than boys in both Urban Non-DEIS schools and Urban Band 1 schools. In both Urban Non-DEIS schools and Urban Band 1 schools, the size of the gender difference was about the same as in the overall sample and the effect sizes associated with these differences were 0.23 and 0.15, respectively. These effect sizes did not meet the 0.25 criterion for substantive importance.

In contrast, there were no significant gender differences in English reading in Urban Band 2 schools, where girls (253.4) and boys (251.0) achieved very similar mean scores to each other (Table A3.4). The mean score of girls in Urban Band 2 schools (253.4) was almost 18 points lower than the mean score of girls in Urban Non-DEIS schools (271.1). There was a somewhat smaller gap between the mean reading scores of boys in the two contexts (8.9 points; mean Urban Non-DEIS 260.0; mean Urban Band 2 251.0; Table A3.4).

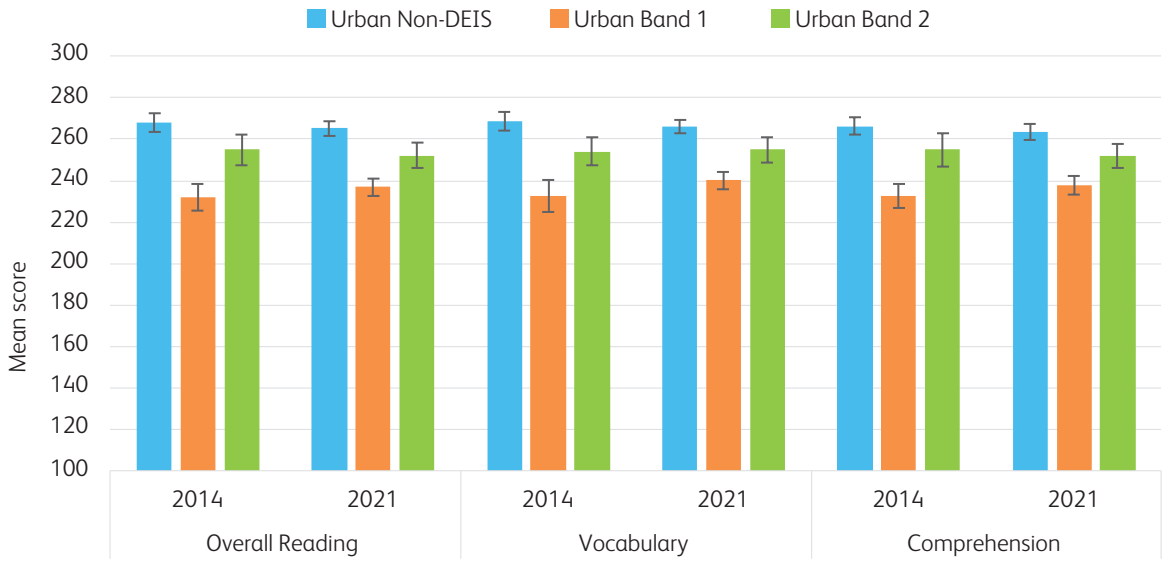
18 In the pupil questionnaire, pupils were asked to indicate if they were a "girl", "boy" or "other" gender. At Second class, less than 0.5% of pupils identified as "other". Because of the very small numbers in this group, mean reading scores by gender are provided only for those pupils identifying as "girl" or "boy".

Trends in English reading achievement and progress towards national targets

Trends in scale scores

In this section, the English reading performance of pupils in NAMER '21 is compared with that of pupils in the previous cycle (NAMER '14). Consideration is given to trends in performance by school DEIS status (Figure 3.5) and changes over time in the gap between DEIS and Non-DEIS schools (Figure 3.6). Details on the methods underpinning the analysis of the achievement gaps are outlined in Appendix 2.

Figure 3.5: Mean scores for overall English reading and components by DEIS status, NAMER '14 and NAMER '21



Error bars represent 95% confidence intervals.

For each of the three groups examined (Urban Non-DEIS, Urban Band 1 and Urban Band 2), there were no significant changes between 2014 and 2021 in the mean scores for overall reading, Vocabulary or Comprehension (Figure 3.5). That is, average levels of overall reading achievement, Vocabulary or Comprehension in 2021 did not differ significantly from those in 2014 in any school context (Table A3.5). Nonetheless, there was a small increase in the mean reading score in Urban Band 1 schools between 2014 and 2021, increasing from 231.9 to 236.9 in the period. There was a slight decrease (of about 2.5 points) in the same period in Urban Non-DEIS and Urban Band 2 schools.

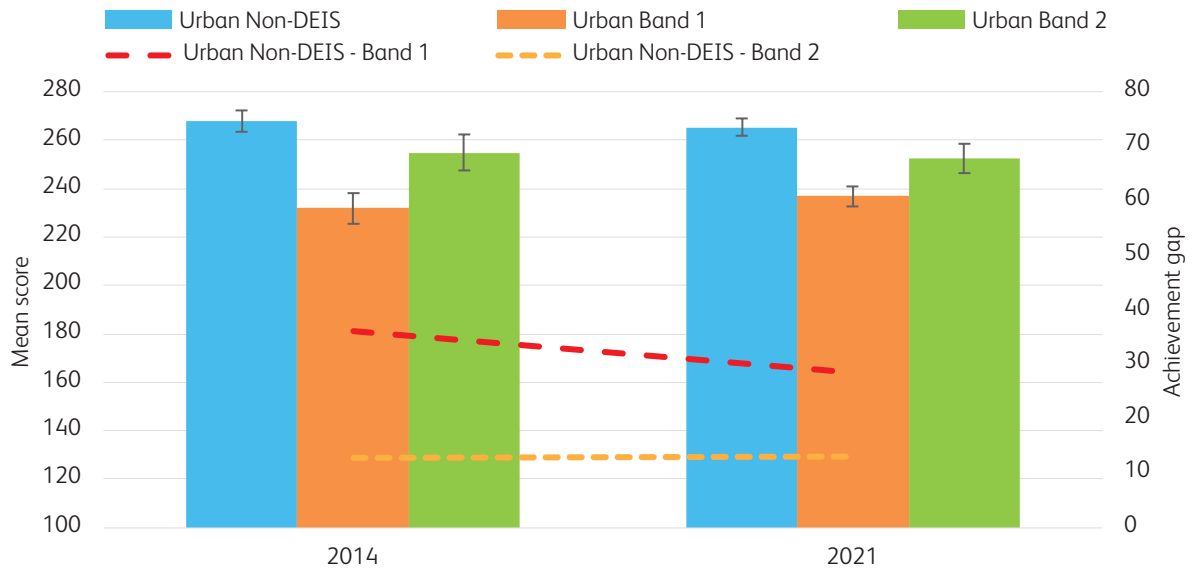
In Urban Band 1 schools, the standard deviation on overall reading was somewhat wider in 2021 (45.6) than in 2014 (39.5; Table A3.5). In Urban Non-DEIS schools and Urban Band 2 schools, the standard deviations were similar across the two cycles.

Figure 3.6 shows again the mean reading achievement for pupils in Urban Non-DEIS schools, Urban Band 1 schools and Urban Band 2 schools. In dotted red and orange lines, Figure 3.6 shows how the gap between Urban Non-DEIS and Urban Band 1 schools and Urban Non-DEIS and Urban Band 2 schools respectively has changed between 2014 and 2021. The gap in mean reading achievement between Urban Non-DEIS schools and Urban Band 1 schools reduced from 36 points in 2014 to 28.5 in 2021 (red dotted line). While this change is not statistically significant (p = .07), it represents a narrowing of the achievement gap between 2014 and 2021 and is a welcome

finding in the context of a small (5-point) increase in the mean reading score of Second class pupils in Urban Band 1 schools in the same period (Table A3.5).

Turning to the average reading achievement gap between pupils in Urban Non-DEIS and Urban Band 2 schools, there is no change in the magnitude of the gap between 2014 and 2021 (Figure 3.6; Table A3.6).

Figure 3.6: Mean scores for overall English reading by DEIS status and achievement gap between urban Non-DEIS and Urban DEIS schools, NAMER '14 and NAMER '21



Error bars represent 95% confidence intervals.

Progress by pupils in Urban Band 1 schools towards DEIS literacy targets

In this section, performance is considered in light of the 2020 targets for Urban Band 1 schools set out in the *National Strategy: Literacy and Numeracy for Learning Interim Review* (Department of Education and Skills, 2017a, 2017b). The targets for 2020 were set on the basis of achievement in NAMER '14 and relate to reducing the percentages of pupils in Urban Band 1 schools with low levels of achievement (defined as At or Below Level 1) and increasing the percentages of pupils with higher levels of achievement (At or Above Level 3).[19] Comparable targets were set for the full population of primary schools and these are discussed in NAMER '21 performance report (Kiniry et al., 2023). While this section groups together pupils At Level 1 in reading with those Below Level 1 (low achievers) and those At Level 3 with those At Level 4 (high achievers), the next section provides further breakdown of the percentages at each level.

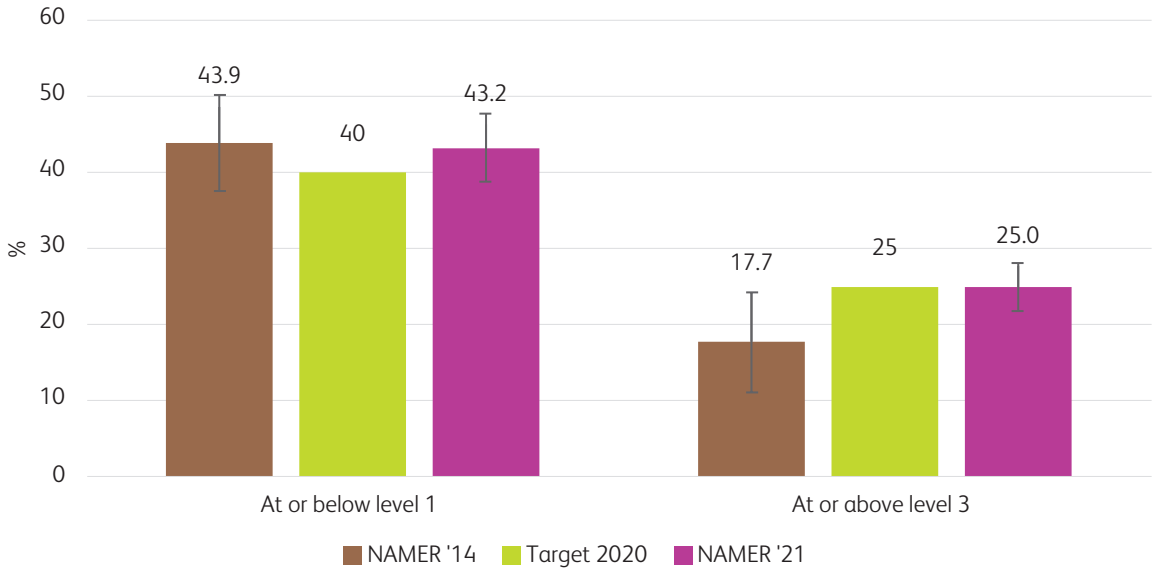
For low achievers, the target was to reduce the percentage of pupils in Urban Band 1 schools performing At or Below Level 1 in English reading from 44% to 40% (Figure 3.7). In NAMER '21, 43.2% of pupils in Urban Band 1 schools had scores At or Below Level 1 compared to 43.9% in NAMER '14. The change from 2014 to 2021 in the percentage of pupils with low reading achievement in Urban Band 1 schools was not statistically significant and there is limited evidence of progress towards the target (Table A3.7).

19 Target values in the *National Strategy: Literacy and Numeracy for Learning Interim Review* are presented as percentages rounded to the nearest whole number. For consistency, rounded values are also used in this section when referring to target values.

For higher achievers, the target was to increase the percentage of pupils in Urban Band 1 schools performing At or Above Level 3 in English reading from 18% to 25% (Figure 3.7). In NAMER '21, 25.0% of pupils in Urban Band 1 schools had scores At or Above Level 3. This increase over the corresponding percentage in NAMER '14 fails to reach statistical significance at the conventional level. Nonetheless, the target is likely to have been met at Second class for high achievers in English reading in Urban Band 1 schools (Table A3.7).

Another positive finding is that the gap between the percentages of high reading achievers in Urban Band 1 schools and Urban Non-DEIS schools narrowed significantly (p = .05) from 2014 to 2021. In 2014, there was a 31% gap. This had reduced to a 23% gap in 2021 as a consequence of the increase in the percentage of high achievers in Urban Band 1 schools from about 18% to 25% while the percentage of high reading achievers in Urban Non-DEIS schools remained about the same (approximately 48%; Table A3.8).

Figure 3.7: Percentages of low achieving and high achieving pupils in English reading: Urban Band 1 2014 results, literacy targets for 2020 and 2021 results



Error bars represent 95% confidence intervals.

Trends in proficiency levels

Table 3.2 shows the percentages of pupils performing at each English reading proficiency level in NAMER '21 and NAMER '14. As previously noted, mean reading scale scores did not change significantly between these two NA cycles, and consistent with this finding, there were small changes between the cycles in the percentages of pupils performing at the various reading proficiency levels. In general, these changes were not statistically significant (Table A3.9).

Table 3.2: Percentages of pupils at each proficiency level on the overall English reading scale, by DEIS status and NAMER cycle

Level	Urban Non-DEIS		Urban Band 1		Urban Band 2	
	2014	2021*	2014	2021*	2014	2021*
	%	%	%	%	%	%
Below Level 1	4.9	5.0	15.5	12.9	5.1	7.1
Level 1	14.3	16.7	28.4	30.3	23.2	22.1
Level 2	32.1	30.3	**38.4**	31.8	37.1	34.8
Level 3	33.5	34.0	16.1	20.9	25.2	28.6
Level 4	15.2	14.0	1.7	4.1	9.5	7.4

Second class database.
Values in bold are statistically significantly different from those of the reference group*.

The percentages at each level in Urban Non-DEIS schools were very similar across the two cycles, with no statistically significant changes in the percentages at each level between 2014 and 2021. About one-third of pupils in Urban Non-DEIS schools had reading achievement At Level 2, a further one-third had reading achievement At Level 3, and about one-in-seven had scores At Level 4 in 2014 and 2021.

In Urban Band 1 schools, there was a small reduction in the percentage of pupils with reading scores Below Level 1 between the two cycles. While 15.5% of pupils had scores Below Level 1 in 2014, this had reduced to 12.9% in 2021. This drop was not statistically significant but represents a small improvement in the percentage of very low achievers. There was a small increase (from 28.4% to 30.3%) in the percentage of pupils in Urban Band 1 schools performing At Level 1.

Turning to the percentages of pupils performing At Level 2 in Urban Band 1 schools, there was a significant change between 2014 and 2021 with 38.4% of pupils at this level in 2014 compared to 31.8% in 2021.

There was some evidence of improvement at Levels 3 and 4 in 2021 with an increase in the percentages of pupils at these levels; however, these differences were not statistically significant and the percentage of pupils At Level 4 in Urban Band 1 schools remained very low at just 4.1%.

There were no significant changes between the two cycles in the percentages at various reading proficiency levels in Urban Band 2 schools. There was a small increase in the percentage of pupils with reading scores Below Level 1 (+2%) and a small decrease in the percentage of pupils at Level 4 (-2%), although neither difference was statistically significant.

CHAPTER 4

Sixth Class Mathematics Achievement

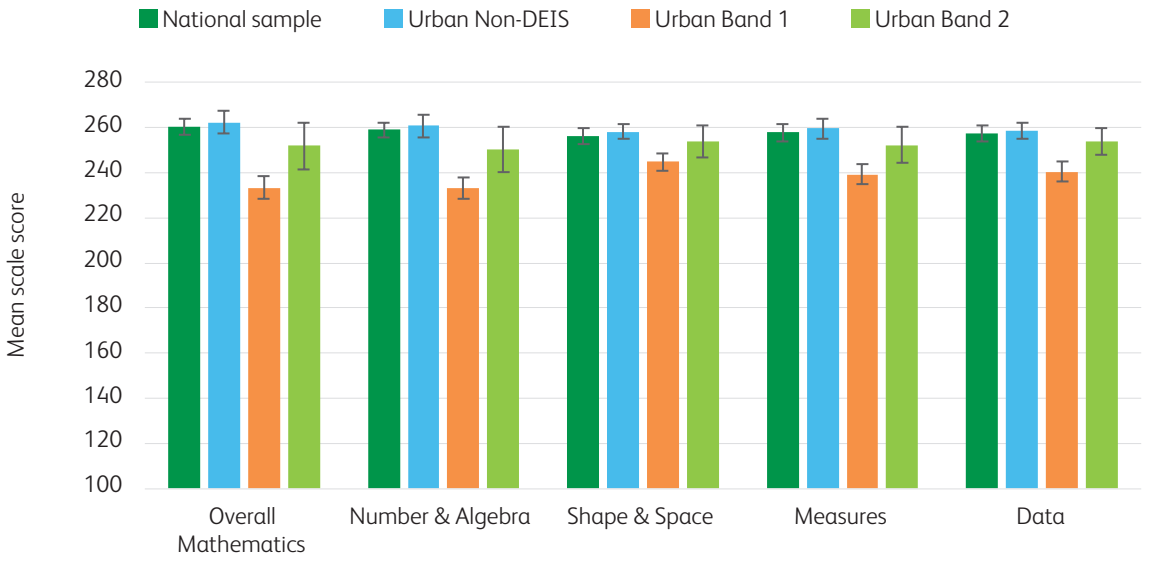
This chapter describes the mathematics performance of Sixth class pupils in DEIS and Non-DEIS schools, focusing on pupils in Urban DEIS schools compared to those in Urban Non-DEIS schools. The first section provides detail on mathematics achievement overall and by content area and process skill. The second section outlines the percentages of pupils with mathematics scores at various proficiency levels. The third section describes gender differences in average mathematics achievement. The fourth section examines trends in mathematics achievement over time and considers changes over time in mean mathematics scores, progress towards national numeracy targets and changes over time in the percentages of pupils with performance at various proficiency levels.

Overall performance in mathematics

In NAMER '21, Sixth class pupils nationally achieved a mean mathematics score of 260.5 (Figure 4.1). There were significant differences in mean achievement by school DEIS status. Pupils in Urban Non-DEIS schools had a significantly higher mean score in overall mathematics (262.3) than their counterparts in Urban Band 1 schools (233.3). The effect size associated with this difference was large (*d* = 0.59; Table A4.1). There was no statistically significant difference between the mean mathematics scores of pupils in Urban Non-DEIS schools (262.3) and pupils in Urban Band 2 schools (251.9).

The standard deviation in mathematics was very similar across Urban Non-DEIS schools (49.6), Urban Band 1 schools (49.3), and Urban Band 2 (50.1) schools, indicating a similar spread of scores in the three contexts (Table A4.5).

Figure 4.1: Mean mathematics achievement scale scores for content area, national sample and by DEIS status



Error bars represent 95% confidence intervals.

Turning to differences between mean mathematics scores in Urban Band 2 schools compared to those in Urban Band 1 schools, pupils in Urban Band 2 schools had a significantly higher mean score in overall mathematics than pupils in Urban Band 1 schools. The effect size associated with this difference was 0.37 and can be interpreted as substantively important (Table A4.1).

The four content areas of the mathematics test were: Number & Algebra, Shape & Space, Measures, and Data. Across all pupils participating in NAMER '21, the mean mathematics scores in these content areas were as follows: Number & Algebra 259.0; Shape & Space 256.4; Measures 257.7; and Data 257.3 (Figure 4.1). In Urban Band 1 schools, mean scores on the content areas

varied from 233.1 (Number & Algebra) to 244.9 (Shape & Space). There was less variation in mean scores across content areas in Urban Band 2 schools; mean scores ranged from 250.5 on Number & Algebra to 254.1 on Data. In Urban Non-DEIS schools, mean scores on content areas ranged from 258.0 on Shape & Space to 260.9 on Number & Algebra (Table A4.1).

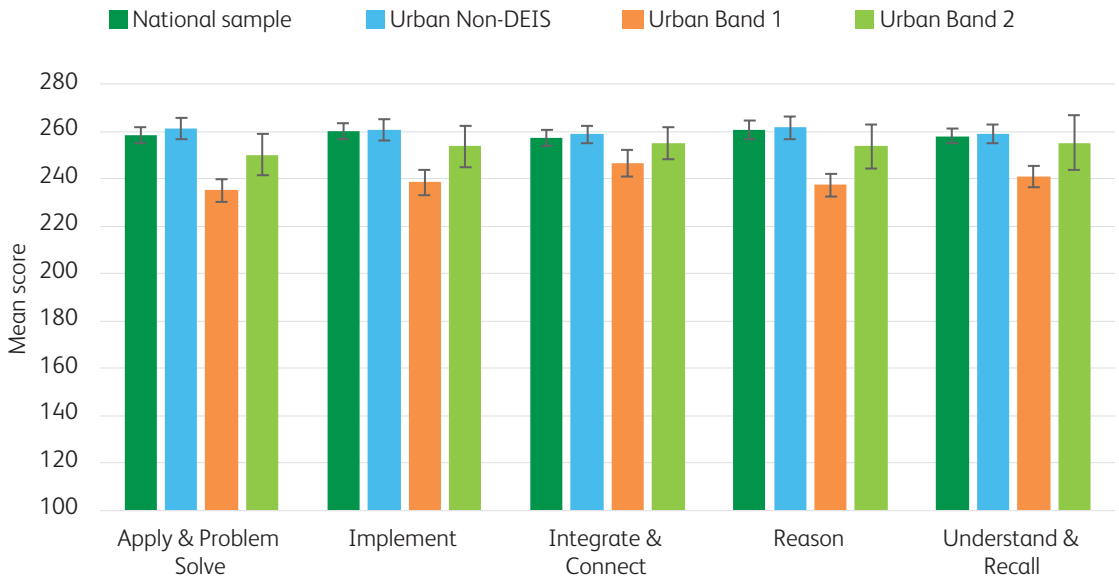
Pupils in Urban Non-DEIS schools had significantly higher mean scores on each of the four mathematics content areas than pupils in Urban Band 1 schools (Table A4.1). The largest gap was evident on Number & Algebra where there was a difference of 28 points between the mean score of pupils in Urban Non-DEIS schools and that of pupils in Urban Band 1 schools (d = 0.56). There was a difference of 20 points on Measures (d = 0.39); a difference of 18 points on Data (d = 0.36); and a difference of 13 points on Shape & Space (d = 0.29). Differences in mean scores between pupils in Urban Band 2 schools and those in Urban Non-DEIS schools on each of the content areas were not statistically significant (Table A4.1).

Turning to the differences between average levels of mathematics achievement of pupils in Urban Band 1 schools compared to those in Urban Band 2 schools, pupils in Urban Band 2 schools had significantly higher mean scores on three of the four content areas than their counterparts in Urban Band 1 schools. These were: Number & Algebra, Measures, and Data. The effect sizes associated with these differences ranged from 0.26 and 0.37. There was no significant difference between Urban Band 2 and Urban Band 1 mean scores on Shape & Space.

Performance by mathematics process skills

Mathematics performance can also be categorised by five process skills: Apply & Problem Solve, Implement, Integrate & Connect, Reason, and Understand & Recall. Across all pupils in NAMER '21, mean scores for Apply & Problem Solve, Implement, Integrate & Connect, Reason, and Understand & Recall were 258.3, 259.9, 257.3, 260.4, and 258.0, respectively (Figure 4.2; Table A4.2). In Urban Band 1 schools, pupils achieved a mean score of 246.5 on Integrate & Connect and a mean score of 235.1 on Apply & Problem Solve; mean scores on the other process skills fell within this range. In Urban Band 2 schools, mean scores ranged from 250.1 on Apply & Problem Solve to 255.1 on Understand & Recall (Figure 4.2).

Figure 4.2: Mean process skill scores in mathematics, national sample and by DEIS status



Error bars represent 95% confidence intervals.

The average performance of pupils in Urban Non-DEIS schools was significantly higher on each of the skills compared to pupils in Urban Band 1 schools. Effect sizes associated with these differences ranged from 0.25 to 0.53 and these differences can be considered substantively important. The largest difference was on Apply & Problem Solve (d = 0.53) and the smallest on Integrate & Connect (d = 0.25).

There were no statistically significant differences between the mean scores of pupils in Urban Non-DEIS schools and pupils in Urban Band 2 schools on any of the mathematics process skills (Table A4.2). The smallest differences between the two groups were observed on Integrate & Connect (d = 0.08) and Understand & Recall (d = 0.08).

Comparing the mathematics process mean scores of pupils in Urban Band 2 schools and those in Urban Band 1 schools, some statistically significant differences were observed. Specifically, pupils in Urban Band 2 schools had significantly higher mean scores on the Apply & Problem Solve, Implement, and Reason processes than pupils in Urban Band 1 schools. The effect sizes associated with these differences ranged from 0.30 to 0.32. In contrast, there were no significant differences on Integrate & Connect or Understand & Recall (Table A4.2).

Proficiency Levels

Pupil performance in mathematics can also be described in terms of proficiency levels. Proficiency levels represent clusters of skill sets, and provide descriptions of the types of tasks which pupils at different levels of performance can consistently complete successfully. Table 4.1 describes the skills that Sixth class pupils at each mathematics proficiency level can be expected to demonstrate.

In summary,

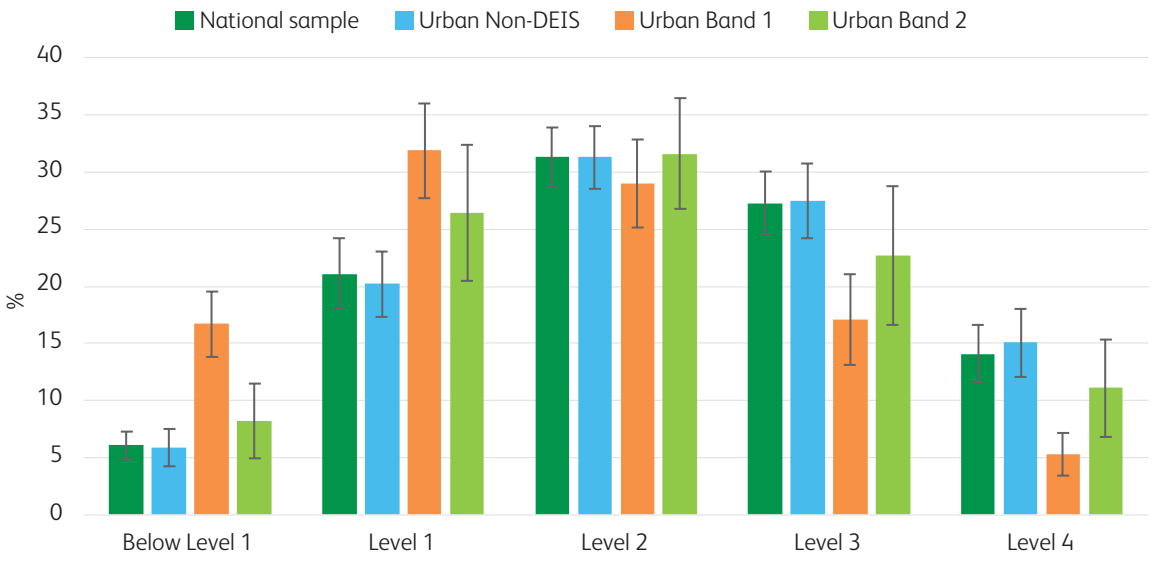
- pupils who do not reach Level 1 are not consistently able to successfully display the mathematics skills assessed by the simplest items on the test;
- pupils performing at Level 1 are expected to consistently be able to complete only the most basic tasks; and
- pupils performing at Level 4 are expected to consistently complete the most complex tasks expected of their grade level.

Table 4.1: Mathematics proficiency level cut points and descriptors

Level & score range	What pupils can typically do
4 ↑ **316+**	Pupils at Level 4 can multiply and divide decimals by decimals, and carry out simple algebraic procedures involving evaluation of linear expressions and one-step equations. They can demonstrate a high level of understanding of signed integers and number theory concepts such as prime and composite numbers. They can deduce symbolic rules for simple functions. At this level, pupils can also analyse geometric shapes in detail and deduce rules about them. They can construct circles. They can plot coordinates and use scales on maps or plans to calculate distances and areas. They can solve non-routine and multi-step practical problems involving ratios, mixed numbers, percentage gain or loss, value for money comparisons, currency conversions, speed, and time zones.
3 **315** ↕ **273**	Pupils at Level 3 can add and subtract mixed numbers and decimals. They can demonstrate understanding of decimal notation, factors and multiples, exponents, and square roots. They can connect verbal and symbolic representations of word problems. They can construct and measure angles and construct triangles and rectangles given selected sides and angles. Pupils at this level can classify triangles and quadrilaterals based on angle and line properties and rules. They can identify properties of 3-D shapes. They can manipulate commonly used units of area, capacity and weight. They can read, interpret, and analyse pie-charts, multiple-bar bar-charts and trend graphs. They can estimate simple probabilities. They can solve routine and non-routine word problems involving operations with fractions, decimals and percentages, length and perimeter, capacity, and time.
2 **272** ↕ **230**	Pupils at Level 2 can multiply fractions and decimals, estimate products, calculate common factors and multiples of whole numbers, and convert fractions and decimals to percentages. They can identify prime numbers within 30 and identify rules for number patterns. They can demonstrate understanding of a letter as a placeholder in algebraic expressions, and complete two-step number sentences involving addition and subtraction. Pupils at this level can construct lines and circles, estimate angles and use properties of shapes to calculate line and angle sizes. They can make logical deductions from simple data sets. They can solve multi-step word problems involving operations with integers, fractions and percentages.
1 **229** ↕ **184**	Pupils at Level 1 can add, subtract, and round whole numbers and decimals. They show understanding of whole number notation and can connect numeric and verbal representations of large numbers. Pupils at this level can classify angles and identify templates of simple 3-D shapes. They can manipulate commonly used units of length. They can read and interpret, without calculation, simple frequency tables, pie-charts, bar charts and trend graphs. They can solve routine word problems involving the four operations with whole numbers.
<1 **< 184** ↓	The maths skills of pupils below proficiency Level 1 are very low, relative to other Sixth class pupils and are not properly assessed by the National Assessment.

Figure 4.3 shows the percentages of Sixth class pupils by school DEIS status achieving at various proficiency levels on the mathematics scale. Further detail is provided in Table A4.3.

Figure 4.3: Percentages of pupils at each proficiency level on the overall mathematics scale, national sample and by DEIS status



Error bars represent 95% confidence intervals.

In Urban Band 1 schools, about one-in-six pupils (16.7%) had mathematics scores Below Level 1. This was considerably (and statistically significantly) higher than the percentage in Urban Band 2 schools (8.2%), where the percentage Below Level 1 was comparable with that in Urban Non-DEIS schools (5.9%).

Almost one-third of pupils (31.9%) in Urban Band 1 schools had mathematics scores at Level 1. These pupils were able to demonstrate basic mathematics skills only. The percentage of pupils at Level 1 in Urban Band 1 schools (31.9%) was significantly above the corresponding percentage in Urban Non-DEIS schools (20.2%). There was no significant difference in the percentages of pupils at Level 1 in Mathematics between Urban Band 1 (31.9%) and Urban Band 2 schools (26.4%).

The percentages of pupils at Level 2 are broadly comparable across the DEIS groups with nearly one-third of pupils performing at this level in each DEIS category.

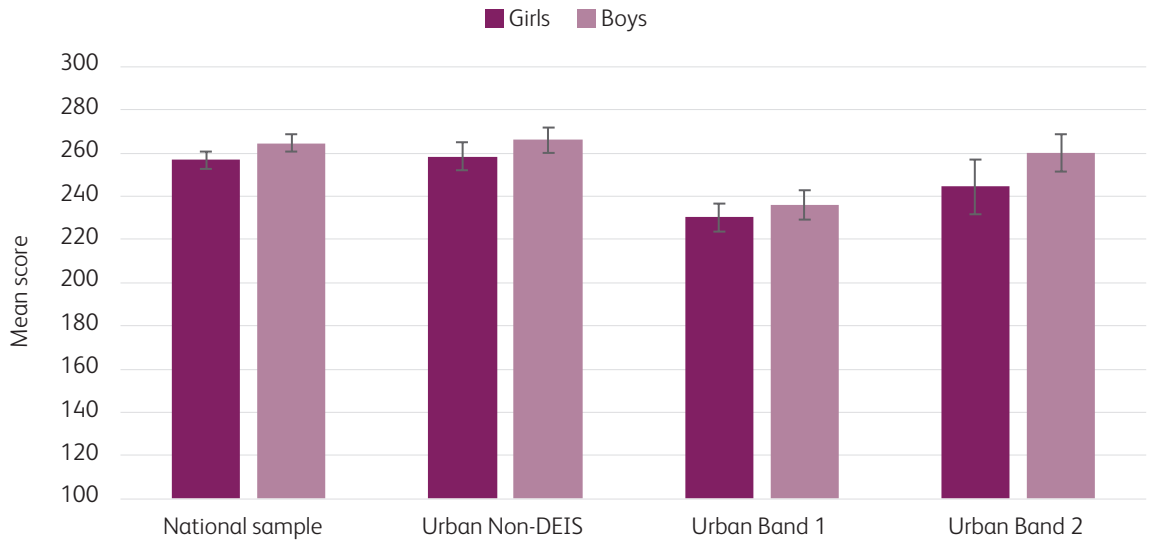
Turning to the higher proficiency levels, pupils in Urban Band 1 schools were less likely than their Non-DEIS counterparts to have mathematics scores in this range. About one-in-six pupils in Urban Band 1 schools (17.1%) compared to over one-quarter in Urban Non-DEIS schools (27.5%) had mathematics scores at Level 3. In Urban Band 2 schools, 22.7% of pupils had mathematics scores at Level 3.

Level 4 represents the highest level of mathematics proficiency. In Urban Band 1 schools, just 5.3% of pupils had mathematics scores at this level compared to 11.1% in Urban Band 2 schools and 15.1% in Urban Non-DEIS schools (Table A4.3).

Gender differences in mathematics

Across all Sixth class pupils in NAMER '21, boys had a significantly higher mean score than girls in overall mathematics, with a difference of 7.8 scale points between the two groups.[20] Mean scores in mathematics by gender and school DEIS status are shown in Figure 4.4.

Figure 4.4: Mean pupil achievement in overall mathematics by gender, national sample and by DEIS status



Error bars represent 95% confidence intervals.

Similar to the overall pattern, boys had significantly higher mean scores than girls in overall mathematics in both Urban Non-DEIS schools and Urban Band 2 schools. In Urban Non-DEIS schools, the gender difference in mathematics was about the same magnitude as the gender difference observed in the overall sample and the effect size associated with this difference was 0.15.

Gender differences in Urban Band 2 schools were more marked and nearly twice as large as the gender difference in Urban Non-DEIS schools. The effect size associated with the gender difference in Urban Band 2 schools (0.32) meets the criterion for substantive importance. Of note in Urban Band 2 schools is the comparatively strong average performance of boys who achieved a mean score of 260.1; this compares favourably to the mean score achieved by boys in the overall sample (264.6), the mean score of boys in Urban Non-DEIS schools (266.1) and the mean score of girls in Urban Non-DEIS schools (258.5). While there was a difference of just under 6 points between the mean mathematics score of boys in Urban Band 2 schools and boys in Urban Non-DEIS schools, the corresponding difference for girls was 14 points.

Notably, the gender difference in mean mathematics scores in Urban Band 1 schools was not statistically significant. The gap between the mean mathematics score of girls (230.3) and boys (235.9) was about 6 points (Table A4.4).

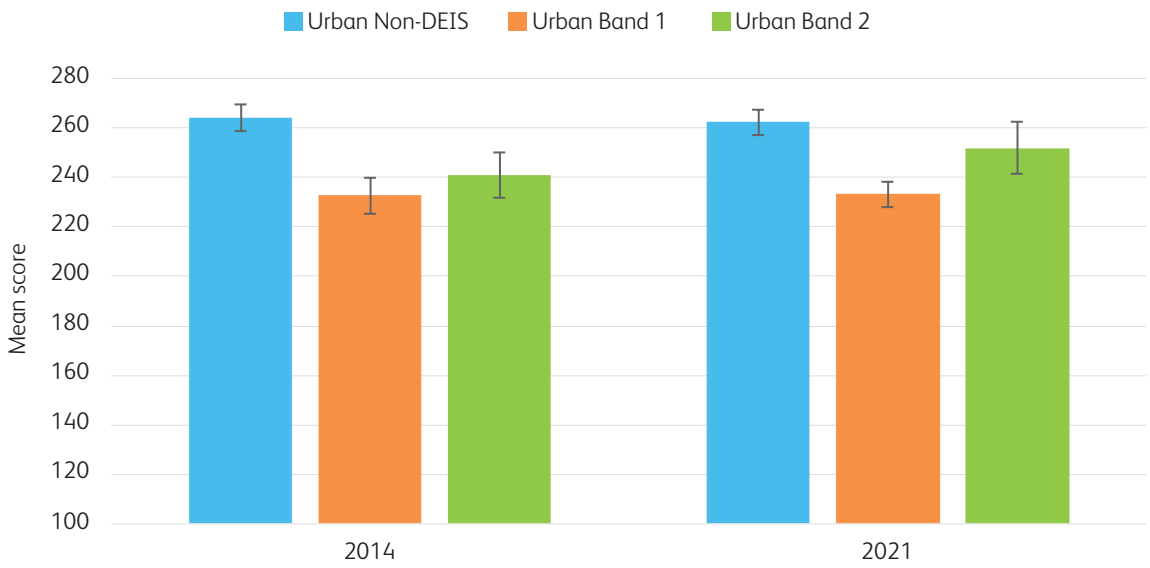
20 In the pupil questionnaire, pupils were asked to indicate if they were a "girl", "boy" or "other" gender. At Sixth class, just over 1% of pupils indicated that they identified as "other". Because of the small numbers in this group, mean mathematics scores by gender are provided only for those pupils identifying as "girl" or "boy".

Trends in mathematics achievement and progress toward national numeracy targets

Trends in scale scores

In this section, the mathematics performance of pupils in NAMER '21 is compared with that of pupils in NAMER '14. Across the school DEIS categories examined (Urban Non-DEIS, Urban Band 1 and Urban Band 2), there were no significant differences between the mean scores on overall mathematics in NAMER '21 and the corresponding mean scores in NAMER '14 (Figure 4.5, Table A4.5).

Figure 4.5: Mean scale scores for overall mathematics by DEIS status, 2014 and 2021

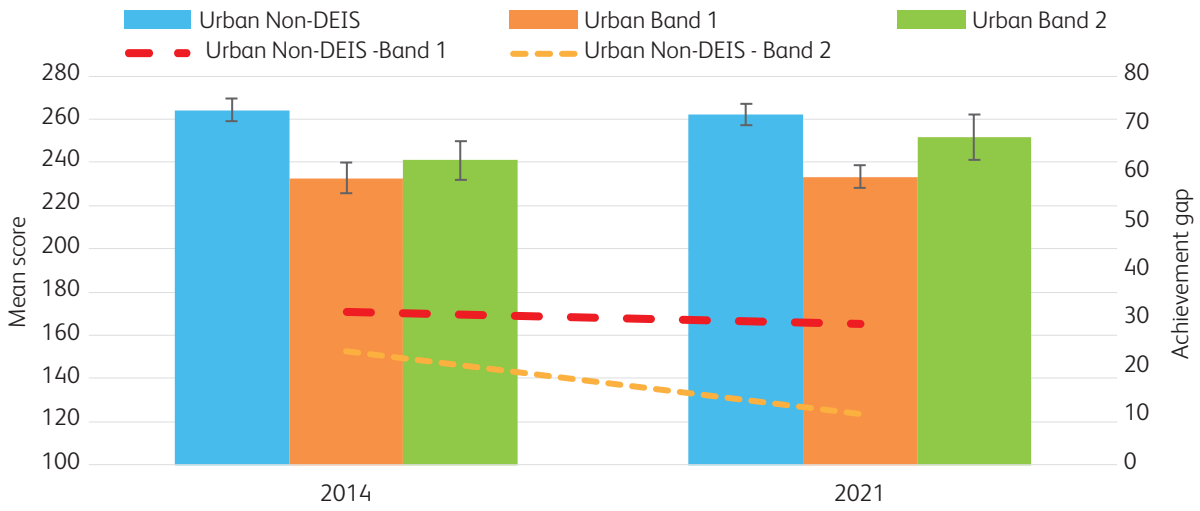


Error bars represent 95% confidence intervals.

Turning to the gap between DEIS and Non-DEIS schools over time, the dotted red line in Figure 4.6 shows that the gap in average mathematics achievement between Urban Non-DEIS schools and Urban Band 1 schools was very similar in 2021 and in 2014 (about 30 points in both cycles; Table A4.6). In contrast, the gap between Urban Non-DEIS and Urban Band 2 schools showed evidence of narrowing between 2014 (23.4 point gap) and 2021 (10.4 point gap), although the change was not statistically significant (p = .06).

Although there was no statistically significant change in the mean mathematics scores of either Urban Non-DEIS or Urban Band 2 schools in the period examined, there was a 2-point drop in the mean score of pupils in Urban Non-DEIS schools and an 11-point increase in the mean score of pupils in Urban Band 2 schools. Together, these contribute to some narrowing of the achievement gap in mathematics between Urban Non-DEIS schools and Urban Band 2 schools (Table A4.6).

Figure 4.6: Mean scores for overall mathematics by DEIS status and achievement gap between Urban Non-DEIS and Urban DEIS schools, NAMER '14 and NAMER '21



Error bars represent 95% confidence intervals.

Progress by pupils in Urban Band 1 schools towards DEIS numeracy targets

Discrete mathematics targets for Urban Band 1 schools were set out in the *National Strategy: Literacy and Numeracy for Learning Interim Review* (Department of Education and Skills, 2017b). Comparable targets for the full population were also set and these are examined in the initial NAMER '21 report (Kiniry et al., 2023). The targets for 2020 were set on the basis of achievement in NAMER '14.[21] Targets were set with the aim of reducing the percentages of low achievers (defined as At or Below Level 1) and increasing the percentages of high achievers (defined as At or Above Level 3). This section considers the percentages of low achievers (pupils with mathematics scores At or Below Level 1) and the percentages of high achievers (pupils with mathematics scores At or Above Level 3); the next section gives further breakdown of the percentages at each level.

For low achievers, the target was to reduce the percentage of pupils in Urban Band 1 schools performing At or Below Level 1 in mathematics from 50% to 42% (see Figure 4.7). In NAMER '21, 48.6% of pupils in Urban Band 1 schools had scores in this range compared to 49.9% in NAMER '14. There has been no significant change from 2014 to 2021 in the percentage of pupils with low achievement in mathematics in Urban Band 1 schools and there is little evidence of progress towards this target (Table A4.7).

In 2014, the gap between Urban Non-DEIS schools and Urban Band 1 schools in the percentage of low achievers was 25.8%. This reduced to 22.5% in 2021, a difference that is not statistically significant (p = .3; Table A4.8). This change occurred as a result of a small increase in the percentage of low achievers in Urban Non-DEIS schools (from 24.1% in 2014 to 26.1% in 2021; Table A4.7) coupled with a very small decrease in the percentage of low achievers in Urban Band 1 schools (from 49.9% to 48.6% in 2021).

The gap between Urban Non-DEIS schools and Urban Band 2 schools in the percentage of low achievers reduced from 17.8% in 2014 to 8.4% in 2021; again, this reduction was not statistically

21 Targets are presented in the *National Strategy: Literacy and Numeracy for Learning Interim Review* rounded to the nearest whole number. When referring specifically to targets in this section, values are rounded for consistency with values presented in the national strategy. When referring to values from NAMER '14, percentages are given to one decimal place.

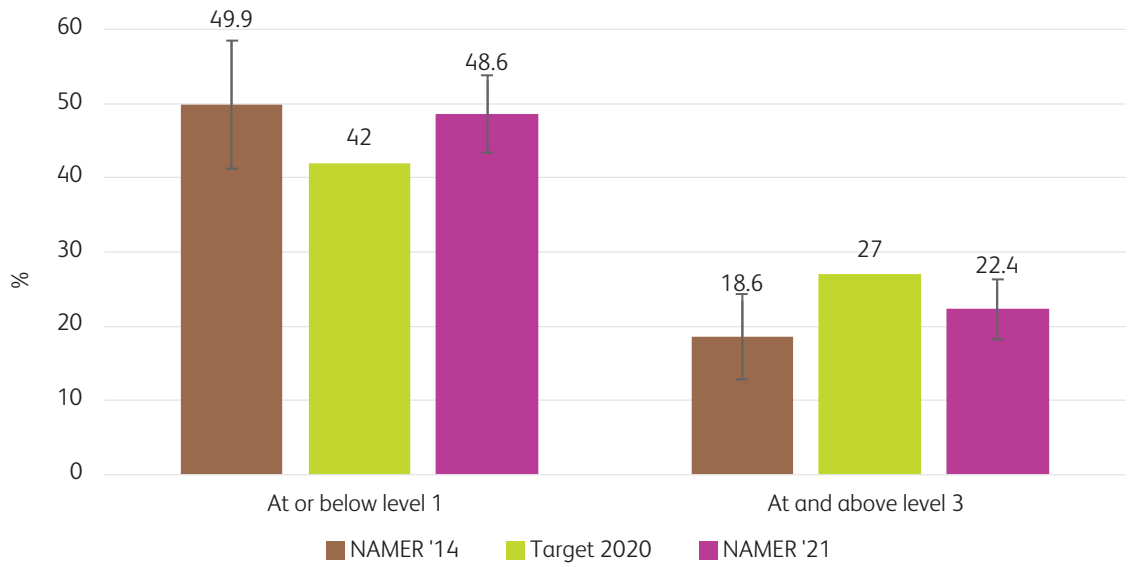
significant (p = .09). The change came about following a small increase in Urban Non-DEIS schools from 24.1% to 26.1% between 2014 and 2021 as well as a non-statistically significant drop in the percentage of low achievers in Urban Band 2 schools from 41.9% in 2014 to 34.5% in 2021 (Table A4.7).

For higher achievers, the target was to increase the percentage of pupils in Urban Band 1 schools performing At or Above Level 3 in mathematics from 19% to 27%. In NAMER '21, 22.4% of pupils in Urban Band 1 schools had scores At or Above Level 3.[22] While this represents a small increase on the percentage in NAMER '14 (18.6%), the difference is not statistically significant (Table A4.7). It is likely that the percentage of high achieving pupils in mathematics in Urban Band 1 schools remains below the target value.

In 2014, there was a 25.1% gap between Urban Non-DEIS schools and Urban Band 1 schools in the percentage of high achievers in mathematics. This reduced to 20.3% in 2021, a change that was not statistically significant (p = .2; Table A4.8). This change occurred as a consequence of a slight reduction in the percentage of high achievers in Urban Non-DEIS schools (from 43.7% in 2014 to 42.6% in 2021) and a small increase in the percentage of high achievers in Urban Band 1 schools (from 18.6% in 2014 to 22.4% in 2021; see Table A4.8).

The gap between Urban Non-DEIS schools and Urban Band 2 schools in the percentage of high achievers reduced from 14.1% in 2014 to 8.8% in 2021, a drop that was not statistically significant (p = .2; Table A4.8). The drop came about following a slight drop in the percentage of high achievers in Urban Non-DEIS schools between 2014 and 2021, from 43.7% to 42.6% respectively, and a non-statistically significant increase in Urban Band 2 schools from 29.6% to 33.9% (Table A4.8).

Figure 4.7: Percentages of low achieving and high achieving pupils in mathematics: Urban Band 1 2014 results, numeracy targets for 2020 and 2021 results



Error bars represent 95% confidence intervals.

22 For interested readers, the 95% confidence interval associated with the percentage of pupils At or Above Level 3 in Urban Band 1 schools in NAMER '21 is [18, 26].

Trends in proficiency levels

Table 4.2 shows detail of the percentages of pupils performing at each mathematics proficiency level in NAMER '14 and NAMER '21. In broad terms, there were small changes between the cycles in the percentages of pupils performing at the various mathematics proficiency levels and in general, these changes were not statistically significant (Table A4.9).

In Urban Band 1 schools, there was a small increase in the percentage of pupils with mathematics scores Below Level 1, rising from 11.9% in 2014 to 16.7% in 2021. This increase was not statistically significant. This change was accompanied by a non-significant decrease in the percentage of Urban Band 1 Sixth class pupils performing At Level 1 in mathematics from 38.0% in 2014 to 31.9% in 2021. Overall, the percentage of low achievers changed little, from 49.9% in 2014 to 48.6% in 2021.

In Urban Band 2 schools, the percentages of pupils Below Level 1 decreased from 12.8% to 8.2%. The percentages at Level 1 decreased from 29.0 to 26.4%; neither of these changes were statistically significant. Overall, the percentage of low achievers in Urban Band 2 schools dropped from 41.9% to 34.5%, a difference that is not statistically significant.

Turning to Level 2, there was a small decrease in the percentage of Urban Band 1 pupils At Level 2 in 2021 compared to 2014. In contrast, there was a small increase in the percentage of pupils at this level in Urban Band 2 schools. Neither change was statistically significant.

The percentages at Levels 3 and 4 in Urban Band 1 schools changed little from NAMER '14 to NAMER '21 and the percentage of pupils at Level 4 in Urban Band 1 schools remains low at just 5.3%. There was a small and non-significant increase in the percentage of pupils with maths scores At Level 4 in Urban Band 2 schools, increasing from 6.4% in 2014 to 11.1% in 2021.

Table 4.2: Percentages of pupils at each proficiency level on overall Mathematics, by school DEIS status and NAMER cycle

Level	Urban Non-DEIS		Urban Band 1		Urban Band 2	
	2014	2021*	2014	2021*	2014	2021*
	%	%	%	%	%	%
Below Level 1	5.0	5.9	11.9	16.7	12.8	8.2
Level 1	19.1	20.2	38.0	31.9	29.0	26.4
Level 2	32.2	31.3	31.5	29.0	28.5	31.6
Level 3	28.3	27.5	14.3	17.1	23.2	22.7
Level 4	15.4	15.1	4.4	5.3	6.4	11.1

Sixth class database.
No statistically significant differences between 2021 and 2014.

CHAPTER 5
Summary and Conclusions

This chapter brings together the NAMER '21 findings in this report, linking these to the wider research and policy context, and drawing some conclusions. Firstly, the wider context in which the study took place is described. Secondly, findings related to achievement in English reading at Second class are summarised. Thirdly, findings related to mathematics achievement at Sixth class are outlined. Fourthly, some broad observations on findings across reading and mathematics are presented. Fifthly, some limitations of the study are acknowledged. The final section draws some general conclusions.

The wider context of NAMER '21

The wider context in which NAMER '21 took place should be borne in mind when interpreting the results of the study. Participating pupils had experienced two months of remote learning and teaching in January and February 2021 as well as an extended period of school closures/remote learning from March to June 2020 (Delaney et al., 2023; Kiniry et al., 2023).

There is considerable international evidence of learning loss in reading and mathematics amongst primary school pupils during the period of the pandemic (Education Policy Institute, 2021). There are also findings of a widening of the attainment gap in the UK between pupils eligible for free school meals (i.e., pupils from socio-economically disadvantaged backgrounds) and their peers, particularly in mathematics (Weidmann et al., 2021). Winter et al. (2022) describe the impact of the COVID-19 pandemic on the Irish primary school and early years' sectors. Numerous reviews in Ireland and elsewhere have noted that younger children, children from marginalised families and those from lower SES backgrounds were most negatively affected by COVID-19-related school closures (Bray et al., 2021; Darmody et al., 2020; Flynn et al., 2021; Hammerstein et al., 2021). Findings outlined in this report show no evidence of a decline in average reading or mathematics scores between 2014 and 2021 in Urban Band 1 or Urban Band 2 schools – findings that are to be welcomed in the context of international evidence of learning loss and the particular impact of COVID-19 on pupils from disadvantaged backgrounds.

It is also relevant to consider the timing of NAMER '14 and NAMER '21 vis-à-vis the timing of the *National Strategy Literacy and Numeracy for Learning and Life 2011-2020* (Department of Education and Skills, 2011) and its interim review (Department of Education and Skills, 2017b). At the time of NAMER '14, aspects of the strategy had yet to be implemented. By the time of NAMER '21, it is reasonable to assume that fuller implementation of the strategy had occurred.[23] Furthermore, by the time of administration of NAMER '21, the Primary Language Curriculum (PLC; Department of Education and Skills, 2019) had been introduced. While the PLC was introduced on a phased basis from September 2016 for pupils from Junior Infants to Second class, it was implemented for all classes from September 2019.[24] Given the design of NAMER '21, it is not possible to directly attribute performance in the study to changes introduced through the Literacy and Numeracy strategy or the Primary Language Curriculum.

Achievement in Second class English Reading

Second class pupils in Urban Non-DEIS schools achieved a mean score in Overall reading of 265.4 and significantly outperformed pupils in Urban Band 1 (236.9) and Urban Band 2 schools (252.3). The gap in average reading achievement between pupils in Urban Band 1 schools and Urban Band 2 schools was also statistically significant, with a significantly higher mean reading score amongst pupils in Urban Band 2 schools than in Urban Band 1 schools. The effect sizes associated with these differences can be interpreted as substantively important.

23 Note that consultation on a successor to the strategy took place from December 2022 to February 2023; https://www.gov.ie/en/consultation/14180-literacy-numeracy-and-digital-literacy-strategy-consultation/

24 Circular 0045/2019; https://curriculumonline.ie/getmedia/8b6f88dc-a0e5-4b5a-9131-8ddf2dfd3210/PLC-Circular_Final_ENG_1.pdf

The pattern of results was very similar on Overall reading, on the Vocabulary and Comprehension reading content areas, and on the reading process subscales. On average, pupils in Urban Non-DEIS schools significantly outperformed pupils in Urban Band 1 schools and Urban Band 2 schools on the reading process skills of Retrieve, Infer and Interpret & Integrate. Also, mean scores on each of the reading process skills were significantly higher across pupils in Urban Band 2 schools than in Urban Band 1 schools.

In Urban Band 1 schools, about one-in-eight pupils had reading achievement Below Level 1, indicating very low skills in reading. A further 30% of pupils in Urban Band 1 schools had reading achievement At Level 1, considered to represent the most basic reading skills. Relative to the percentages in Urban Band 1 schools, the percentages of low achievers (Below Level 1, At Level 1) were significantly lower in Urban Band 2 schools (7.1% and 22.1%, respectively) and in Urban Non-DEIS schools (5.0% and 16.7%, respectively).

Turning to higher achievers in English reading, findings show that in 2021 about one-fifth of pupils in Urban Band 1 schools, over a quarter in Urban Band 2 schools, and over one-third in Urban Non-DEIS schools had reading scores at Level 3. Just 4.1% of pupils in Urban Band 1, schools compared to 7.4% in Urban Band 2 schools and 14% in Urban Non-DEIS schools, had reading scores at Level 4 – the highest level on the reading test.

These findings from NAMER '21 mirror those from NAMER '14 where it was found that Second class pupils in Urban Band 1 schools had significantly lower mean scores in Overall reading, Comprehension, and Vocabulary than pupils in Urban Band 2 schools and Urban Non-DEIS schools (Shiel et al., 2014). Findings from PIRLS 2016 and PIRLS 2021 also show poorer average reading performance of pupils in Urban Band 1 schools compared to pupils in Non-DEIS schools.[25] In both cycles of PIRLS (2016 and 2021), pupils in Urban Band 2 schools had a significantly lower mean reading score than their counterparts in Non-DEIS schools (Delaney et al., 2023; Delaney et al., 2022).

Gender differences in Second class reading

Across all participating pupils in NAMER '21, there was a statistically significant gender difference in average English reading, with a gap of about 8 points in favour of girls. A gender difference of a similar magnitude was observed in Urban Non-DEIS schools and Urban Band 1 schools, although the effect sizes associated with these differences (0.23 and 0.15, respectively) did not meet the criterion for substantive importance. There was no significant gender difference in English reading in Urban Band 2 schools.

The magnitude of the gender differences in NAMER '21 were very similar to differences reported in NAMER '14 (Shiel et al., 2014). As in most participating countries, gender differences in favour of girls were also observed in Ireland in PIRLS 2016 (Eivers et al., 2017) and PIRLS 2021 (Delaney et al., 2023).

Trends in performance (NAMER '14 – NAMER '21) and progress towards literacy targets

Across Urban Non-DEIS, Urban Band 1 and Urban Band 2 schools, there were no significant changes in mean scores for overall English reading, Vocabulary or Comprehension between NAMER '14 and NAMER '21. Nonetheless, there were small, non-statistically significant improvements in Urban Band 1 schools, where the mean reading score improved by 5 points between 2014 and 2021, mean Vocabulary increased by 7 points and mean Comprehension increased by 5.1 points. These increases led to some narrowing of the gap in reading achievement between Urban Non-DEIS schools and Urban Band 1 schools between 2014 and 2021. The gap in mean reading

25 In the PIRLS analysis, Urban Non-DEIS and Rural Non-DEIS schools were grouped into a single Non-DEIS category.

achievement between Urban Non-DEIS schools and Urban Band 1 schools reduced from 36 points in 2014 to 28.5 points in 2021, a reduction that is not statistically significant.

In the *National Strategy: Literacy and Numeracy for Learning Interim Review* (Department of Education and Skills, 2017b), discrete targets were set for English reading performance in Urban Band 1 schools. For low achievers, the target was to reduce the percentage of pupils in Urban Band 1 schools performing At or Below Level 1 in English reading from 44% to 40%. In NAMER '21, 43.2% of pupils in Urban Band 1 schools had scores At or Below Level 1, a value which is very similar to the corresponding percentage in 2014 (43.9%). On the basis of the available data, there is limited evidence of progress towards this target.

For high achievers, the target was to increase the percentage of pupils in Urban Band 1 schools performing At or Above Level 3 in English reading literacy from 18% to 25%. There was no evidence of a narrowing of the gap between Urban Non-DEIS and DEIS schools in the percentages of low achievers in reading, with broadly similar percentages of pupils achieving reading scores At or Below Level 1 in 2021 as in 2014. There was some evidence of a narrowing of the gap between Urban Band 1 and Urban Non-DEIS schools in the percentages of high achievers (At or Above Level 3). This occurred in the context of a non-statistically significant improvement in the percentage of high achievers in Urban Band 1 schools (from 17.7% to 25.0%) and no change in Urban Non-DEIS schools (48% in both cycles). Despite this improvement, the percentage of pupils in Urban Band 1 schools with reading achievement at Level 4 remains low (4.1%) compared to that in Urban Non-DEIS schools (14.0%).

Achievement in Sixth class Mathematics

Sixth class pupils in Urban Non-DEIS schools achieved a mean score in overall mathematics of 262.3 and significantly outperformed their counterparts in Urban Band 1 schools where the mean mathematics score was 233.3. The difference between the mean mathematics score of pupils in Urban Non-DEIS schools (262.3) and those in Urban Band 2 schools (251.9) was not statistically significant. There was a statistically significant gap between the mean mathematics score of pupils in Urban Band 2 schools and the mean score of pupils in Urban Band 1 schools, with pupils in Urban Band 2 schools significantly outperforming those in Urban Band 1 schools on average.

In NAMER '14, findings showed the mean mathematics score of Sixth class pupils in Urban Band 1 schools was significantly lower than the corresponding mean score in Urban Non-DEIS schools. In contrast to findings from NAMER '21, findings from the 2014 cycle of the study show that there was no significant difference between the mean mathematics scores in Urban Band 1 and Urban Band 2 schools (Shiel et al., 2014).

In 2021, the standard deviation in mathematics was very similar across the three groups (Urban Non-DEIS, Urban Band 1 and Urban Band 2) pointing towards a similar spread of achievement in mathematics across the three contexts.

The four content areas of the NAMER '21 mathematics test were: Number & Algebra, Shape & Space, Measures, and Data. As with overall mathematics scores, pupils in Urban Non-DEIS schools had significantly higher mean scores on all four mathematics content areas than pupils in Urban Band 1 schools, with the largest gap observed on Number & Algebra (29 point gap in favour of pupils in Urban Non-DEIS schools). The smallest gap (13 points) was found on Shape & Space. Differences on Measures and Data were 20 points and 18 points, respectively. There may be merit in focusing in particular on supporting pupils in Urban Band 1 schools to develop skills in Number & Algebra.

Differences in mean scores on the mathematics content areas between pupils in Urban Non-DEIS schools and those in Urban Band 2 schools were not statistically significant. Pupils in Urban Band 2 schools had significantly higher scores on Number & Algebra, Measures, and Data than pupils in Urban Band 1 schools. There were no significant differences on Shape & Space.

Average performance across the mathematics five process skills of Apply & Problem Solve, Implement, Integrate & Connect, Reason, and Understand & Recall varied significantly by school DEIS status. Pupils in Urban Non-DEIS schools had significantly higher mean scores on each of the processes compared to pupils in Urban Band 1 schools. No significant differences in the mean scores for mathematics processes were observed between Urban Non-DEIS pupils and pupils in Urban Band 2 schools. Pupils in Urban Band 2 schools had significantly higher mean scores on the Apply & Problem Solve, Implement, and Reason processes than pupils in Urban Band 1 schools. On Integrate & Connect and Understand & Recall, differences in mean scores between pupils in Urban Band 1 schools and Urban Band 2 schools were not statistically significant.

Relative to the percentages in Urban Non-DEIS schools (5.9%) and in Urban Band 2 schools (8.2%), a considerably higher percentage of pupils in Urban Band 1 schools (16.7%) had mathematics scores Below Level 1. The National Assessments are not designed to fully assess the skills of these pupils as relative to other Sixth class pupils, their skills in mathematics are very low.

Almost one-third of pupils (31.9%) in Urban Band 1 schools had mathematics scores at Level 1 – the level representing the most basic skills in mathematics. These pupils are able to consistently complete the most basic tasks only. The corresponding percentages in Urban Non-DEIS schools and Urban Band 2 schools were 20.2% and 26.4%, respectively.

In terms of high achievers in mathematics (Level 3 and Level 4), pupils in Urban Band 1 schools were less likely than their Non-DEIS counterparts to have mathematics scores in this range. About one-in-six pupils in Urban Band 1 schools (17.1%), compared to about one-quarter in Urban Non-DEIS schools (27.5%), had mathematics scores at Level 3; the corresponding value in Urban Band 2 schools was 22.7%. Just 5.3% of pupils in Urban Band 1 schools had mathematics scores at Level 4 compared to 11.1% in Urban Band 2 schools and 15.1% in Urban Non-DEIS schools.

Gender differences in Sixth class Mathematics

Across all participating pupils in NAMER '21, there was a small statistically significant gender difference in average mathematics achievement in favour of boys. In Urban Non-DEIS schools, boys had a significantly higher mean score than girls in overall mathematics, with a difference of 7.8 scale points between the two groups (d = 0.15). Gender differences in pupils for Urban Band 2 schools were more marked with a difference of 15 points (d = 0.32). Boys in Urban Band 2 schools achieved a mean score of 260.1, close to the mean score of boys in the overall sample (264.6) and boys in Urban Non-DEIS schools (266.1). Given the strong average mathematics performance of boys in Urban Band 2 schools, there may be merit in considering how the mathematics achievement of girls in Urban Band 2 schools can be further developed.

The mean mathematics achievement of boys and girls did not differ significantly in Urban Band 1 schools, suggesting a need to focus equally on the mathematics achievement of both boys and girls.

Other recent studies in Ireland have not identified a gender gap in average mathematics achievement. For example, Kavanagh and Weir (2018) reported that boys' performance in mathematics was, on average, just marginally higher than girls at all grade levels. In TIMSS 2019, Fourth class boys and girls in Ireland achieved comparable mean scores in mathematics (Perkins & Clerkin, 2020). There were no significant gender differences in average Sixth class mathematics performance in NAMER '14 (Shiel et al., 2014). Gender differences in NAMER '21 may warrant further research attention.

Trends in performance (NAMER '14 – NAMER '21) and progress towards numeracy targets

The average mathematics scores for NAMER '21 and NAMER '14 did not differ significantly from one another. Pupils in Urban Non-DEIS schools, Urban Band 1 schools and Urban Band 2 schools demonstrated similar levels of mathematics achievement on average in 2021 as in 2014. The gap between the average mathematics scores in Urban Non-DEIS schools and Urban Band 2 schools

reduced somewhat between 2014 and 2021, dropping from 23.4 points in 2014 to 10.5 points in 2021. The change was not statistically significant. The gap between Urban Band 1 schools and Urban Non-DEIS schools remained about the same in both cycles.

Targets set out in the *National Strategy: Literacy and Numeracy for Learning Interim Review* aimed to reduce the percentage of pupils in Urban Band 1 schools performing At or Below Level 1 in mathematics from 50% (in 2014) to 42% (in 2020). In NAMER '21, 49% of pupils in Urban Band 1 schools had scores At or Below Level 1, providing little evidence of progress towards this target.

For higher achievers, the target was to increase the percentage of pupils in Urban Band 1 schools performing At or Above Level 3 in mathematics from 19% to 27%. In NAMER '21, 22% of pupils in Urban Band 1 schools had scores At or Above Level 3. In spite of a small improvement between 2014 and 2021, from 19% to 22%, there is little evidence from the current data that this target has been met.

The gap between Urban Non-DEIS schools and Urban Band 2 schools in the percentage of low achievers (At or Below Level 1) reduced from 17.8% in 2014 to 8.4% in 2021, a drop that was not statistically significant. There was also a small non-significant narrowing of the gap (from 14.1% in 2014 to 8.8% in 2021) between Urban Non-DEIS schools and Urban Band 2 schools in the percentages of high achievers. This follows a slight drop in the percentage of high achievers in Urban Non-DEIS schools (from 43.7% to 42.6%) and a small increase in Urban Band 2 schools (from 29.6% to 33.9%).

A small reduction in the gap between the percentages of high achievers in Urban Non-DEIS and Urban Band 1 schools was also observed, dropping from 25.1% in 2014 to 20.3% in 2021. This change was not statistically significant and resulted from a slight drop in the percentage of high achievers in Urban Non-DEIS schools (from 43.7% to 42.6%) and a small increase in the corresponding percentage in Urban Band 1 schools (from 18.6% in 2014 to 22.4% in 2021).

Looking across reading and mathematics

Although reading and mathematics were assessed at different grade levels (Second and Sixth classes, respectively), some broad comparisons can be made between findings of the two assessments.

- In Urban Band 1 schools, nearly half of Sixth class pupils had mathematics scores At or Below Level 1 and over two-fifths of Second class pupils had reading scores At or Below Level 1. In Urban Band 2 schools, over one-third of Sixth class pupils had mathematics achievement At or Below Level 1 and more than a quarter of Second class pupils had reading achievement At or Below Level 1. Pupils at these levels have low skills relative to their counterparts and findings show the need for ongoing support for low achieving pupils in disadvantaged contexts.
- In both Urban Band 1 and Urban Band 2 schools, percentages of low achievers (At or Below Level 1) in reading were somewhat lower than the percentages of low achievers in mathematics.
- Up to one-quarter of pupils in Urban Band 1 schools and one-third in Urban Band 2 schools were high achievers (At or Above Level 3) in reading or mathematics. These findings underscore the need to challenge and support high achieving pupils in the disadvantaged context.
- While there was a statistically significant difference between the mean reading score of pupils in Urban Non-DEIS and Urban Band 2 schools, the corresponding difference in mathematics was not statistically significant. In reading, the difference amounted to 13.1 score points; in mathematics, the difference was 10.4 points. The effect sizes associated with these were similar (d = 0.28 and d = 0.21, respectively), emphasising the importance not only of focusing on statistical significance but also on the substantive interpretation facilitated by effect sizes.

- At Sixth class, boys in Urban Band 2 schools achieved a mean mathematics score (260.1) close to the mean mathematics score of boys in Urban Non-DEIS schools (266.1). The gap between the two was somewhat larger for girls (14 points) although the overall mathematics score in Urban Band 2 schools was not significantly different from that in Urban Non-DEIS schools. There may be merit in focusing further on the engagement and achievement of girls in mathematics in Urban Band 2 schools.
- In Urban Band 2 and Urban Non-DEIS schools, average performance across mathematics content areas was quite similar with mean scores across content areas within about 3 points of each other. In Urban Band 1 schools, there was greater variation in mean scores across mathematics content areas, ranging from 233.1 on Number & Algebra to 244.9 on Shape & Space. Mean scores on Measures and Data were 239.3 and 240.4, respectively. It may be useful to examine these findings in more detail, to explore the relative strengths and weaknesses in mathematics of Sixth class pupils in Urban Band 1 schools.
- There was also some variation in mean scores across mathematics process areas in Urban Band 1 schools, with mean scores ranging from 235.1 on Apply & Problem Solve to 246.5 on Integrate & Connect. In Urban Band 2 schools, a slightly lower mean score (250.1) was achieved on Apply & Problem Solve compared to other process areas (Implement: 253.6; Reason: 253.8; Integrate & Connect: 254.9; Understand & Recall: 255.1).
- At Second class, within school contexts, little variation across the mean scores in reading processes was observed. That is, in Urban Band 1 schools Second class pupils achieved very similar mean scores on Retrieve, Infer, and Interpret & Integrate. Findings were similar for Urban Band 2 and Urban Non-DEIS schools. Similarly, in Urban Band 1 schools (as in Urban Band 2 schools and Urban Non-DEIS schools), the mean score for Vocabulary (240.1) was close to that for Comprehension (237.8).

Limitations to NAMER '21 and the current analyses

NAMER '21 is a cross-sectional study of pupil achievement in reading and mathematics. It also gathers some information on pupil attitudes and experiences related to learning. Given its cross-sectional nature, causal inferences cannot be made. Notably, in the most recent cycle of the study the mathematics achievement of Second class pupils and the English reading achievement of Sixth class pupils were not assessed. This change from 2014 was due to reconfigurations introduced as a result of COVID-19. As such, NAMER '21 provides a partial picture of pupil achievement compared to NAMER '14.

The focus of this report has been on the achievements of pupils in Urban DEIS schools compared to Urban Non-DEIS schools. As outlined in the introduction, the original sampling plan for NAMER '21 allowed for the inclusion of 80 Urban Band 1, 80 Urban Band 2, 80 Rural DEIS and 80 Non-DEIS schools. This was subsequently revised downwards resulting in the sampling of 60 Urban Band 1, 30 Urban Band 2, 100 Non-DEIS schools and 5 Rural DEIS schools. While the representation of Urban Band 1 and Urban Band 2 schools in the NAMER '21 sample gives more accurate estimates than were available in 2014, future National Assessments cycles could usefully give detailed consideration to the sample sizes required and in particular, the benefits of including a larger sample of Rural DEIS schools.

The current report focused primarily on "average" achievement. The need for more nuanced approaches has been recognised, noting that measures of dispersion and estimates of the variance explained by various factors provide useful additional information; for example, see work by Karakolidis et al. (2021a, 2021b) which draws on Irish data from national and international assessments and uses measures of dispersion and variance explained to provide a nuanced picture of equity-related issues. The benefits of more complex statistical methodologies have also been recognised (e.g., Perry et al., 2022).

In the review of DEIS conducted by Smyth et al. (2015), the authors suggest that it would be "an extremely ambitious agenda" to reduce or eliminate the overall gap between DEIS and Non-DEIS schools and suggest that "a fairer test of success" of DEIS would be to reduce the achievement gap between disadvantaged students in DEIS schools and disadvantaged students in Non-DEIS schools (Smyth et al., 2015, p. 76). The rollout of the primary pupil database was identified by Smyth et al. as a possible vehicle for recording information on pupil social background. While the database records information on pupil address which is matched to a HP small-area deprivation score for the purposes of DEIS identification (Department of Education, 2022a), these data are currently used in the DEIS identification process only and are not linked to achievement at the pupil level, not least because no central source of individual achievement at primary level is held.[26] Therefore, analyses of the type suggested by Smyth et al. are not yet possible for the population of primary pupils. A limitation of NAMER '21 is that the parent questionnaire was not administered. One consequence of this is that there is very limited background information available about participating pupils which limits the analytic possibilities of examining differences in achievement between disadvantaged pupils in DEIS schools compared to disadvantaged pupils in Non-DEIS schools.

Conclusions

While findings from NAMER '21 do not show significant gains in overall achievement since NAMER '14, a sustained level of performance has been maintained. As in previous cycles, current findings show a persistent achievement gap between pupils in DEIS schools compared to those in Non-DEIS schools. This is particularly pronounced when comparing the average achievement of pupils in Urban Band 1 schools with that of pupils in Urban Non-DEIS schools. These findings underscore the need for continued provision of additional supports, particularly for Urban Band 1 schools. While Sixth class pupils in Urban Non-DEIS schools significantly outperformed their peers in Urban Band 1 schools in mathematics, it is to be welcomed that the gap in average mathematics achievement between pupils in Urban Non-DEIS schools and those Urban Band 2 schools was not statistically significant.

In conclusion, it is important to bear in mind that NAMER '21 took place at a time of recent disruption to schooling in Ireland (and elsewhere) due to the COVID-19 pandemic. All pupils had missed in-person school days during periods of school closure while many pupils had had further absences during periods of illness or COVID-related isolation. All pupils had been required to engage in remote learning for an extended period prior to the NAMER '21 and research shows that existing socio-economic inequalities were exacerbated (Darmody et al., 2021). While it is not possible to determine the impact of COVID-19 on NAMER '21 findings, there is undoubtedly a need for ongoing monitoring of standards of literacy and numeracy in the years following the pandemic.

26 Note that aggregated data are reported as outlined in Circular 0018/2012; https://assets.gov.ie/13572/96e8a702827348bea4290897888f2651.pdf

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Appendices

Appendix 1: Supports provided under the DEIS School Support Programme

Table A1.1: Supports provided under the DEIS School Support Programme*

Resources for DEIS Band 1 Primary schools

- Reduced class sizes – application of a staffing schedule to DEIS Band 1 schools to accommodate class size of 18:1 at junior classes, 20:1 in vertical schools (schools with junior and senior classes) and 22:1 at senior classes.
- Allocation of Administrative Principal on lower enrolment and staffing figures than apply in primary schools generally (114 in Band 1).
- Additional grant aid based on level of disadvantage and enrolment.
- Access to Home School Community Liaison (HSCL) services.
- Access to Schools Meals Programme.
- Access to range of supports under School Completion Programme.
- Access to literacy/numeracy support such as Reading Recovery, Maths Recovery, First Steps, Ready Set Go Maths
- Access to planning supports
- Access to a range of professional development supports – Teacher Education Section, Professional Development Service for Teachers (PDST), Centre for School Leadership (CSL).
- Additional funding under School Books Grant Scheme
- In addition, the DEIS Plan (DES, 2017, pp. 56-57) identified:
- Expansion of NEPS provision in DEIS schools.
- Roll out of Incredible Years Teacher Classroom Management Programme and Friends Programme to all DEIS schools.

Resources for DEIS Band 2 Primary schools:

- Allocation of Administrative Principal on lower enrolment and staffing figures than apply in primary schools generally (141 in Band 2).
- Additional grant aid based on level of disadvantage and enrolment.
- Access to Home School Community Liaison (HSCL) services.
- Access to Schools Meals Programme.
- Access to range of supports under School Completion Programme.
- Access to literacy/numeracy support such as Reading Recovery, Maths Recovery, First Steps, Ready Set Go Maths.
- Access to planning supports.
- Access to a range of professional development supports – Teacher Education Section, PDST, CSL.
- Additional funding under the School Books Grant Scheme.
- In addition, the DEIS Plan (DES, 2017, pp. 56-57) identified:
- Expansion of NEPS provision in DEIS schools.
- Roll out of Incredible Years Teacher Classroom Management Programme and Friends Programme to all DEIS schools.

Resources for DEIS Rural schools

- Additional grant aid based on level of disadvantage and enrolment.
- Access to Schools Meals Programme.
- Access to planning supports.
- Access to a range of professional development supports – Teacher Education Section, PDST, CSL.
- Additional funding under the School Books Grant Scheme.
- In addition, the DEIS Plan (DES, 2017, pp. 56-57) identified:
- Access to range of supports under School Completion Programme.
- Expansion of NEPS provision in DEIS schools.
- Roll out of Incredible Years Teacher Classroom Management Programme and Friends Programme to all DEIS schools.

*Accessed 14.12.2022 list provided: https://www.gov.ie/en/policy-information/4018ea-deis-delivering-equality-of-opportunity-in-schools/#resources-for-deis-schools

Additional resources for DEIS post-primary schools are also outlined in the *DEIS Plan* (Department of Education and Skills, 2017a, p. 57) with the most up-to-date list provided at https://www.gov.ie/en/policy-information/4018ea-deis-delivering-equality-of-opportunity-in-schools/#resources-for-deis-schools.

Appendix 2:
Technical details on analysis of the achievement gap between DEIS and Non-DEIS schools

Analyses for NAMER '21 were conducted in the IDB Analyzer (https://www.iea.nl/data-tools/tools), a software package designed for the analysis of large-scale assessments. The IDB Analyzer provides the difference between the mean achievement of two groups and the standard error of the difference, with appropriate adjustments applied to account for the complex sampling design and to incorporate plausible values.

To analyse changes in the significance of the achievement gap over time (using Second class pupils in Urban Non-DEIS and pupils Urban Band 1 as an example), the difference between the mean reading scores of Second class pupils in Urban Non-DEIS schools and those in Urban Band 1 schools was computed in the IDB Analyzer for 2014 and 2021, along with the standard error of the difference in each cycle. These were used to calculate the change in the achievement gap across cycles.

The standard error associated with the change was calculated as sqrt($SE_1^2 + SE_2^2$) and used to calculate a z-statistic which was compared, using a one-tailed test, to a critical value to determine the statistical significance of the change in the gap between the two cycles. A one-tailed test was used as the question of interest is whether or not the gap has significantly narrowed between the two cycles.

Appendix 3:
Second Class English Reading Additional Material

Table A3.1: Mean pupil achievement scores in English reading by component and school DEIS status, Second class

	Overall Reading		Vocabulary		Comprehension	
	Mean	**SE**	**Mean**	**SE**	**Mean**	**SE**
National sample	260.8	1.65	262.6	1.50	259.2	1.66
By school DEIS status						
Urban Non-DEIS	265.4	1.79	266.3	1.59	263.5	1.85
Urban Band 1	236.9	2.08	240.1	1.98	237.8	2.17
Urban Band 2	252.3	3.07	255.1	3.11	251.7	2.91
Rural DEIS	*245.7*	*12.05*	*253.0*	*11.52*	*243.4*	*10.88*
Rural Non-DEIS	*266.7*	*2.76*	*267.7*	*2.48*	*264.7*	*2.82*
Comparisons - Overall Reading	**Difference**	**SED**	**95% CI (BC)**			***d***
Urban Non-DEIS* - Urban Band 1	**28.5**	2.78	21.7	35.2		0.60
Urban Non-DEIS* - Urban Band 2	**13.1**	3.58	4.4	22.7		0.28
Urban Band 2* - Urban Band 1	**15.4**	3.69	6.45	24.3		0.34
Comparisons - Vocabulary	**Difference**	**SED**	**95% CI (BC)**			***d***
Urban Non-DEIS* - Urban Band 1	**26.2**	2.59	19.9	32.5		0.53
Urban Non-DEIS* - Urban Band 2	**11.2**	3.44	2.9	19.5		0.23
Urban Band 2* - Urban Band 1	**15.0**	3.67	6.1	23.9		0.30
Comparisons - Comprehension	**Difference**	**SED**	**95% CI (BC)**			***d***
Urban Non-DEIS* - Urban Band 1	**25.7**	2.88	18.8	32.7		0.56
Urban Non-DEIS* - Urban Band 2	**11.8**	3.46	3.4	20.2		0.25
Urban Band 2* - Urban Band 1	**13.9**	3.59	5.3	22.6		0.31

Second class database.
Values in italics are provided for information only (groups were excluded from tests of statistical significance due to small sample size).
Values in bold are statistically significantly different from those of the reference group*.

Table A3.2: Mean pupil achievement scores in English reading by reading process and DEIS status

DEIS status	Retrieve		Infer		Interpret & Integrate	
	Mean	SE	Mean	SE	Mean	SE
National sample	257.8	1.62	260.9	1.58	260.1	1.68
By school DEIS status						
Urban Non-DEIS	260.5	1.75	264.5	1.76	263.9	1.90
Urban Band 1	239.9	2.32	242.5	1.98	244.8	1.78
Urban Band 2	252.5	2.52	254.1	2.48	254.7	2.29
Rural DEIS	*244.6*	*12.10*	*252.2*	*12.21*	*247.5*	*14.31*
Rural Non-DEIS	*263.0*	*2.88*	*264.7*	*2.79*	*263.5*	*2.47*
Comparisons - Retrieve	**Difference**	**SED**	**95% CI (BC)**			**d**
Urban Non-DEIS* - Urban Band 1	**20.6**	2.80	13.8	27.3		0.45
Urban Non-DEIS* - Urban Band 2	**7.9**	3.06	0.5	15.3		0.17
Urban Band 2* - Urban Band 1	**12.6**	3.43	4.4	20.9		0.28
Comparisons - Infer	**Difference**	**SED**	**95% CI (BC)**			**d**
Urban Non-DEIS* - Urban Band 1	**22.0**	2.55	15.9	28.2		0.46
Urban Non-DEIS* - Urban Band 2	**10.4**	3.05	2.9	17.7		0.22
Urban Band 2* - Urban Band 1	**11.7**	3.18	3.9	19.3		0.25
Comparisons - Interpret & Integrate	**Difference**	**SED**	**95% CI (BC)**			**d**
Urban Non-DEIS* - Urban Band 1	**19.1**	2.51	13.0	25.1		0.41
Urban Non-DEIS* - Urban Band 2	**9.2**	2.96	2.0	16.3		0.19
Urban Band 2* - Urban Band 1	**9.9**	2.86	3.0	16.8		0.21

Second class database.
Values in italics are provided for information only (groups were excluded from tests of statistical significance due to small sample size).
Values in bold are statistically significantly different from those of the reference group*

Table A3.3: Percentages of pupils at each proficiency level on the overall English reading scale, national sample and by DEIS status

	National sample		Urban Non-DEIS		Urban Band 1		Urban Band 2		*Rural DEIS*		*Rural Non-DEIS*	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Below Level 1	*6.0*	*0.75*	5.0	0.63	12.9	1.48	7.1	1.07	*7.4*	*7.30*	*4.9*	*1.14*
Level 1	*18.4*	*1.34*	16.7	1.16	30.3	1.92	22.1	1.98	*27.0*	*12.42*	*14.7*	*1.94*
Level 2	*31.4*	*1.83*	30.3	1.70	31.8	1.55	34.8	2.19	*32.2*	*16.71*	*31.8*	*2.67*
Level 3	*32.4*	*1.65*	34.0	1.95	20.9	1.49	28.6	2.51	*30.3*	*12.40*	*34.7*	*2.38*
Level 4	*11.7*	*0.79*	14.0	1.12	4.1	0.56	7.4	1.76	*3.1*	*2.04*	*13.9*	*1.60*
Comparisons - Below Level 1				**Difference**		**SED**			**95% CI (BC)**			
Urban Band 1* - Urban Non-DEIS				**7.9**		1.59			4.1		11.9	
Urban Band 2* - Urban Non-DEIS				2.1		1.29			-1.0		5.2	
Urban Band 1* - Urban Band 2				**5.8**		1.91			1.2		10.5	
Comparisons - Level 1				**Difference**		**SED**			**95% CI (BC)**			
Urban Band 1* - Urban Non-DEIS				**13.6**		2.24			8.1		18.9	
Urban Band 2* - Urban Non-DEIS				5.4		2.29			-0.2		10.9	
Urban Band 1* - Urban Band 2				**8.2**		2.89			1.2		15.2	
Comparisons - Level 2				**Difference**		**SED**			**95% CI (BC)**			
Urban Band 1* - Urban Non-DEIS				1.5		2.54			-4.7		7.6	
Urban Band 2* - Urban Non-DEIS				4.5		2.73			-2.1		11.1	
Urban Band 1* - Urban Band 2				3.1		2.66			-3.3		9.5	
Comparisons - Level 3				**Difference**		**SED**			**95% CI (BC)**			
Urban Non-DEIS* - Urban Band 1				**13.1**		2.56			6.9		19.3	
Urban Non-DEIS* - Urban Band 2				5.4		2.82			-1.4		12.2	
Urban Band 2* - Urban Band 1				**7.7**		2.97			0.5		14.9	
Comparisons - Level 4				**Difference**		**SED**			**95% CI (BC)**			
Urban Non-DEIS* - Urban Band 1				**9.8**		1.26			6.8		12.9	
Urban Non-DEIS* - Urban Band 2				**6.6**		2.01			1.7		11.4	
Urban Band 2* - Urban Band 1				3.3		1.89			-1.3		7.8	

Second class database.
Values in italics are provided for information only.
Values in bold are statistically significantly different from those of the reference group*.

Table A3.4: Mean pupil achievement scores in English reading by gender and DEIS status

	Girls*	SE	Boys	SE	Difference	SED	95% CI		*d*
National sample	265.1	2.78	256.8	2.00	**8.3**	3.3	1.7	14.9	0.17
By school DEIS status									
Urban Non-DEIS	271.1	2.30	260.0	2.18	**11.1**	3.03	5.1	17.1	0.23
Urban Band 1	240.6	2.27	233.9	2.75	**6.7**	3.02	0.7	12.6	0.15
Urban Band 2	253.4	4.00	251.0	3.20	2.3	3.73	-5.0	9.7	0.05
Rural DEIS	*235.2*	*31.42*	*252.6*	*8.45*					
Rural Non-DEIS	*271.6*	*3.46*	*261.4*	*3.90*					

Second class database.
Values in italics are provided for information only (groups were excluded from tests of statistical significance due to small sample size).
Values in bold are statistically significantly different from those of the reference group*.

Table A3.5: Mean scale scores on the English reading scales by DEIS status; comparison between 2014 and 2021

	2014			2021*			2021-2014			
By school DEIS status	***M***	***SE***	***SD***	***M***	***SE***	**SD**	**Difference**	**SED**	**95% CI**	
Overall Reading										
Urban Non-DEIS	267.9	2.28	47.4	265.4	1.79	48.5	2.5	2.90	-3.2	8.3
Urban Band 1	231.9	3.33	39.5	236.9	2.08	45.6	5.0	3.93	-2.8	12.7
Urban Band 2	254.9	3.88	47.6	252.3	3.07	46.0	2.6	4.95	-7.1	12.4
Rural DEIS	*266.8*	*4.19*	*47.2*	*245.7*	*12.05*	*41.6*				
Rural Non-DEIS	*267.5*	*2.26*	*46.4*	*266.7*	*2.76*	*48.2*				
Vocabulary										
Urban Non-DEIS	268.5	2.30	48.2	266.3	1.59	49.9	2.2	2.80	-3.3	7.7
Urban Band 1	232.8	3.96	43.3	240.1	1.98	49.9	7.3	4.43	-1.4	16.0
Urban Band 2	254.2	3.38	46.9	255.1	3.11	49.7	0.9	4.59	-8.1	10.0
Rural DEIS	*269.2*	*3.99*	*49.5*	*253.0*	*11.52*	*38.8*				
Rural Non-DEIS	*269.1*	*2.06*	*47.8*	*267.7*	*2.48*	*49.0*				
Comprehension										
Urban Non-DEIS	266.3	2.10	46.0	263.5	1.85	47.1	2.8	2.80	-2.7	8.3
Urban Band 1	232.7	3.06	40.1	237.8	2.17	44.6	5.1	3.80	-2.5	12.5
Urban Band 2	254.9	4.19	47.4	251.7	2.91	45.5	3.2	5.10	-6.9	13.3
Rural DEIS	*263.6*	*4.59*	*43.8*	*243.4*	*10.88*	*45.7*				
Rural Non-DEIS	*265.6*	*2.19*	*44.7*	*264.7*	*2.82*	*46.7*				

Second class database.
Values in italics are provided for information only (groups were excluded from tests of statistical significance due to small sample size).
No statistically significant differences in mean scores between 2021 and 2014.

Table A3.6: Changes in the magnitude of the gap in mean English reading scores between 2014 and 2021 by DEIS status

	Urban Non-DEIS - Urban Band 1	SED	Urban Non-DEIS - Urban Band 2	SED	Urban Band 1 - Urban Band 2	SED
NAMER '14	36.0	4.17	13.0	4.48	23.0	5.19
NAMER '21	28.5	2.78	13.1	3.58	15.4	3.69
2014 - 2021	7.5	5.01	-0.1	5.73	7.6	6.37
z	1.51		-0.02		1.20	
p	0.07		0.51		0.11	

Second class databases.
(Comparisons: Urban Non-DEIS vs Urban Band 1, Urban Non-DEIS vs Urban Band 2, Urban Band 1 vs Urban Band 2)

Table A3.7: Percentages of low achievers and high achievers in Second class English reading: comparison between 2014 and 2021

Level	NAMER '14	SE	NAMER '21*	SE	Difference	SED	95% CI	
Urban Non-DEIS								
At or Below Level 1	19.1	1.33	21.7	1.40	2.6	1.93	-1.23	6.39
At or Above Level 3	48.8	2.08	48.0	1.93	0.8	2.84	-4.81	6.39
Urban Band 1								
At or Below Level 1	43.9	3.21	43.2	2.28	0.7	3.94	-7.1	8.5
At or Above Level 3	17.7	3.36	25.0	1.60	7.3	3.72	-0.0	14.6
Urban Band 2								
At or Below Level 1	28.2	3.01	29.2	2.41	0.9	3.86	-6.68	8.54
At or Above Level 3	34.7	3.65	36.0	3.10	1.3	4.79	-8.16	10.74

No statistically significant differences between 2021 and 2014.

Table A3.8: Changes in the magnitude of the gap in the percentages of low and high achievers in English reading between 2014 and 2021 by DEIS status

	Urban Non-DEIS - Urban Band 1	SED	Urban Non-DEIS - Urban Band 2	SED	Urban Band 1 - Urban Band 2	SED
% At or Below Level 1						
NAMER '14	24.8	3.54	9.1	3.28	15.7	4.63
NAMER '21	21.5	2.73	7.4	2.80	14.1	3.34
2014 - 2021	3.3	4.47	1.7	4.31	1.6	5.71
z	0.73		0.38		0.28	
p	0.23		0.35		0.39	
% At or Above Level 3						
NAMER '14	31.1	4.13	14.1	4.18	17.0	5.03
NAMER '21	23.0	2.60	12.0	3.55	11.0	3.57
2014 - 2021	8.1	4.88	2.1	5.48	6.0	6.17
z	1.66		0.38		0.98	
p	**0.05**		0.35		0.16	

Second class databases.
(Comparisons: Urban Non-DEIS vs Urban Band 1, Urban Non-DEIS vs Urban Band 2, Urban Band 1 vs Urban Band)

Table A3.9: English reading proficiency level distributions, by DEIS status

	Urban Non-DEIS				Urban Band 1				Urban Band 2			
	2014		2021*		2014		2021*		2014		2021*	
	%	*SE*	%	*SE*	%	*SE*	%	*SE*	%	*SE*	%	*SE*
Below Level 1	4.9	0.65	5.0	0.63	15.5	2.42	12.9	1.48	5.1	1.45	7.1	1.07
Level 1	14.3	1.05	16.7	1.16	28.4	2.81	30.3	1.92	23.2	3.13	22.1	1.98
Level 2	32.1	1.16	30.3	1.70	**38.4**	2.57	31.8	1.55	37.1	2.20	34.9	2.19
Level 3	33.5	1.48	34.0	1.95	16.1	3.02	20.9	1.49	25.2	3.54	28.6	2.51
Level 4	15.2	1.36	14.0	1.12	1.7	0.72	4.1	0.56	9.5	1.38	7.4	1.76

Values in bold are statistically significantly different from those of the reference group*

Appendix 4:
Sixth Class Mathematics Additional Material

Table A4.1: Mean pupil achievement scores in mathematics by content area and school DEIS status, Sixth class

	Overall mathematics		Number & Algebra		Shape & Space		Measures		Data	
	Mean	**SE**	**Mean**	**SE**	**Mean**	**SE**	**Mean**	**SE**	**Mean**	**SE**
National sample	260.5	1.82	259.0	1.70	256.4	1.79	257.7	1.89	257.3	1.84
By school DEIS status										
Urban Non-DEIS	262.3	2.51	260.9	2.54	258.0	1.65	259.5	2.21	258.7	1.81
Urban Band 1	233.3	2.61	233.1	2.48	244.9	1.92	239.3	2.38	240.4	2.24
Urban Band 2	251.9	5.34	250.5	5.11	253.7	3.66	252.3	4.17	254.1	3.01
Rural DEIS	*264.4*	*14.91*	*264.8*	*10.24*	*249.9*	*23.08*	*253.9*	*20.03*	*262.8*	*20.26*
Rural Non-DEIS	*266.5*	*2.94*	*264.8*	*2.90*	*259.1*	*2.01*	*262.2*	*2.90*	*259.8*	*2.93*
Comparisons - Overall mathematics	**Difference**		**SED**		**95% CI (BC)**				***d***	
Urban Non-DEIS* - Urban Band 1	**29.0**		3.62		20.3		37.8		0.59	
Urban Non-DEIS* - Urban Band 2	10.4		5.90		-3.8		24.7		0.21	
Urban Band 2* - Urban Band 1	**18.6**		5.93		4.3		33.0		0.37	
Comparisons - Number & Algebra	**Difference**		**SED**		**95% CI (BC)**				***d***	
Urban Non-DEIS* - Urban Band 1	**27.8**		3.54		19.3		36.4		0.56	
Urban Non-DEIS* - Urban Band 2	10.4		5.72		-3.43		24.2		0.21	
Urban Band 2* - Urban Band 1	**17.4**		5.65		3.8		31.1		0.35	
Comparisons - Shape & Space	**Difference**		**SED**		**95% CI (BC)**				***d***	
Urban Non-DEIS* - Urban Band 1	**13.1**		2.60		6.9		19.4		0.29	
Urban Non-DEIS* - Urban Band 2	4.3		3.99		-5.34		14.0		0.10	
Urban Band 2* - Urban Band 1	8.8		4.04		-0.9		18.6		0.19	
Comparisons - Measures	**Difference**		**SED**		**95% CI (BC)**				***d***	
Urban Non-DEIS* - Urban Band 1	**20.1**		3.29		12.2		28.1		0.39	
Urban Non-DEIS* - Urban Band 2	7.1		4.66		-4.1		18.4		0.14	
Urban Band 2* - Urban Band 1	**13.0**		4.79		1.4		24.6		0.26	
Comparisons - Data	**Difference**		**SED**		**95% CI (BC)**				***d***	
Urban Non-DEIS* - Urban Band 1	**18.3**		2.87		11.3		25.2		0.36	
Urban Non-DEIS* - Urban Band 2	4.58		3.56		-4.0		13.2		0.09	
Urban Band 2* - Urban Band 1	**13.7**		3.76		4.6		22.8		0.27	

Sixth class database. Values in italics are provided for information only (groups were excluded from tests of statistical significance due to small sample size).
Values in bold are statistically significantly different from those of the reference group*.

Table A4.2: Mean pupil achievement scores in Mathematics by process and DEIS status

	Apply & Problem Solve		Implement		Integrate & Connect		Reason		Understand & Recall	
	Mean	**SE**	**Mean**	**SE**	**Mean**	**SE**	**Mean**	**SE**	**Mean**	**SE**
National sample	258.3	1.77	259.9	1.76	257.3	1.70	260.4	2.09	258.0	1.60
By school DEIS status										
Urban Non-DEIS	260.9	2.28	260.8	2.32	258.8	1.81	261.5	2.47	258.9	1.90
Urban Band 1	235.1	2.47	238.4	2.74	246.5	2.85	237.4	2.60	240.9	2.35
Urban Band 2	250.1	4.45	253.6	4.32	254.9	3.33	253.8	4.98	255.1	5.80
Rural DEIS	*251.2*	*15.10*	*266.8*	*18.39*	*258.8*	*11.73*	*262.7*	*21.13*	*264.7*	*14.07*
Rural Non-DEIS	*264.0*	*2.93*	*264.4*	*2.67*	*259.3*	*3.17*	*265.8*	*2.91*	*260.8*	*3.15*
Comparisons - Apply & Problem Solve	**Difference**		**SED**		**95% CI (BC)**				***d***	
Urban Non-DEIS* - Urban Band 1	**25.8**		3.41		17.6		34.1		0.53	
Urban Non-DEIS* - Urban Band 2	10.8		4.97		-1.2		22.8		0.22	
Urban Band 2* - Urban Band 1	**15.0**		5.12		2.6		27.4		0.31	
Comparisons - Implement	**Difference**		**SED**		**95% CI (BC)**				***d***	
Urban Non-DEIS* - Urban Band 1	**22.3**		3.49		13.9		30.9		0.44	
Urban Non-DEIS* - Urban Band 2	7.1		4.87		-4.6		18.9		0.14	
Urban Band 2* - Urban Band 1	**15.2**		5.03		3.1		27.4		0.30	
Comparisons - Integrate & Connect	**Difference**		**SED**		**95% CI (BC)**				***d***	
Urban Non-DEIS* - Urban Band 1	**12.3**		3.36		4.2		20.4		0.25	
Urban Non-DEIS* - Urban Band 2	4.0		3.82		-5.3		13.2		0.08	
Urban Band 2* - Urban Band 1	8.4		3.90		-1.1		17.8		0.17	
Comparisons - Reason	**Difference**		**SED**		**95% CI (BC)**				***d***	
Urban Non-DEIS* - Urban Band 1	**24.1**		3.64		15.3		32.9		0.47	
Urban Non-DEIS* - Urban Band 2	7.7		5.60		-5.9		21.2		0.15	
Urban Band 2* - Urban Band 1	**16.4**		5.60		2.87		30.0		0.32	
Comparisons - Understand & Recall	**Difference**		**SED**		**95% CI (BC)**				***d***	
Urban Non-DEIS* - Urban Band 1	**18.0**		2.97		10.8		25.1		0.37	
Urban Non-DEIS* - Urban Band 2	3.7		6.13		-11.1		18.6		0.08	
Urban Band 2* - Urban Band 1	14.2		6.25		-0.9		29.3		0.29	

Sixth class database. Values in italics are provided for information only (groups were excluded from tests of statistical significance due to small sample size).
Values in bold are statistically significantly different from those of the reference group*.

Table A4.3: Percentages of pupils at each proficiency level on the overall Mathematics scale, national sample and by DEIS status

Level	National sample		Urban Non-DEIS		Urban Band 1		Urban Band 2		*Rural DEIS*		*Rural Non-DEIS*	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Below Level 1	6.1	0.63	5.9	0.82	16.7	1.47	8.2	1.66	*0.8*	*0.79*	*4.3*	*1.18*
Level 1	21.1	1.58	20.2	1.45	31.9	2.11	26.4	3.03	*22.0*	*19.98*	*18.3*	*1.85*
Level 2	31.3	1.31	31.3	1.40	29.0	1.94	31.6	2.47	*37.0*	*13.74*	*30.9*	*1.99*
Level 3	27.3	1.37	27.5	1.65	17.1	2.01	22.7	3.08	*27.9*	*10.24*	*30.4*	*2.53*
Level 4	14.1	1.28	15.1	1.51	5.3	0.97	11.1	2.17	*12.2*	*10.24*	*16.2*	*2.63*

Comparisons - Below Level 1	**Difference**	**SED**	**95% CI (BC)**
Urban Band 1* - Urban Non-DEIS	**10.9**	1.69	6.8 14.9
Urban Band 2* - Urban Non-DEIS	2.3	1.86	-2.2 6.8
Urban Band 2* - Urban Band 1	**8.6**	2.30	3.0 14.1
Comparisons - Level 1	**Difference**	**SED**	**95% CI (BC)**
Urban Band 1* - Urban Non-DEIS	**11.7**	2.61	5.4 18.0
Urban Band 2* - Urban Non-DEIS	6.2	3.33	-1.9 14.2
Urban Band 2* - Urban Band 1	5.5	3.53	-3.0 14.0
Comparisons - Level 2	**Difference**	**SED**	**95% CI (BC)**
Urban Band 1* - Urban Non-DEIS	2.3	2.33	-3.4 7.9
Urban Band 2* - Urban Non-DEIS	0.3	2.73	-6.3 6.9
Urban Band 2* - Urban Band 1	2.6	2.87	-4.3 9.5
Comparisons - Level 3	**Difference**	**SED**	**95% CI (BC)**
Urban Non-DEIS* - Urban Band 1	**10.4**	2.60	4.1 16.7
Urban Non-DEIS* - Urban Band 2	4.8	3.53	-3.7 13.3
Urban Band 2* - Urban Band 1	5.6	3.74	-3.4 14.7
Comparisons - Level 4	**Difference**	**SED**	**95% CI (BC)**
Urban Non-DEIS* - Urban Band 1	**9.6**	1.83	5.4 14.3
Urban Non-DEIS* - Urban Band 2	3.9	2.72	-2.6 10.6
Urban Band 2* - Urban Band 1	6.0	2.38	0.1 11.6

Sixth class database. Values in italics are provided for information only (groups were excluded from tests of statistical significance due to small sample size).
Values in bold are statistically significantly different from those of the reference group*.

Table A4.4: Mean pupil achievement scores in mathematics by gender and DEIS status

	Girls	SE	Boys*	SE	Difference	SED	95% CI		*d*
National sample	256.8	2.21	264.6	2.20	**7.8**	2.59	2.7	12.9	0.16
By school DEIS status									
Urban Non-DEIS	258.5	3.24	266.1	3.06	**7.6**	3.70	0.3	14.9	0.15
Urban Band 1	230.3	3.42	235.9	3.76	5.6	4.82	-3.9	15.1	0.11
Urban Band 2	244.3	6.54	260.1	4.38	**15.7**	5.72	4.4	27.0	0.32
Rural DEIS	*250.5*	*10.79*	*284.9*	*7.86*					
Rural Non-DEIS	*264.4*	*4.04*	*269.0*	*3.80*					

Sixth class database.
Values in italics are provided for information only (groups were excluded from tests of statistical significance due to small sample size).
Values in bold are statistically significantly different from those of the reference group*.

Table A4.5: Mean scale scores for overall mathematics by DEIS status; comparison between 2014 and 2021

Overall mathematics	2014			2021*			2021-2014			
DEIS status	**M**	**SE**	**SD**	**M**	**SE**	**SD**	**Difference**	**SED**	**95% CI**	
Urban Non-DEIS	264.3	2.78	48.5	262.3	2.51	49.6	2.0	3.75	-5.4	9.4
Urban Band 1	232.8	3.72	44.7	233.3	2.61	49.3	0.5	4.54	-8.5	9.5
Urban Band 2	240.9	4.65	50.0	251.9	5.34	50.1	11.0	7.08	-3.0	25.0
Rural DEIS	*280.8*	*6.17*	*44.6*	*264.4*	*14.91*	*40.4*				
Rural Non-DEIS	*267.7*	*3.37*	*46.6*	*266.5*	*2.94*	*47.9*				

Sixth class database.
Values in italics are provided for information only (groups were excluded from tests of statistical significance due to small sample size).
Values in bold are statistically significantly different from those of the reference group*.

Table A4.6: Changes in the magnitude of the gap in mean mathematics scores between 2014 and 2021 by DEIS status

	Urban Non-DEIS - Urban Band 1	SED	Urban Non-DEIS - Urban Band 2	SED	Urban Band 1 - Urban Band 2	SED
NAMER '14	31.5	4.59	23.4	5.80	8.1	5.43
NAMER '21	29.0	3.62	10.4	5.90	18.6	5.93
2014 - 2021	2.5	5.85	13.0	8.27	-10.5	8.04
z	0.40		1.57		-1.32	
p	0.34		0.06		0.91	

Sixth class databases.
(Comparisons: Urban Non-DEIS vs Urban Band 1, Urban Non-DEIS vs Urban Band 2, Urban Band 1 vs Urban Band)

Table A4.7: Percentages of low achievers and high achievers in Sixth class mathematics: comparison between 2014 and 2021

Level	NAMER '14	SE	NAMER '21*	SE	Difference	SED	95% CI	
Urban Non-DEIS								
At or Below Level 1	24.1	1.86	26.1	1.74	2.0	2.55	-3.01	7.05
At or Above Level 3	43.7	2.70	42.6	2.33	1.1	3.57	-5.99	8.09
Urban Band 1								
At or Below Level 1	49.9	4.42	48.6	2.66	1.2	5.16	-8.9	11.4
At or Above Level 3	18.6	2.93	22.4	2.06	3.7	3.58	-3.3	10.8
Urban Band 2								
At or Below Level 1	41.9	5.11	34.5	4.15	7.4	6.58	-5.63	20.4
At or Above Level 3	29.6	4.69	33.4	4.43	4.3	6.45	-8.43	17.0

No statistically significant differences between 2021 and 2014.

Table A4.8: Changes in the magnitude of the gap in the percentages of low and high achievers in mathematics between 2014 and 2021 by DEIS status

	Urban Non-DEIS - Urban Band 1	SED	Urban Non-DEIS - Urban Band 2	SED	Urban Band 1 - Urban Band 2	SED
% At or Below Level 1						
NAMER '14	25.8	4.81	17.8	5.40	8.0	6.00
NAMER '21	22.5	3.19	8.4	4.48	14.1	4.84
2014 - 2021	3.3	5.77	9.4	7.02	-6.1	7.71
z	0.57		1.34		-0.79	
p	0.29		0.09		0.79	
% At or Above Level 3						
NAMER '14	25.1	3.89	14.1	5.36	11.0	4.87
NAMER '21	20.3	3.09	8.8	5.01	11.5	4.91
2014 - 2021	4.8	4.97	5.4	7.34	-0.6	6.92
z	0.97		0.73		-0.08	
p	0.17		0.23		0.53	

Sixth class databases.
Due to rounding, some values may appear inconsistent.
(Comparisons: Urban Non-DEIS vs Urban Band 1, Urban Non-DEIS vs Urban Band 2, Urban Band 1 vs Urban Band 2)

Table A4.9: Mathematics proficiency level distributions, by DEIS status: compares NAMER '14 and NAMER '21

	Urban Non-DEIS				Urban Band 1				Urban Band 2			
	2014		2021*		2014		2021*		2014		2021*	
	%	*SE*	%	*SE*	%	*SE*	%	*SE*	%	*SE*	%	*SE*
Below Level 1	5.0	0.63	5.9	0.82	11.9	2.65	16.7	1.47	12.8	2.66	8.2	1.66
Level 1	19.1	1.51	20.2	1.45	38.0	4.79	31.9	2.11	29.0	3.50	26.4	3.03
Level 2	32.2	1.71	31.3	1.40	31.5	4.09	29.0	1.94	28.5	3.26	31.6	2.47
Level 3	28.3	1.97	27.5	1.65	14.3	1.81	17.1	2.01	23.2	2.96	22.7	3.08
Level 4	15.4	1.52	15.1	1.51	4.4	1.48	5.3	0.97	6.4	1.50	11.1	2.17

Sixth class database.
No statistically significant differences between 2021 and 2014.

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