Full report

The literacy landscape in Aotearoa New Zealand

What we know, what needs fixing and what we should prioritise

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Executive summary

This paper summarises the evidence for how best to improve children and young persons' literacy development in Aotearoa New Zealand. There is an urgent need to have acceptable equity and excellence outcomes for all our students. Among 15 year-olds, literacy achievement levels have been dropping and wide disparities remain unchanged.

This report also reveals just how little evidence we have in some areas. For example, we know very little about what literacy and language activities and instruction actually occur in the everyday experiences of children and young people. We also don't know what outcomes these activities lead to.

We also need to more knowledge about how to support progress through Māori medium schools and kura kaupapa Māori, as well as the everyday experiences that would help kaiako to be even more effective. Many of the recommendations here that focus on English medium education could be extended to Māori medium schooling.

In this report, we use a life course approach to identify areas where we could increase equity and excellence. We need to consider how to optimise learning and development across all ages – rather than looking at isolated, limited or piecemeal solutions. Only changing one variable at one point is unlikely to make an overall difference. Instead, changes during sensitive periods and at transitions are needed. We can identify four sensitive periods and three transitions where specific improvements can be made backed by solid evidence. At all stages, experimental evidence suggests we can use digital tools and platforms to improve literacy.

The first is the 'emergent literacy period' before formal schooling begins at around age five. At the point of starting school, children vary markedly in their literacy and language profiles. This reflects different experiences with family/whānau and early learning services. Therefore, we recommend three high-value parenting and early learning activities to reduce inequalities and improve deliberate development of literacy and language skills. These are reading with children; telling and retelling stories; and the use of progress and quality measures in early learning services.

The first transition is to school. At this point, formal and informal assessment tools are needed. These should provide detailed profiles of new entrants' strengths and learning needs in literacy and language.

Initial differences in literacy knowledge and skills continue and may get exaggerated throughout Years 1-3. The report finds that our current three-tiered 'Response to Intervention' (RTI) model has weaknesses, especially following the second tier 'Reading Recovery' intervention. Five high-value instructional activities need to occur frequently and with precision over the Years 1-3: shared (or dialogic) reading; guided (instructional) reading with systematic phonics; shared and instructional writing; personalised high quality dialogue; and home reading and writing.

The next transition occurs around Year 4, where literacy progress typically slows. Around 8% of children in regular Year 4 classrooms are estimated to read individual words accurately but have language skills that limit their holistic reading comprehension. Differences in achievement between Māori and Pasifika students and those from low socioeconomic status (SES) communities and others are apparent and can represent one to two years of progress.

Recommended developments include screening and diagnostic tools in Year 4 to inform effective teaching and resources for learning needs.

The report finds further literacy issues between Years 4 and 8. Drops in achievement are marked in science and mathematics, perhaps due in part to an increasing need for subject-specific literacy skills. In addition, critical thinking must be developed, especially for digital and social media contexts. Across many countries, advanced forms of critical literacy are not taught well, and Aotearoa New Zealand is no different. Social and emotional skills also come to be important, especially those related to self-regulation. We recommend three high-value activities to reduce disparities and increase overall levels of achievement: critical reasoning across subjects; a high literacy 'diet'; and summer learning programmes.

A dip in achievement as students transition from primary to secondary schooling has been documented in different countries and occurs in Aotearoa New Zealand. Social and emotional skills related to wellbeing impact on the adjustment to secondary school. Activities that would make a difference to the transition and subsequent achievement in literacy include: accessible student records to support effective teaching; a combination of school-wide policies and specific teaching to promote wellbeing (on either side of the transition); and continuation of summer learning programmes.

The final period for change occurs across Years 9-11. Aspects of collaborative reasoning (argumentation) and critical literacy become even more important, in addition to developing high level subject-specific literacy skills. From Year 9 onwards, students' motivation and social and emotional skills make a major contribution to achievement. For Māori, living with whānau with strong Māori identity, language and culture enables greater achievement. Additionally, attending Māori medium schools or having teachers who are Māori increases the odds of achievement even more. High-value activities recommended include a new RTI system; research and development to determine culturally appropriate designs; and continued summer learning programmes.

Throughout the report, we identify constraints on and enablers for greater success in equity and excellence objectives. These range from the preparation of teachers through to the limited funding for research and development in educational science. Disparities in living circumstances, or structural inequalities and discrimination, also contribute to our challenges in equity and excellence. The recommendations proposed here would be more powerful if these conditions were improved.

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Introduction

The question

This analysis of literacy patterns in Aotearoa New Zealand starts with a simple question. What are the most reasonable explanations for our problems in excellence and equity in literacy? Specifically, what are the plausible hypotheses for:

(a) the overall drop in literacy achievement in successive cycles of international assessments; and
(b) the limited impact on changing the distributions of achievement for Māori and Pasifika students and those from low socioeconomic status (SES) communities?

This seemingly simple question turns out to be very difficult to answer – or at least difficult to generate reasonable hypotheses for, as distinct from explanations that are unreasonable or unable to be supported by the evidence. There are two difficulties in particular that hinder attempts to explain these patterns. One is the complexity of the phenomena and the second is the tendency to approach the evidence from one perspective or within one limited period in development. Together these mean that proposed explanations often reflect a confirmation bias or – in the familiar metaphor of the blind men and the elephant – each of us only seeing one part of the whole. By 15 years of age (when one of the international assessments occurs) there are multiple potential causes, some distal and some more proximal. In addition, different patterns for different groups might reflect different combinations of causes.

The answer

Answering the question requires a life course approach. This is because education is a comprehensive form of socialisation, in which almost all our children and young people participate, across many years of their lives. Looking at development across the years is necessary because of the complex networks of influences. Some influences are relatively constant while others come into play at different times, each one dependent on and interacting with the other. We must also consider how children's development occurs in various contexts – with some very close to learning and teaching and others more encompassing. These embedded systems of influence – from the immediate interactions between a teacher and a learner through to policies enacted by a system – require consideration, taking into account immediate causes and the wider conditions that enhance or constrain learning and development.

An example (a fictitious worst-case scenario)

An illustrative example is useful. A Pākehā boy from a low SES family might spend a few months at an early learning centre before starting at the small, local, low-decile school in a rural town. The learning centre has high turnover of staff – most of whom are not qualified – and there are few occasions to hear books being read, sing rhyming songs or tell stories and play with writing.

Sporadic employment problems coupled with housing difficulties and pressing income stresses mean the family shifts around a lot and are isolated from their wider family, and the single parent dad works more than one job when he can. The father did not have many educational opportunities as a child – such as having adults read books with him and his

siblings, or telling and retelling stories – and he doesn't engage very often in these activities with his son. The family don't have the disposable income to go on many planned trips, buy books, or have regular extra experiences. When his dad is at home and when they can, father and son often go fishing.

This boy arrives at the local school with little literacy knowledge – especially those aspects of literacy that help during the transition and in early progress. He knows few sounds in isolation and has limited awareness of the sound (phonemic) system. He is confused by the formal structure of stories and awed by the rapid progress of those around him. This child spends a year at school not making much progress in learning to read and write. After a year he still has low decoding skills (skills for identifying words) and knowledge for the alphabetic and phonemic system. His vocabulary is limited, especially of those words appearing in books, and in the words his teacher uses. He still doesn't really understand how a story works and when asked about what a character in a book might do, he becomes shy and withdrawn. He hasn't had an opportunity to recall, read or write about something he knows well: fishing. He hasn't had the chance to use event-based words such as 'sinker', 'bait', 'tide' and 'oars'; let alone express the feelings he gets of the salt and sea either orally or in writing.

School instruction proves insufficient to optimise learning. Instruction in decoding did take place, but due to staff turn-over, the instruction was variable and sporadic and not well attuned to this child's needs. The replacement teachers were not aware of his possible strengths in event knowledge. The leadership in the school and management were not able to remedy this situation because workforce planning and initial teacher education had not been able to provide the school with a tranche of well-trained teachers.

This boy receives an intervention after a year at school, which is meant to be 15-20 weeks of daily one-on-one sessions. Because of some seasonal work being available for his dad, he stays with a neighbour most days. But he sometimes stays with his dad in another town and ends up missing quite a few of the planned 20 sessions. In addition, the houses he stays at are crowded, cold and damp and he gets colds quite often. The intervention is not sufficient to build all the skills needed and identifies him as needing a specialist service. During school breaks he spends time fishing and playing with friends. He doesn't read or write.

By three of four years into school, an itinerant literacy specialist gives him the decoding skills needed. But in the meantime, the opportunities to acquire an expanding vocabulary, extensive experience with a range of books – both narrative and informational – have been drastically reduced. His comprehension strategies are weak because of this. He is given simpler texts than his peers with less complex content. The school doesn't have the resources to provide many extra hours of one-on-one tuition, and literacy is not a focus; the major professional learning thrust in the school has become the health and physical education curriculum.

This student goes to the local secondary school. This is quite disruptive. He has liked some of his primary teachers and he knew they liked him. But now different teachers teaching very hard subjects is the norm. He is not the only one struggling. There have been a number of similar students only at Level 2 of the curriculum arriving over the last few years, some of them with learning and behavioural difficulties. Based on past experiences with Year 9 cohorts, subject teachers have low expectations of progress.

For two years his English and science teachers try to make up the gaps in content knowledge and vocabulary. The school does not have resources to employ remedial teachers. In Year 10, he is still about two curriculum levels below average peers nationally. This student sits PISA (the OECD benchmark assessment) and is one of a group of students across Aotearoa New Zealand who score very low, below level 2.

Cause or causes?

What is the cause of this boy's PISA performance? The immediate difficulties in engaging with the curriculum in Years 9 and 10? The family cultural capital, which didn't include a lot of literacy practices before school? All or some of the summer breaks? The early learning centre experiences – or rather their limitations? Housing inadequacies and ear, nose and throat infections? Employment patterns? The transition to school and the inadequacies of foundational learning? The transition to more content-focused uses of literacy in the middle and upper primary years which did not accelerate skills for those areas? The transition to secondary when accelerating didn't happen? Or the instruction leading up to when our student sat PISA? Or the resources, infrastructure and system capability? These rhetorical questions signal the aim of this summary, and where to look for reasonable explanations (and solutions).

Explaining

To answer the question, we need to understand the development of literacy from before school and through schooling. We also need to understand the nature of effective instruction in the everyday world of the classroom. In addition, we need to understand the constraints and enablers for what develops and what can be effectively taught.

This evidence summary is designed to identify priorities for change that can impact on our system's excellence and equity objectives. The foci proposed here might be in business as usual, or additional to business as usual. They are linked to the longer-term outcome of raising the overall distribution of achievement in the middle secondary years and to overcoming the disparities in the distributions of Māori and Pasifika students' achievement, and for those from low SES communities. It is not an exhaustive review of the literature and prioritises the evidence for Aotearoa New Zealand in relationship to brief summaries of general international evidence.

Finally, the summaries and recommendations made here are based on a range of evidence. Where this evidence comes from relationships between aspects of learning and development over time or a single time, but do not involve an experiment, the terms 'predict', are 'related' or 'correlated' with, and sometimes 'explain' (referring to a statistical technique to show more closely what relates to what) are used. Where there is some form of experimental evidence the terms 'cause', 'explain' or 'show' (demonstrate) are used. Outcomes of equity and excellence are judged in a variety of ways. The terms are not used as mutually exclusive, an excellent system is one that is equitable. In addition, excellence is judged here in terms of our curriculum expectations as well as by benchmarking with other jurisdictions. Equity means educational success for children from those communities who traditionally have not been served well such that they achieve at levels and with the same range of success as expected of any student. The primary focus is on meeting these objectives in English medium settings, but parallels are drawn where possible to Māori medium.

The early years

General

1. The period from birth to the beginning of formal schooling is characterised as *emergent literacy*[1] – children's developing awareness, knowledge and skills relating to written language. These are often 'embedded' in familiar activities and practices – for example, recognising the first letter of a name as one's name, a scribble on a picture signifying one's name, memorising and repeating parts of a favourite storybook, or singing the alphabet.

2. Two very general areas of development[2] which are emergent are: (a) 'constrained skills' (the knowledge and awareness of the sound system and the written-symbol/alphabetic system) and (b) 'unconstrained skills' (knowledge of words, syntax and language patterns, strategies for comprehending, knowledge of texts and writing for different purposes).

3. Emergent literacy is a product of the child's capabilities to learn from incidental experience and guidance with significant others; and the opportunities and focus of the activities and practices that provide the incidental experience and guidance. Frequent of specific activities such as reading to children and having extended narrative (story) conversations have predictable positive developmental outcomes.[3]

4. Multiple sites for learning occur primarily through family and early learning centres, but also social and cultural institutions, events and resources that families have access to.

5. Children's emergent literacy will vary in many ways depending on the opportunities and foci in these sites. This means individual profiles of awareness, knowledge, and skills vary and there will be variation between children from different families / whānau and different communities.

6. Profiles vary in the degree of 'match' with, or grounding in, those aspects of literacy valued by and formally taught in schools. This is sometimes described as 'school readiness'. Children's levels of the constrained skills are predictive of early progress in learning to read and write in many English-using countries including Aotearoa

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[1] McNaughton, S. (1995). *Patterns of emergent literacy: processes of development and transition*. Auckland: Oxford University Press.

[2] Paris, S. G. (2005). Reinterpreting the development of reading skills. *Reading Research Quarterly*, 40(2), 187-202.

[3] https://www.educationcounts.govt.nz/publications/series/he-whakaaro/he-whakaaro-what-affects-how-often-mothers-read-books-to-their-pre-schoolers; Borgonovi, F. and G. Montt (2012), "Parental Involvement in Selected PISA Countries and Economies", OECD Education Working Papers, No. 73, OECD Publishing. http://dx.doi.org/10.1787/5k990rk0jsjj-en

New Zealand.[4] For example, in close to 9 out of 10 cases, the prediction of low progress over the first two years at school based on the entry level of constrained skills would be right.[5]

7. After the initial years at school, the unconstrained skills become more important as predictors of further development.[6] The size of receptive (listening) vocabulary in the first year at school predicts the levels of achievement in reading comprehension in succeeding years, even after 10 years at school.[7] Similar relationships are found for the complexity of a child's language before school and telling and retelling stories for later development.[8]

8. The relationships of literacy with language mean that oracy should be considered as part of literacy learning. To be able to read and write effectively, children must develop strong oral language skills. Different parts of language relate to development in literacy at different phases of acquisition.[9] The skills in hearing sounds and distinguishing sound units (phonological and phonemic development) are important bases for the early phases of learning to read and write. They develop in part through everyday practices, for example, those related to phonemic awareness develop through everyday songs, rhymes and word play. More complex language uses for retelling and for narrating, or for pretend or imaginative talk, also relate to early acquisition.[10] These combine to support development, shown in how

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[4] Snow, C. E., Burns, M. S., & Griffith, P. L. (1998). *Preventing Reading Difficulties in Young Children.* Washington DC: Department of Education. Clay, M. (2001). *Change over time in children's literacy development*. Portsmouth, NH: Heinemann.

[5] Juel, C., Griffith, P. L., & Gough, P. (1986). Acquisition of literacy: A longitudinal study of children in first and second grade. *Journal of Educational Psychology*, 78(4), 243-255.

[6] Whitehurst, G. J., & Lonigan, C. J. (2001). Emergent Literacy: Development from Prereaders to Readers. In S. B. Neuman & D. Dickinson (Eds.), *Handbook of Early Childhood Literacy* (pp. 11-29). New York, NY: Guilford Press. Hogden E. Competent learner@16: Competency levels and development over time-technical report. Wellington: Ministry of Education; 2007.

[7] Biemiller, A. (2006). Vocabulary development and instruction: A prerequisite for school learning. In D. K. Dickinson & S. B. Neuman (Eds.), *Handbook of Early Literacy Research* (Vol. 2, pp. 41-51). New York: Guilford Press.

[8] Dickinson, D., & Tabors, P. O. (Eds.). (2001). *Beginning literacy with language: Young children learning at home and at school. Baltimore*, MD: Brookes Publishing; Salmon, K. & Reese, E. (2016).The Benefits of Reminiscing With Young Children. *Current Directions in Psychological Science* 2016, Vol. 25(4) 233–238.

[9] Paris, S. G. (2005). Reinterpreting the development of reading skills. *Reading Research Quarterly*, 40(2), 187-202.

[10] Dickinson, D. K., McCabe, A. & Sprague, K. (2003). Teacher Rating of Oral Language and Literacy (TROLL): Individualizing Early Literacy Instruction with a Standards-Based Rating Tool. *The Reading Teacher*, Vol. 56,(6), pp. 554-564

narrative skills are crucial for later reading comprehension, in addition to the role of vocabulary.[11]

9. Understanding of writing and writing skills, as distinct from reading, develops during this time. Again, incidental experience and engagement in the activities and practices that provide the experience and guidance are influential. For example, drawing is a precursor to representing thoughts in symbols and early writing.[12]

10. Families differ in their provision of activities, practices and guidance in two major ways. (a) The consistency, variety and extensiveness of provision, which reflects variation in living conditions and economic resources. This is why indicators such as SES are predictive of development over this period. (b) The degree of focus on the awareness, skills and knowledge for readiness for school, often referred to as the 'cultural capital' a family has relating to school success.

11. These differences between families are the reason why indicators of family activities and practices such as SES and ethnicity are relatively strong predictors of what develops over the early years in English medium or 'mainstream' schooling.[13]

12. Initial overall levels of literacy on entry to school tend to persist.[14] Some data from the United States suggest they become exaggerated,[15] while other studies suggest small reductions in certain gaps are happening in early school years.[16] However, the overall trajectories in achievement for reading and writing for different SES and ethnic groups typically follow the initial differences.[17]

13. Early childhood education can make a difference to the patterns of development, as shown in specific well-controlled experimental interventions.[18] The patterns are

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[11] Salmon, K. & Reese, E. (2016).The Benefits of Reminiscing With Young Children. *Current Directions in Psychological Science* 2016, Vol. 25(4) 233–238.

[12] McNaughton, S. (1995). *Patterns of emergent literacy: processes of development and transition*. Auckland: Oxford University Press.

[13] Neuman, S. B. (2006). The knowledge gap: implications for early education. In D. K. Dickinson & S. B. Neuman (Eds.), Handbook of Early Literacy Research (Vol. 2, pp. 29-40). New York, NY: Guilford Press.

[14] McNaughton, S. (2011). Educational outcomes in adolescence for Maori and Pasifika students. In P. Gluckman. *Improving the transition: Reducing social and psychological morbidity during adolescence*. (pp 97-110). Wellington: Office of the Prime Minister's Science Advisory Committee.

[15] Alexander, K. L., Entwisle, D. R., & Olson, L. S. (2007). Lasting Consequences of the Summer Learning Gap. *American Sociological Review*, 72, 167-180.

[16] D'Agostino, J. V .& Rodgers, E. (2017). Literacy Achievement Trends at Entry to First Grade. *Educational Researcher*, Vol. 46 No. 2, pp. 78–89 DOI: 10.3102/

[17] McNaughton (2011). Op. cit.

[18] Kautz, T., Heckman, J. J. Diris, R., ter Weel, B., & Borghans, L. (2014). Fostering and measuring skills: Improving cognitive and non-cognitive skills to promote lifetime success. *OECD Education Working Papers*. Retrieved from doi.org/10.1787/5jxsr7vr78f7-en

determined by curricula and assessment practices, as well as specific activities. There are risks associated with a narrowed curriculum focus, direct training approaches and a focus on a small range of school readiness skills. Curriculum and school readiness assessments concentrated on constrained skills (e.g. phonemic awareness and alphabet knowledge) have been associated with gains in those constrained skills, but not gains in more complex (unconstrained) skills.[19] Despite direct training approaches before school being associated with increased skills, they have also been associated with drops in aspects of self-regulation.[20]

Emergent literacy in Aotearoa New Zealand

Children's profiles

Consistent with the general evidence, children in Aotearoa New Zealand vary markedly in their profiles of literacy at the point of going to school. For example, in the most recent longitudinal study (Growing Up in New Zealand – GUiNZ),[21] 4.5 year olds knew on average 8.4 letters, but they varied markedly in just how many, and 31% knew no letters. In the bottom 20% on this measure there were more boys than girls, more Māori or Pasifika children than non; and more low SES than high SES families. These differences were very large in statistical terms. Similarly, 57% could write their name (43% not). Among those not able to, there were more boys than girls, more Māori or Pasifika children than non; and more from low SES than high SES families. Almost half of the children had some understanding of, or could use, te reo Māori. Māori mothers were seven times more likely to say their child used te reo Māori every day compared with others.

Family/whānau literacy practices

 The practice of reading books to children as described by the GUiNZ study[22]is widespread over the first five years; for example, between half and two thirds of mothers (only mothers were asked) read, daily depending on the age of the child, variable at different ages of the children. ans. Fifty-eight per cent of mothers also told stories to their children several times a week or more. Mothers who read with children were also very likely to tell stories. About a third of mothers also encouraged their children to print letters and words or numbers (35%), or to read words (35%), once or several times a day. These patterns indicate we have a solid base on which to further develop valued family activities such as reading to children and narrative conversations. These practices can be further promoted in families, from different

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[19] D'Agostino, J. V .& Rodgers, E. (2017). Literacy Achievement Trends at Entry to First Grade. *Educational Researcher*, Vol. 46 No. 2, pp. 78–89 DOI: 10.3102/0013189X17697274

[20] Bassok, D. & Latham, S. (2017). Kids Today: The Rise in Children's Academic Skills at Kindergarten Entry. *Educational Researcher*, Vol. 46 No. 1, pp. 7–20 DOI: 10.3102/0013189X17694161

[21] https://www.educationcounts.govt.nz/publications/series/he-whakaaro/he-whakaaro-what-developmental-resources-do-our-pre-schoolers-have-approaching-the-transition-to-school

[22] https://www.educationcounts.govt.nz/publications/series/he-whakaaro/he-whakaaro-what-affects-how-often-mothers-read-books-to-their-pre-schoolers;

cultural groups and in different SES communities, adding to parenting practices in culturally responsive ways.[23]

Early childhood practices: guidance and teaching

There is very little representative or system level evidence for what literacy and language activities actually occur in early learning services; with what frequency, with what quality and with what outcomes. As with the international evidence base, reading to children and having extended narrative conversations have significant impacts on children's literacy and language development.[24] However, an Education Review Office (ERO) report indicates literacy practices in 2011 were variable. Reading books with children occurred with "some educators", and there were embedded incidental reading and writing activities. But there was reference to "poor practices", differences by gender and ethnicity and inappropriate use of worksheets and reliance on phonics programmes for literacy learning.[25]

Constraints and enablers of excellence and equity

Support for families/whānau

Two findings from the GUiNZ study indicate learning services can provide support for families and whānau developing reading to children. As part of a variety of support or advice systems for mothers, early childhood education services had a positive influence on reading to children at nine months. Added to this, mothers who used teacher-led, centre-based services at 54 months were more likely to read to their children frequently compared with mothers who used informal care.[26] There is potential for wider and systematic promotion of the activity through these services.

Support for early learning services

A constraint is the lack of systematic measures focused on literacy (including language) practices that would enable continuous improvement in centres and across the system. Allied to this is the lack of measures of children's learning in literacy and language that would enable the effectiveness of practices to be evaluated. Without these two resources

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[23] McNaughton, S. (1998). Why there might be several ways to read storybooks to preschoolers in Aotearoa/New Zealand: Models of tutoring and sociocultural diversity in how families read books to preschoolers. In M. Kohl de Oliviera & J. Valsiner (Eds.), *Literacy in human development* (pp. 123–144)*.* Norwood NJ: Ablex.

[24] McNaughton, S. (1995). *Patterns of emergent literacy: processes of development and transition*. Auckland: Oxford University Press; Reese, E. (2015). What good is a picture book? Developing children's oral language and literacy through shared picturebook reading. In B. Kümmerling-Meibauer, J. Meibauer, K. Nachtigäller & K. J. Rohlfing (Eds.), *Learning from picturebooks: Perspectives from child development and literacy studies*. (pp. 194-208). Hove, UK: Routledge; Salmon, K. & Reese, E. (2016).The Benefits of Reminiscing With Young Children. *Current Directions in Psychological Science* 2016, Vol. 25(4) 233–238.

[25] https://www.ero.govt.nz/assets/Uploads/Literacy-in-Early-Childhood-Services-Teaching-and-Learning-February-2011.pdf

[26] https://www.educationcounts.govt.nz/publications/series/he-whakaaro/he-whakaaro-what-affects-how-often-mothers-read-books-to-their-pre-schoolers

for educators in place, it is unlikely widespread consistent effective practices can be assured for all children. It also constrains cycles of continuous improvement and evidence based innovation.

Wider influences

The GUiNZ study identified more 'distant' enablers including mother's educational level (the higher the level the more frequent the practice such as reading to children) and associated employment status; while limited access to resources as indicated by SES and hours worked were constraints. Low levels of qualifications of early learning teachers and limited preparation have been identified internationally as constraints.[27]

Recommended high-value parenting and early learning activities

Several criteria can be specified for identifying important activities for literacy and language that should be part of everyday practices in early learning services. These are:

(a) *Breadth* – an effect on a range of areas of development versus a narrow impact;
(b) *Developmental significance* – the activity is related to and predictive of short-, medium-, and long-term developmental outcomes;
(c) *Sustainability and scalability* – known to be sustainable and able to be implemented with fidelity and low variability across sites including with digital support;
(d) *Social, cultural, and curriculum validity* – fits the goals and values of education in Aotearoa New Zealand as articulated in Te Whāriki, the New Zealand Curriculum and Te Marautanga o Aotearoa and is commensurate with Māori and Pasifika cultural values and expressions;
(e) *Low risk* – all procedures carry risks including those of opportunity costs and compliance, as well as Matthew (rich get richer) effects.

Each of these relates to what has become a guiding principle in using research evidence: knowing what works for whom, under what conditions and at scale. The following three activities which meet these criteria are not stand alone or add-ons in early learning services , they should be promoted as part of the everyday experience. The evidence is clear that they can also be promoted as everyday practices for family and whānau.

1. **Reading to/dialogic reading/shared reading** has a strong experimental and descriptive evidence base.[28] Different approaches have slightly different emphases, but reading books with children and language exchanges based on the shared reading are the core practice. The evidence is strong that these approaches produce gains in vocabulary and other oral language skills including narrative skills; across different populations; in both family and early learning sites (parents and teachers implementing); and in different languages. The frequency of use and how rich the

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[27] OECD (2017), *Starting Strong 2017: Key OECD Indicators on Early Childhood Education and Care*, OECD Publishing, Paris. *http://dx.doi.org/10.1787/9789264276116-en*

[28] Dickinson, D.K., Griffith, J. A., Golinkoff, R. M. & Hirsh-Pasek, K. (2012). How Reading Books Fosters Language Development around the World .*Child Development Research*, Volume 2012, doi:10.1155/2012/60280; Reese, E, Sparks, A. & Leyvaa, D. (2010). Review of parent interventions for preschool children's language and emergent literacy. Journal of Early Childhood Literacy, 10(1) 97–117.

language exchanges are both make a difference to outcomes. The practices can reduce disparities between groups. Text (book) selection, the language use of the parent or teacher (including their own levels of vocabulary and complex language use) become even more important as children make progress.

2. **Telling and retelling stories (reminiscing, narrative conversations)** has a strong experimental and descriptive evidence base.[29] It has been linked with all aspects of language development (including phonological development and narrative skills) and is crucial for early learning to read (e.g. decoding) and later reading (e.g. comprehension). The frequency of use and the features of the interactions make a difference to outcomes. It can reduce disparities between groups.

3. **Progress and quality measures.** As noted above, systematic measures of both progress and quality provisions are needed urgently for two related purposes, to:
   (a) enable monitoring of children's development and making changes to or add provisions when specific learning needs are indicated; and
   (b) to enable continuous improvement and evaluation of practices.

The transition to school

General

1. Age-related changes in contexts create transitions, which can impact on aspects of development, both positively and negatively.[30] Such developmental transitions, of which going to school is one, involve changes in where activities take place, with whom they occur, in how they occur, and with what foci.

2. Students moving from early learning services to school experience varying degrees of contrast between what has been common and familiar and what is now new and unfamiliar. The newness includes expectations and values, pedagogy (and the range of formal to informal instruction), curricula, the roles of the teachers, the content, and formal assessments. These changes create various levels of discordance and stress for all children, and children vary in their resilience and the ease of adjustment to the new setting.

3. Preparedness for school is in part dependent on the level of skill and knowledge in school-related literacy and language skills children have on entry, and the match between familiar literacy and language practices before school and those at

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[29] Dickinson, D. K., McCabe, A. & Sprague, K. (2003). Teacher Rating of Oral Language and Literacy (TROLL): Individualizing Early Literacy Instruction with a Standards-Based Rating Tool. *The Reading Teacher*, Vol. 56,(6), pp. 554-564; Salmon, K. & Reese, E. (2016).The Benefits of Reminiscing With Young Children. *Current Directions in Psychological Science* 2016, Vol. 25(4) 233–238.

[30] Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA.: Harvard University Press.

school.[31] The greater the levels and the closer the match, the less the disruption and the greater the receptiveness to learning and teaching at school.[32]

4. Preparedness for school also includes aspects of social and emotional wellbeing. Studies over various transitions show those children with higher levels of interpersonal skills (e.g. prosocial) and intrapersonal skills (e.g. self-regulation) are more resilient and able to adjust more easily.[33] But these skills are context specific. The more the contexts are similar and the more that there is guidance for those skills to be applied across contexts, the greater the resilience and the better the adjustment across the transition.

5. Teachers' preparedness to engage with new entrants is a significant component of managing the transition. This means having the knowledge, skills and strategies to identify and understand key features of individual children's skills and knowledge from their contexts prior to school. The preparedness has been labelled 'diversity awareness'.[34]

The transition to school in Aotearoa New Zealand

The following section on Years 1-3 focuses on instruction for reading and writing and targeted responses to needs. In this section on the transition itself, the focus is on what is known about the practices for promoting preparedness and the interconnections between home, early learning services and schools.

Children's learning

1. Literacy knowledge and skills vary greatly on entry to school. Representative data[35] from the first three weeks show new entrants know many letters of the alphabet (17 letters); can write some words (two words); knew 10 of the concepts about written language (such as the front of the book); and have some phonemic awareness. They generally cannot recognise individual words. However, children differ greatly (e.g. some are able to write 0 words and some 24 words in 10 minutes), and there is substantial variation within individual children's profiles (e.g. may know a lot of

[31] Siraj I., Kingston, D., Neilsen-Hewett, C., Howard S., Melhuish E., de Rosnay, M., Duursma, E. & Luu, B. (2017). A review of the current international evidence considering quality in early childhood education and care programmes – in delivery, pedagogy and child outcomes. Fostering Effective Early Learning Study. Early Start Research Institute, University of Wollongong. NSW Government.

[32] McNaughton, S. (1995). *Patterns of emergent literacy: processes of development and transition*. Auckland: Oxford University Press.

[33] Pan, Q., Trang, K. T., Love, H. R. & Templin, J. (2019). School Readiness Profiles and Growth in Academic Achievement November. *Frontiers in Education*. 2019), 4 | Article 127 https://doi.org/10.3389/feduc.2019.00127

[34] McNaughton, S. (2002). *Meeting of Minds*. Wellington, NZ: Learning Media.

[35] Berg, M. & Lawes, E. (2018). *Norms for New Zealand students in two age groups for the Observation Survey*. Wellington: New Zealand Council for Educational Research

letters but no words). Little is known about profiles in Te Reo Māori for new entrants in Māori Medium schools, but the same variability is likely.[36]

2. Oral language skills also vary greatly. In 2016, almost half of the principals surveyed for the Progress in International Reading Literacy Study (PIRLS, 44%) judged that less than 25% of their students entered school with needed early literacy skills (letter knowledge, read or write some words, read sentences, read a story).This was below the average across countries. Judgements about the percentages of children on entry with good oral language skills (can use age appropriate vocabulary, retell or tell a story) were strongly related to achievement at 10 years old.[37] Similarly, little is known about profiles in Te Reo Māori for new entrants in Māori Medium schools, but again, the same variability is likely.[38]

Continuity across settings in Aotearoa New Zealand

1. **Professional collaboration.** The advice in curriculum guidelines is for close interaction including sharing of information about new entrants between professionals in early learning centres and schools.[39] There is no systematic national evidence of current practices. In one survey from 2003[40] around three quarters of the professionals in either setting had visited the other setting, but fewer than half the schools arranged familiarity visits for children. Very few schools received assessment or descriptive information on children, and teachers had insufficient skills and knowledge to help children.

2. **Supports for interpersonal and intrapersonal skills: before school.** There is limited evidence for how well children are prepared in social and personal skills. The Education Review Office reports just over half of the 374 early learning services they reviewed were implementing a curriculum that supported the development of these skills to optimise the transition.[41] About 90% of mothers in the GUiNZ study reported being positive or not worried about their 4.5 year olds' social and

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[36] C. Rau (Ed.), (1998). *He matai ata titiro ki te tutukitanga matatupu panui, tuhi. The Māori reconstruction of the observation survey of early literacy achievement.* Ngaruawahia, New Zealand: Kia Ata Mai Educational Trust.

[37] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0006/194730/PIRLS-2016-Schools-and-schools-climate-final04.pdf

[38] C. Rau (Ed.), (1998). *He matai ata titiro ki te tutukitanga matatupu panui, tuhi. The Māori reconstruction of the observation survey of early literacy achievement.* Ngaruawahia, New Zealand: Kia Ata Mai Educational Trust.

[39] New Zealand Ministry of Education (2007). *The New Zealand Curriculum*. Wellington: Learning Media Limited.

[40] Timperley, H. S., McNaughton, S., & Howie, L. (2003). Transitioning children from early childhood education to school: Teachers' beliefs and practices. *Australian Journal of Early Childhood*, *28*(2)*,* 32–38.

[41] https://www.ero.govt.nz/publications/continuity-of-learning-transitions-from-early-childhood-services-to-schools/

emotional skills for school and the ratings of children mirrored this. However, mothers had relatively high levels of concern for levels of hyperactivity and peer relationships (around 25% had concerns), most notable for boys, and mothers in low SES communities and with Māori and Pasifika children. The patterns are supported by Ministry of Health data drawing on the B4School Check for four year olds.[42]

3. **Supports for literacy and language**. Systematic evidence for how well children are prepared in literacy and language for school is limited. The Education Review Office[43] reporting on 353 services of various types, noted that "many services, mostly kindergartens" had transition programmes for older four-year-olds, but refer to considerable variability in coverage, frequency and personalisation. In a "few" centres educators lacked understanding of the literacy skills and their development sufficient to prepare children, relying on worksheets and commercial phonics programmes.

4. **Teacher assessment**. Currently, teachers' use of school entry assessments is variable, and a variety of assessment tools are used covering different aspects of language and literacy.[44] More incidental forms of assessment are used, with unknown consistency. Experimental data show teachers can use every day instructional activities such as the language exchanges when helping children to write about their shared experiences, or guided (instructional) reading as assessment activities to profile the knowledge and skills of new entrants.[45] This approach can increase the effectiveness of standard reading and writing activities and accelerate Māori and Pasifika new entrants progress over the first year of school, substantially reducing the risk of not being at expected levels, across a broad range of literacy measures. It is not known what assessments might be used for social and emotional skills that support the transition; or whether health assessments such as the B4School check are accessed by primary teachers.[46]

Constraints and enablers of equity and excellence

1. **Teaching capabilities**. The capability of the workforce is a major determinant of educational objectives including those for promoting equity. The beginning of school is the point where targeted early intervention for school learning is possible and for

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[42] https://www.health.govt.nz/publication/social-emotional-and-behavioural-difficulties-new-zealand-children-new-zealand-health-survey

[43] www.ero.govt.nz/assets/Uploads/Literacy-in-Early-Childhood-Services-Teaching-and-Learning-February-2011.pdf

[44] Cameron, T. A., Carroll, J. L. D., Taumoepeau, M. & Schaughency, E. (2019). How Do New Zealand Teachers Assess Children's Oral Language and Literacy Skills at School Entry? *New Zealand Journal of Educational Studies* (2019) 54:69–97. https://doi.org/10.1007/s40841-019-00133-4

[45] Phillips, G., McNaughton S., & MacDonald, S. (2004). Managing the mismatch: Enhancing early literacy progress for children with diverse language and cultural identities in mainstream urban schools in New Zealand. *Journal of Educational Psychology, 96*(2), 309–323.

[46]https://www.hpa.org.nz/sites/default/files/before_school_checks_consumer_research_report_-_final.pdf

prevention of longer term low or inequitable progress.[47] An effective teacher of children beginning school requires both general and specific forms of expertise to do this. There is limited evidence for how well initial teacher education or ongoing professional learning promotes that expertise. Research into the specialist skills needed is required.

2. **Pathways**. Sharing knowledge about expectations and information about children, learning and development, and teaching, enhances familiarity.[48] This in turn increases the capability of teachers and parents/caregivers to support children over the transition. Children arriving at school likely will come from a range of early learning services and communities. This means the connections for sharing need to be deliberately designed and maintained, byprofessionals both sides of the transition. It appears that effective connections are variable nationally and need to be of greater quality and consistency. It is possible that the relatively new Kāhui Ako organisation could facilitate these. Principals of primary schools have been expecting that[49] and the Early Learning 10-year Strategic Plan identifies this as a vision; currently a third of early learning services are part of a Kāhui Ako.[50]

Recommended high-value instructional activities

1. **Assessment tools and practices.** Well-designed progress tools used nationally in early learning services would contribute greatly to teachers becoming familiar with their new entrants. In addition, teachers need in-depth knowledge of two sorts to better match instruction to new entrants' profiles: (a) Literacy and language profiles as they relate to learning to read and write at school; and (b) other forms of literacy and language that children might have that reflect their cultural and social practices.

   This knowledge can be gained through formal and informal processes. These capabilities are likely needed to support tamariki Māori medium as much as in English medium.

   (a) A nationally consistent formal School Entry Assessment tool is needed which provides appropriate language and literacy profiles.[51] This would be a more up-to-date tool than currently available, with limited compliance costs, able

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[47] Shonkoff, J. P. & Fisher, P. A. (2013). Rethinking evidence-based practice and two-generation programs to create the future of early childhood policy. *Development and Psychopathology* 25, 1635–1653

[48] Timperley, H. S., McNaughton, S., & Howie, L. (2003). Transitioning children from early childhood education to school: Teachers' beliefs and practices. *Australian Journal of Early Childhood*, *28*(2)*,* 32–38.

[49] https://www.nzcer.org.nz/system/files/NZCER%20COL%20Report%20final.pdf

[50] Ministry of Education, He Taonga te Tamiati Every Child a Taonga: Early Learning Action Plan 2019-2029.New Zealand, December 2019

[51] Cameron, T. A., Carroll, J. L. D., Taumoepeau, M. & Schaughency, E. (2019). How Do New Zealand Teachers Assess Children's Oral Language and Literacy Skills at School Entry? *New Zealand Journal of Educational Studies* (2019) 54:69–97. https://doi.org/10.1007/s40841-019-00133-4

to become business as usual, and which demonstrably provides usable data for formative teaching relevant for our schools.

(b) Specialist skills are needed to systematically use standard instructional activities such as guided reading for informal assessment and ongoing classroom discourse (elaborated language exchanges which include needed technical and complex words). Teachers also need professional development about how to use both formal and incidentally gained assessment information to inform instruction.

2. **Preparation in early learning services**. As noted earlier, systematic frequent use of high-value activities such as reading to children and telling and retelling stories would help prepare children in early learning services and in families/whānau.

Years 1-3

General

1. As noted in previous sections, learning to read and write depend on learning two general sets of skills and knowledge. This is why levels of complex language skills before school – such as knowledge of how stories (narrative text) work and vocabulary – are related to later development in comprehension. Similarly, this is why high levels of decoding skills and knowledge determine progress in reading over the first years of schooling.

2. As noted earlier, initial differences in literacy knowledge and skills related to learning at school tend to determine subsequent rates of acquisition, and different trajectories tend to emerge over the first few weeks at school. In order to prevent pathways being relatively fixed and to reduce disparities, universal provision needs to be able to differentiate sufficiently to add the new skills and knowledge for those who need it and to rapidly accelerate their rate of learning.

3. Early progress is causally dependent on decoding skills. This means the building blocks of decoding such as phonemic awareness need to be taught well and learned early and fast.

4. Systematic phonics instruction is needed for some readers – in addition to what is often business-as-usual (i.e. where there is non-systematic or embedded phonics within a multicomponent programme that includes an extensive focus on oral reading, writing and oral language). The evidence doesn't identify a phonics approach that is 'best', rather, it supports being systematic.[52]

5. Systematic phonics instruction added to general classroom programmes has short-term detectable effects for some students and on some outcomes – notably those close to what has been trained (e.g. measures of phonemic and phonological knowledge and decoding made up 'nonsense' words). Adding such programmes

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[52] Torgerson, C., Brooks, G., Gascoine, L., & Higgins, S.(2019) Phonics: reading policy and the evidence of effectiveness from a systematic 'tertiary' review, *Research Papers in Education*, 34:2, 208-238, DOI: 10.1080/02671522.2017.1420816

does not necessarily result in longer-term gains in complex language skills and comprehension.

6. After proficiency is reached, the causal relationships between the constrained skills and knowledge (e.g. phonemic awareness and phonological knowledge) and further progress are attenuated. They are necessary but not sufficient for further progress. Conversely, after the initial years at school, the unconstrained skills become even more important as predictors of further development.[53] For example, the size of receptive vocabulary in the first year at school predicts reading comprehension in succeeding years, even after 10 years at school.[54] Similarly, oral skills are increasingly related to higher level comprehension from Year 3 onwards.[55] The relationships are strong for telling and retelling stories.[56]

7. This evidence for complex language skills means development in oral language skills should also be a major focus for instruction in a universal multicomponent programme over the first years.

8. Simple descriptors of approaches – such as the binary of 'phonics' versus 'whole language' – do not adequately describe instruction that actually takes place in the classroom, nor what should take place. This limits judgements about what makes a difference. Most programmes use several components but with a particular core focus in the early years.[57] Most children make progress despite differences in that core focus. What differentiates universal programmes is how well the programme promotes both short-term acquisition as well as longer-term development in the more complex aspects of literacy, and whether the instruction is differentiated enough to reduce the initial disparities without compromising the longer-term development needs.

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[53] Whitehurst, G. J., & Lonigan, C. J. (2001). Emergent Literacy: Development from Prereaders to Readers. In S. B. Neuman & D. Dickinson (Eds.), *Handbook of Early Childhood Literacy* (pp. 11-29). New York, NY: Guilford Press. Hogden E. Competent learner@16: Competency levels and development over time-technical report. Wellington: Ministry of Education; 2007.

[54] Biemiller, A. (2006). Vocabulary development and instruction: A prerequisite for school learning. In D. K. Dickinson & S. B. Neuman (Eds.), *Handbook of Early Literacy Research* (Vol. 2, pp. 41-51). New York: Guilford Press.

[55] Schaughency, E., Suggate, S. & Reese, E. (2017) Links between early oral narrative and decoding skills and later reading in a New Zealand sample, *Australian Journal of Learning Difficulties*, 22:2, 109-132, DOI: 10.1080/19404158.2017.1399914

[56] Dickinson, D., & Tabors, P. O. (Eds.). (2001). *Beginning literacy with language: Young children learning at home and at school. Baltimore*, MD: Brookes Publishing; Salmon, K. & Reese, E. (2016).The Benefits of Reminiscing With Young Children. *Current Directions in Psychological Science* 2016, Vol. 25(4) 233–238.

[57] Bowers, J.S. (2020). Reconsidering the Evidence That Systematic Phonics Is More Effective Than Alternative Methods of Reading Instruction. *Educational Psychology Review* (2020). https://doi.org/10.1007/s10648-019-09515-y; Torgerson, C., Brooks, G., Gascoine, L., & Higgins, S.(2019) Phonics: reading policy and the evidence of effectiveness from a systematic 'tertiary' review, *Research Papers in Education*, 34:2, 208-238, DOI: 10.1080/02671522.2017.1420816

9. An example is a comparison of two highly specified and standardised programmes implemented at scale.[58] One focused more on direct instruction of decoding (but also had some daily comprehension lessons). It rapidly and successfully reduced disparities in decoding but was not associated with longer-term gains in comprehension. A more 'literature-based' programme focused more on comprehension and complex writing across genres in the early stages showed fewer marked gains initially, but was more successful in the later grades at reducing disparities in comprehension. These programmes differed in other ways, such as the degree to which the instructional patterns were determined by 'procedural controls' (leadership focused on high prescription) or 'professional controls' (leadership via coaches and facilitators supporting teachers). Both of these programmes were markedly superior to a low prescription programme in which teachers developed their own instructional foci for 'powerful learning' of literacy.

10. Higher-level descriptions of effective teaching (not specific to early literacy) include well specified curricula and a classroom culture focused on collective success, with deliberate acts of teaching (both guided and independent practice).[59] More specifically, classroom programmes that involve well-designed pedagogical approaches (such as cooperative learning) in everyday instruction are more effective than relying on only curriculum materials or technology.[60]

11. There is, by comparison, much less research on writing than reading. There is also less instructional focus on writing in classrooms compared with reading.[61] Effective specific instruction increases writing production and directly teaches skills, processes and strategies.[62] Reading has been emphasised as the vehicle for systematic phonics instruction, but writing can be very effective too, by systematically adding 'analytic'

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[58] Rowan, B., Correnti, R., Miller, R., & Camburn, E. M. (2009). School improvement by design: Lessons from a study of comprehensive school reform programs. In G. Sykes, B. L. Schnieder & D. N. Plank (Eds.), *Handbook of education policy research* (pp. 637-651). Washington, DC: American Educational Research Association, Routledge.

[59] Hattie, J. (2009). *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement*. London, UK: Routledge. Slavin, R. E., Lake, C., Chambers, B., Cheung, A. & Davis, S. (2009). Effective Reading Programs for the Elementary Grades: A Best-Evidence Synthesis 79(4) 1391-1466.

[60] Robert E. Slavin, R. E., Lake, C., Chambers, B., Alan Cheung, A., Davis, S. (2009). *Success for All Foundation* Effective Reading Programs for the Elementary Grades: A Best-Evidence Synthesis *Review of Educational Research*, 79(4), 1391–1466. DOI: 10.3102/0034654309341374

[61] Graham, S., McKeown, D., Kiuhara, S., & Harris, K. R. (2012). A meta-analysis of writing instruction for students in the elementary grades. *Journal of Educational Psychology*, 104(4), 879-896. http://dx.doi.org/10.1037/a0029185

[62] Graham, S., & Harris, K. R. (2018). Evidence-based writing practices: A meta-analysis of existing meta-analyses. In M. Braaksma, K. R. Harris, & R. Fidalgo (Eds.), *Design Principles for Teaching Effective Writing: Theoretical and Empirical Grounded Principles* (pp. 13-37). (Studies in Writing; Vol. 34). Brill Academic Publishers. https://doi.org/10.1163/9789004270480_003

phonics to 'synthetic' phonics instruction. Writing also enhances fluency and spelling.[63]

12. Research has identified bidirectional effects of effective reading and writing interventions, where progress in both is mutually beneficial.[64] In addition, balanced literacy programmes (no more than 60% of instructional time spent on either reading or writing) are associated with higher gains in both reading and writing than control conditions that are not balanced.[65] This leads to the conclusion that beginning literacy acquisition is enhanced if there is concurrent and connected instruction in both reading and writing.

13. There are potential opportunity costs and Matthew effects ('rich get richer' effects) if there is reliance on a predominating focus – be that phonics or language – and if instruction is not well differentiated, integrated and balanced across a range of developmental needs.[66]

14. Volume of text reading across a wide 'diet' of types of texts is influential for fluency, accuracy and comprehension. However, the practice of unstructured and independent reading as a part of classroom instruction in the early years, is not related to achievement gains.[67]

15. Intervention for problematic development in literacy in the early years is a feature of all developed educational systems. Three-tiered 'Response to Intervention' (RTI) models are considered the most effective system design.[68] The tiers are: (1) universal provision, followed by (2) early intervention to recover learners from low

[63] Fitzgerald, J. & Shanahan, T. (2000) Reading and Writing Relations and Their Development, *Educational Psychologist*, 35:1, 39-50, DOI: 10.1207/S15326985EP3501_5

[64] Graham, S. & Herbert, M. (2011). Writing-to-read: a meta-analysis of writing and writing instruction on reading. *Harvard Educational Review*, 81, 710-724; Graham, S., Liu, X., Bartlett, B., Ng, C., Harris, K. R., Aitken, A., Barkel, A., Kavanaugh, C. & Talukdar, J. (2018). Reading for writing: a meta-analysis of the impact of reading interventions on writing. *Review of Educational Research*, 88(2), 243-284.

[65] Graham, S., Liu, X., Aitken, A., Ng, C., Bartlett, B., Harris, K. R., Holzapfel, A. (2019). Effectiveness of Literacy Programs Balancing Reading and Writing Instruction: A Meta-Analysis. *Reading Research Quarterly*, 53(3), 279–304. doi:10.1002/rrq.194

[66] McNaughton, S. (2018). *Instructional Risk in Education: Why Instruction Can Fail*. New York NY: Routledge.

[67] Allington, R. L. (2014). How Reading Volume Affects both Reading Fluency and Reading Achievement. *International Electronic Journal of Elementary Education*, 2014, 7(1), 13-26.; Heibert, E. H. (2017). The Texts of Literacy Instruction: Obstacles to or Opportunities for Educational Equity? *Literacy Research: Theory, Method, and Practice*, Vol. 66, 117-134.

[68] Johnston, P. H. (Ed.),(2010). *RTI in literacy – responsive and comprehensive*. Newark, DE: International Reading Association. Jeanne Wanzek, Sharon Vaughn, Scammacca, N., Gatlin, B., Walker, M. A. & P. (2016). Meta-Analyses of the Effects of Tier 2 Type Reading Interventions in Grades K-3 *Educational Psychology Review*. 2016 Sep; 28(3): 551–576.

problematic progress, which in the process identifies those needing more targeted clinical interventions, who then (3) receive intensive personalised interventions.

16. The effectiveness of an RTI system depends on a number of moving parts. Overall, a defining feature is coherence among the various moving parts. The parts include: well-functioning high-quality universal provision with early and ongoing assessments for differentiation; effective and reliable screening and diagnostics for problematic development (i.e. where there are 'false positive' or 'false negative' errors); high treatment integrity for effective intervention programmes; rigorous assessments of progress and criteria for success for tier 2 – which identifies the hardest to teach, those needing tier 3; even more detailed diagnostics following their identification which leads directly to individualised treatment programmes with meaningful success criteria. Recent research suggests RTIs for early literacy are more effective if they are flexible in terms of timing and access to each of the tiers.[69]

17. Parental/caregiver/whānau involvement is influential. Programmes that promote specific involvement activities add value to both shorter- and longer-term learning outcomes at school. The process of learning to read can be enhanced when children take home books from school, and parents listen to them practising. But for the full beneficial effect, family/whānau should receive guidance from schools and books must be carefully selected.[70] Similarly, the provision of suitable books for children to read over summer alongside guidance for family/whānau members to support and interact with them, produces achievement gains in literacy over summer.[71]

Learning to read and write: Years 1-3 in Aotearoa New Zealand (universal provision)

1. Consistent with the general evidence, children rapidly acquire the constrained skills, approaching ceilings after one year.[72] Six-year-olds can on average identify 52 letters out of 54 letters; can isolate 35 sounds in a test of 50 sounds; and know 16 out of 24 concepts about print. The more open-ended skills develop too: they can write 27 words in 10 minutes; recognise 11 words out of 15 words from a text list and 17 words on a standardised international test. In addition, progress through multiple semi-graded reading levels takes place, to level seven. However, this latter achievement is below the expected level, which is set at between 11 and 13. What were quite variable profiles on entry (a child could be high in letter knowledge but know few concepts about print), are reduced as components in our multicomponent programme tend to be acquired together. However, the variation remains

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[69]Stephanie Al Otaiba, Carol M. Connor, Jessica S. Folsom, Jeanne Wanzek, Luana Greulich, Christopher Schatschneider and Richard K. Wagner (2014). To Wait in Tier 1 or Intervene Immediately: A Randomized Experiment Examining First-Grade Response to Intervention in Reading. Exceptional Children 2014, Vol. 81(1), 11– 27, DOI: 10.1177/0014402914532234

[70] McNaughton, S., Parr, J., Timperley, H., & Robinson, V. (1992). Beginning reading and sending books home to read: A case for some fine tuning. *Educational Psychology, 12*(3 & 4), 239–247.

[71] Kim, J. S., & Quinn, D. M. (2013). The effects of summer reading on low-income children's literacy achievement from kindergarten to grade 8 a meta-analysis of classroom and home interventions. *Review of Educational Research, 83*(3), 386–431. https://doi.org/10.3102/0034654313483906.

[72] Berg, & Lawes, E. (2018).op.cit.

considerable for the more open-ended measures and especially for progress through the reading levels (at six years, 10% of children are not yet started on the very beginning level of the reading series).

2. In the second year, gains are made in word knowledge, most of the common text-related sight words are acquired and many more words can be written (43 words in 10 minutes). It is not known what the progress in text levels is in the second year.

3. It is a fair assumption that the patterns of difference established in Years 1 and 2 tend to persist in Year 3. They are readily apparent in Year 4 as is shown in the evidence described in the next section remain relatively stable over the next four years, because, on average, groups tend to make similar rates of progress year-on-year.[73] National data on writing show low levels against expectations at Year 1. From 2013 to 2016, year-on-year writing progress dropped after the first year.[74]

Instructional practices: Years 1-3 in Aotearoa New Zealand (universal provision)

1. As noted above, descriptions of programmes in simple binary terms are not only unhelpful, they are misleading. For example, despite claims that our teachers teach using a 'whole language' approach and hence don't teach phonics, studies over 15 years have consistently shown otherwise.[75] In the most recent surveys, 90% of teachers report teaching phonics, most through explicit instruction, two thirds on a daily basis, although with variable knowledge; and 75% deliberately assess for some components of 'phonics' on entry to school.

2. The best overall summary is that the current programme in Years 1-3 is 'balanced' in terms of reading and writing. It has a meaningful text and language base, as shown by the continued use of the 'Ready to Read' series and the School Journals. It uses a range of ways to teach phonics, which are unlikely to be systematic. Peer collaboration is generally a strong feature. Seven core approaches for reading are used (including guided reading, and shared reading) plus independent and literature-based reading. Five core writing approaches (including instructional or guided writing and independent writing) are used.

3. An estimate made 10 years ago suggests that around 60% of schools allocate 3-6 hours a week for reading instruction (less than a quarter of schools allocate >6

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[73] https://www.educationcounts.govt.nz/publications/series/he-whakaaro/understanding-student-attainment-and-progress

[74] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0019/185023/20171213-Achievement-and-Progress-in-mathematics-reading-and-writing.pdf

[75] Cameron, T. A., Carroll, J. L. D., Taumoepeau, M. & Schaughency, E. (2019). How Do New Zealand Teachers Assess Children's Oral Language and Literacy Skills at School Entry? *New Zealand Journal of Educational Studies* (2019) 54:69–97. https://doi.org/10.1007/s40841-019-00133-4. Chapman, J. W., Greaney, K. T., Arrow A. W. & Tunmer, W. E. (2018) Teachers' use of phonics, knowledge of language constructs, and preferred word identification prompts in relation to beginning readers , *Australian Journal of Learning Difficulties*, 23:1, 87-104, DOI: 10.1080/19404158.2018.1467937. Parr, J., Aikman, M., Earl Irving, E., & Glasswell, K. (2004). An evaluation of the use and integration of readymade commercial literacy packages into classroom programmes. Ministry of Education.

hours), and 70% of schools allocate 3-6 hours to writing a week (around 10% of schools allocate >6 hours). It is unclear if the same schools reported balanced hours, but it is likely. Overall, we evaluate the quality and range of instructional approaches for reading and writing as varied, with between quarter and a third of schools partially using or not using the core approaches.[76]

4. Guided reading instruction augmented with phonics (systematic, non-systematic or embedded). Guided reading is used by most teachers in Year 1-2, often with ability groups.[77] There is no systematic evidence at a national level about how well this is implemented. Research suggests that the embedded instructional prompts typically used may not be as effective as they should be for word knowledge, word solving and phonemic awareness, and carry a risk of promoting guessing rather than accurate decoding.[78] Also, teacher knowledge of instruction for phonics integrated into guided reading may be limited. Comparing teacher responses in 2004 with those from 2018 it is likely that teaching of phonics and the use of commercial programmes has increased (in 2018, 51 different programmes were reported being used).[79] Evidence is not available to know how best to integrate phonics teaching (embedded and systematic) with guided reading, but individual studies provide examples. One which accelerated progress for Year 1 Māori and Pasifika students at urban decile one schools augmented instructional reading with systematic 'word work' focused on phonological and alphabetic knowledge and phonemic awareness relating to words in texts.[80] There are risks with ability groupings to do with expectation and Matthew effects.[81] Other known risks are the compartmentalising of instruction which limits further progress. For example, transfer of phonics skills into text reading is greater when the training is closer to actual reading of connected text so extended time on work sheets is problematic.[82]

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[76] https://www.ero.govt.nz/assets/Uploads/readingwriting-y12-dec09.pdf

[77] https://www.ero.govt.nz/assets/Uploads/readingwriting-y12-dec09.pdf

[78] Chapman, J. W., Greaney, K. T., Arrow A. W. & Tunmer, W. E. (2018) Teachers' use of phonics, knowledge of language constructs, and preferred word identification prompts in relation to beginning readers , *Australian Journal of Learning Difficulties*, 23:1, 87-104. DOI: 10.1080/19404158.2018.1467937.

[79] Cameron et. al. 2019; Chapman et. al. (2018); Parr et. al. (200$) op. cit.

[80] Phillips, G., McNaughton S., & MacDonald, S. (2004). Managing the mismatch: Enhancing early literacy progress for children with diverse language and cultural identities in mainstream urban schools in New Zealand. *Journal of Educational Psychology, 96*(2), 309–323.

[81] McNaughton, S. (2018).op. cit.; Rubie-Davies, C. M., Robert Rosenthal, R. (2016). Intervening in teachers' expectations: A random effects meta-analytic approach to examining the effectiveness of an intervention. *Learning and Individual Differences*. 50, 83–92.

[82] Swanson, H., Trainin, G., Necoechea, D. M. & Hammill. D. D. (2003). Rapid naming, phonological awareness, and reading: A meta-analysis of the correlation evidence. *Review of Educational Research*, 73(4) 407–440.

5. **Shared/dialogic reading**. Shared reading is a common practice in schools.[83] There is no systematic evidence at a national level about how well this is implemented at scale. Local studies support what is known generally about impacts on vocabulary learning, complex language skills and comprehension.

6. **Shared language with instructional writing**. Some form of guided writing instruction is a common practice in schools[84] but there is no systematic evidence at a national level about how well this is implemented at scale. More specific local studies support what is known generally about impact. For example, an intervention which accelerated progress for Year 1 Māori and Pasifika students at urban decile one schools redesigned the existing writing practices using language generated in shared events in small-group scaffolded instruction for writing narratives, three or more times a week.[85]

7. **Conferencing, personalised dialogic interactions**. Personalised exchanges between teacher and student are a common practice in schools, often taking place within the instructional approaches, such as shared reading, or when there is project work. But there is no systematic evidence at a national level about how well this is implemented at scale. More specific local studies support what is known generally about impact, most recently in studies with Year 4 and older students in one-on-one digital classrooms.

8. **Guided home reading and writing activities**. Sending books home to read has been a common practice in most primary schools for more than 50 years.[86] Schools vary in the guidance given to family members but formal programmes which can be adjusted for very early and later reading levels are used by a number of schools.[87] It is not known what programmes or local alternatives are used nationally and to what effect at a system level.

9. **Māori medium**. Some combinations of each of these approaches may be found in Māori medium contexts.[88] In addition, specific tutoring programmes have been tested. For example, a Best Evidence Synthesis (BES) shows promising effects for audio-assisted reading to support students' literacy in Te Reo Māori. The intervention involves students listening to recorded Te Reo Māori as they read

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[83] https://www.ero.govt.nz/assets/Uploads/readingwriting-y12-dec09.pdf

[84] https://www.ero.govt.nz/assets/Uploads/readingwriting-y12-dec09.pdf

[85] Phillips, G., McNaughton S., & MacDonald, S. (2004). Managing the mismatch: Enhancing early literacy progress for children with diverse language and cultural identities in mainstream urban schools in New Zealand. *Journal of Educational Psychology, 96*(2), 309–323.

[86] McNaughton, S., Parr, J., Timperley, H., & Robinson, V. (1992). Beginning reading and sending books home to read: A case for some fine tuning. *Educational Psychology, 12*(3 & 4), 239–247.

[87] Examples include *Pause, Prompt and praise / Tatari, Tautoko, Tauawhi and Reading Together.*

[88] C. Rau (Ed.), (1998). *He matai ata titiro ki te tutukitanga matatupu panui, tuhi. The Māori reconstruction of the observation survey of early literacy achievement.* Ngaruawahia, New Zealand: Kia Ata Mai Educational Trust.

accompanying text. It has been used to rapidly accelerate progress through reading levels (impacting specifically on accuracy and fluency).[89]

Response to Intervention: Years 1-3 in Aotearoa New Zealand

1. Reading Recovery is used in 55% of primary schools, making it available to 63% of six-year-olds. It is a tier 2 intervention involving one-on-one tutoring, four times a week for 15-20 weeks. The international evidence includes a recent large-scale randomised control trial (RCT, the most rigorous of experimental designs) which shows moderate to large effects across a broad range of literacy outcomes, but found issues with variability across sites.[90]

2. In Aotearoa New Zealand, Reading Recovery typically 'recovers' around 80-85% of targeted children back to average classroom levels, and identifies 15-20% of children as needing tier 3 interventions.

3. A recent system-level evaluation indicates that Reading Recovery has a positive effect for selected children that can be detected over some years at primary school. It also indicates that dosage (the number of lesson received) matters, and it appears to be more effective than alternative literacy programmes.[91] The evaluation identified issues in coverage, capacity and coherence within and across schools.

4. Tier 3 provisions do not meet criteria for RTI effectiveness. Two studies conducted 20 years apart show that the service delivery for children identified by Reading Recovery (tier 2) as having more severe difficulties does not function well and continues not to function well. This judgement arose from inconsistent, overlapping or minimal service delivery for those identified as needing tier 3 interventions.[92] Agency evaluations indicate problems with the available capability and capacity (e.g. around 100 resource teachers of literacy and 1000 resource teachers of learning and behaviour). There are also problems with coherence across tiers 1-3 within and across schools and clusters, with measurement and evaluation limitations, and with

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[89] Ripene Āwhina ki te Pānui Pukapuka (RĀPP)
https://www.educationcounts.govt.nz/__data/assets/pdf_file/0010/107110/BES-Exemplar2.pdf

[90] May, H., Sirinides, P. M., Gray, A. M. & Goldsworthy, H. (2016). *Reading Recovery: An Evaluation of the Four-Year i3 Scale-Up*. Philadelphia, PA: Consortium for Policy Research in Education.

[91] DRAFT Reading Recovery Evaluation: Report for Ministry of Education. 2019.

[92] Colligan, M. A. (2011). *Outcomes and Achievement of Children after Referral from Reading Recovery: A Comparative Study.* The University of Auckland. ResearchSpace@Auckland; https://www.ero.govt.nz/assets/Uploads/RTLB-Evaluation-Report4.pdf
www.educationcounts.govt.nz/publications/literacy/resource-teachers-literacy-operational-and-policy-review
URL: http://hdl.handle.net/2292/6350

variable practices and processes.[93] Overall there is no system-wide data on how effectively tier 3 is operating.

Constraints and enablers on equity and excellence

1. **Assessment and progress tools**. As noted earlier, assessment on entry to school is variable and this creates a constraint on personalised or differentiated instruction, which is nationally consistent.[94] An enabler after school entry is the use by 100% of teachers in Year 1 of the 'Running Record' tool for repeated measurement of progress.[95] Eighty-five percent of teachers start using this tool within 10 weeks of entry to school. However, even this tool is used in different ways despite established protocols, sometimes differentially and with varying use for probing comprehension (e.g. 10% of teachers don't probe comprehension this way). There is no early equivalent in writing which provides repeated probes into progress. Teachers likely use informal assessments but only around a third (35.6%) of surveyed teachers in 2004 indicated systematic analysis of writing samples over the early years.[96] A tool for assessing oral language – especially oral narrative skills – is needed which overcomes the problems in the earlier retell procedure in the School Entry Assessment.[97] While similar tools exist for Māori medium schooling, the same needs exist too.[98]

2. **Teacher knowledge, training and professional development**. Teachers need to know what works for whom under what conditions, at scale, and over time. As noted above, implementation of core practices is variable and knowledge of the practices is limited. The summary in this paper does not review the evidence around initial teacher education and professional development. Nonetheless, how teachers are prepared and what resources become available over their working lives is a major source of enablers.

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[93] https://www.educationcounts.govt.nz/publications/literacy/resource-teachers-literacy-operational-and-policy-review; https://www.ero.govt.nz/publications/resource-teachers-learning-and-behaviour-governing-and-managing-rtlb-clusters/overview-of-findings/

[94] Cameron, T. A., Carroll, J. L. D., Taumoepeau, M. & Schaughency, E. (2019). How Do New Zealand Teachers Assess Children's Oral Language and Literacy Skills at School Entry? *New Zealand Journal of Educational Studies* (2019) 54:69–97. https://doi.org/10.1007/s40841-019-00133-4

[95] Cameron, Carroll, Taumoepeau, & Schaughency (2019) op. cit.

[96] Parr, J., Aikman, M., Irving, E. & Glasswell, K. (2004). An evaluation of the use and integration of readymade commercial literacy packages into classroom programmes. Ministry of Education. https://www.educationcounts.govt.nz/publications/curriculum/5015

[97] Schaughency, E., Suggate, S. & Reese, E. (2017) Links between early oral narrative and decoding skills and later reading in a New Zealand sample, *Australian Journal of Learning Difficulties*, 22:2, 109-132, DOI: 10.1080/19404158.2017.1399914

[98] C. Rau (Ed.), (1998). *He matai ata titiro ki te tutukitanga matatupu panui, tuhi. The Māori reconstruction of the observation survey of early literacy achievement.* Ngaruawahia, New Zealand: Kia Ata Mai Educational Trust.

3. **Practice effects and opportunities to learn**. Learning complex skills such as reading and writing require significant and extended opportunities to learn. As skills mature, extensive application across a range of text types becomes very important. Neither the opportunities nor the practice are confined to the classroom, but that is where the bulk of planned time occurs. The references to 'frequency matters' in descriptions of specific recommended activities below attest to their importance. This is a condition of curriculum specification and planning in classrooms. It is also a matter of support for individual engagement, either as independent reading at school, or for independent reading at home (sometimes called 'recreational reading').[99]

4. **Tier 3 provisions.** There is a need to evaluate and then likely redesign the resources and intervention activities of the tier 3 provisions. Without these in place more systematically and with known effectiveness, appropriate progress for all children over the first three years, judged in both equity and excellence terms cannot be guaranteed.

5. **Cultural responsiveness and bias**. As is the case through schooling, a constraint is whether learning contexts are responsive to and actively support the culture, identity and language of the student.[100]

Recommended high-value instructional activities (universal provision)

The review of progress, achievement and instruction in Aotearoa New Zealand together with the international evidence, is a basis for setting some priorities. Criteria outlined previously help identify five high-value instructional activities within the range of everyday activities used in classrooms. These are activities for which there is some evidence, or for which there is enough practice knowledge to consider them modifiable, following appropriate research and development, to meet identified learning needs, and increased equity and excellence. These are activities that warrant further development and implementation at scale. They can be considered an evidence-based core in a balanced multicomponent programme in Years 1-3. Of particular significance in these is the need to have activities which can carry the oral language experiences necessary for both short- and long-term development.

1. **Shared/dialogic reading.** Shared reading has a strong experimental and descriptive evidence base.[101] It has been shown to produce gains in students' vocabulary and other oral language skills including narrative skills; across different populations and

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[99] Anderson, R.C., Wilson, P.T. & Fielding, L.G. (1988). Growth in reading and how children spend their time outside of school. *Reading Research Quarterly, 23,* 285–303.

[100]https://www.educationcounts.govt.nz/__data/assets/pdf_file/0003/198642/He-Whakaaro-Importance-of-Maori-identity-language-and-culture-for-akonga-Maori.pdf

[101] Dickinson,D.K., Griffith, J. A., Golinkoff,R. M. & Hirsh-Pasek, K. (2012). How Reading Books Fosters Language Development around the World .*Child Development Research*, Volume 2012, doi:10.1155/2012/60280; National Research Council. (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

for English language learners[102]; in both family and classroom sites (parents and teachers implementing); and in different languages. The frequency of use and the features of the interactions make a difference to outcomes. It can reduce disparities between groups in vocabulary acquisition. Research is needed on the optimal frequency, duration or weighting in a balanced programme, and use for Māori medium settings.

2. **Guided/instructional reading plus systematic phonics.** Clearly, some form of sequenced, deliberate and structured instruction is needed which enables learners to develop and integrate the skills to read increasingly complex texts with fluency, accuracy and comprehension. Guided reading is repeated, text-based instruction led by the teacher. Often this is through small ability-based groups using texts selected for students at similar levels, designed to provide differentiated teaching for reading proficiency. There is surprisingly little experimental research on the effectiveness of the small group configuration for early universal provision (as distinct from interventions for at-risk students) compared with alternatives such as one-on-one or whole-class teaching. Significant properties of instruction which are related to reducing disparities are:

   (a) text selection (a core of highly engaging 'predictable' or 'meaningful' texts, within a wide 'diet', reflecting cultural and linguistic backgrounds and provided in substantial amounts.[103]); with
   (b) deliberate and evidence-based instructional foci in carefully paced, scaffolded interactions.

The basic activity is modifiable for teaching comprehension strategies (such as how to solve the meaning of an unknown word).[104] The instructional foci needs to be augmented by incidental embedded phonics teaching as well as systematic phonics instruction within the reading interactions. But there are risks of compartmentalising instruction, given that transfer of phonics skills is greater the closer the training is to actual reading of connected text.[105] Research is needed on the optimal frequency, duration or weighting in a balanced programme, and on use for Māori medium settings.

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[102] Fitton, L., McIlraith, A. L. & Wood, C. L. (2018). Shared book reading: Interventions with English learners: A meta-analysis. *Review of Educational Research*, 88(5), 712-751.

[103] Heibert, E. H. (2017). The Texts of Literacy Instruction: Obstacles to or Opportunities for Educational Equity? *Literacy Research: Theory, Method, and Practice*, Vol. 66, 117-134.; Mesmer, H. A., Cunningham, J. W. & Hiebert, E. H. (2012). Toward a theoretical model of text complexity for the early grades: learning from the past, anticipating the future. *Reading Research Quarterly*, 47(3), 235–258. DOI: 10.1002/RRQ.019; McNaughton, S. (2002). *Meeting of Minds*. Wellington, NZ: Learning Media.

[104] Dymock SJ. A comparison study of the effects of text structure training, reading practice, and guided reading on reading comprehension. National Reading Conference Yearbook. 1998;47:90–102.

[105] Swanson, H., Trainin, G., Necoechea, D. M. & Hammill. D. D. (2003). Rapid naming, phonological awareness, and reading: A meta-analysis of the correlation evidence. *Review of Educational Research*, 73(4), 407–440.

3. **Shared and instructional writing.** Some form of instructional writing is needed which increases writing production and which directly teaches skills, processes and strategies within a balanced programme. Research is needed on the optimal frequency, duration or weighting in a balanced programme, and on use for Māori medium settings.

4. **Conferencing, personalised dialogic interactions**. Activities which entail focused discussion around texts have a strong evidence base.[106] High rates of extended discussion and discourse in classrooms between teachers and individual students are associated with gains in comprehension and reasoning across subject areas and can generalise across time and content areas. Conditions include teacher deliberateness and awareness of dialogic features and applications within well-managed classrooms with engaged students. Reduction in disparities is indicated but more large scale testing if how to implement is needed. Effective use of digital tools in classrooms increases opportunities for individualised dialogue which is associated with achievement gains in writing for students in low-decile schools.[107] Research is needed on the optimal frequency, duration or weighting in a balanced programme, and on use for Māori medium settings.

5. **Guided home reading and writing activities**. Hearing children read books sent home from school during term time has a solid experimental and descriptive base. In addition, summer learning programmes have a strong experimental and descriptive evidence base.[108] Programmes that use carefully matched texts, and provide detailed guidance to both students and family members produce large impacts on reading outcomes (both decoding accuracy and comprehension), can reduce disparities and are relatively low cost with a high benefit-to-cost ratio. Research is needed on the optimal frequency, duration or weighting in a balanced programme, and on use for Māori medium settings.

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[106] Kim, M.-Y., & Wilkinson, I. A. (2019). What is dialogic teaching? Constructing, deconstructing, and reconstructing a pedagogy of classroom talk. *Learning, Culture and Social Interaction, 21*, 70-86. 10.1016/j.lcsi.2019.02.003

[107] Jesson, J., McNaughton, S., Wilson, A., Zhu T. & Cockle, J. (2018). 'Improving Achievement Using Digital Pedagogy: Impact of a Research Practice Partnership in New Zealand'. *Journal of Research on Technology in Education*, DOI:10.1080/15391523.2018.1436012;

[108] Kim, J. S., & Quinn, D. M. (2013). The effects of summer reading on low-income children's literacy achievement from kindergarten to grade 8 a meta-analysis of classroom and home interventions. *Review of Educational Research, 83*(3), 386–431. https://doi.org/10.3102/0034654313483906; The Washington State Institute for Public Policy http://www.wsipp.wa.gov/BenefitCost/ProgramPdf/354/Summer-learning-programs-Academically-focused;

The transition around Year 4

General

1. A plateau in literacy progress has long been identified across jurisdictions (e.g. Australia, New Zealand, the United States).[109] Despite the seeming precision of the original term for this plateau, the '4th Grade Slump', the boundaries are not clearly delineated. But between about Years 3 and 4 and the end of primary schooling (Year 8) a noticeable slowing down of progress against expectations is observed. It was first documented in reading, but newer tools in writing have produced similar evidence.[110] It is predicted by models of the development of reading which highlight the need for more complex language skills and applications of skills across curriculum areas.[111]

2. In addition to those students continuing to need specialist interventions (such as those identified by tier 2 interventions in Years 1-3 as learning disabled or dyslexic), new groups of students who are struggling in literacy become more obvious. These students have a range of needs, generally in vocabulary learning, comprehension and reading fluency.[112] Beginning in Years 2 and 3 and apparent by Year 4, around 8% of students in the United States are identified as having normal decoding skills but deficits in comprehension, attributable to delay in a range of oral language skills (vocabulary, listening comprehension, narrative skills, semantic and syntactic knowledge).[113]

3. The beginning of this period can be considered a second transition. It is not a structural transition and is not fixed by age. But it is created by shifts in focus and pedagogy relating to literacy and the curriculum. Three interdependent shifts have been identified. These have sometimes been captured in the description of the shift from 'learning to read' to 'reading to learn' which should be extended to a shift from learning to write to multi-purpose writing.

   (a) The first shift is the increased significance of generic literacy skills which determine further learning and achievement across the curriculum. These are the skills related to the complex language needed for advanced

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[109] Hattie, J. (2007). The status of reading in New Zealand schools: *The upper primary plateau problem* (UP). *Reading Forum N.Z., 22*(3), 25-39.

[110] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0019/185023/20171213-Achievement-and-Progress-in-mathematics-reading-and-writing.pdf

[111] Paris, S. G. (2005). Reinterpreting the development of reading skills. *Reading Research Quarterly, 40*(2), 187-202.

[112] Wanzek J, Vaughn S, Scammacca NK, Metz K, Murray CS, Roberts G, Danielson L. Extensive reading interventions for students with reading difficulties after Grade 3. *Review of Educational Research*. 2013;83(2):163–195

[113] Spencer, M. & Wagner, R. K. (2018). The comprehension problems of children with poor reading comprehension despite adequate decoding: a meta-analysis*. Review of Educational Research*, 88(3). Pp366-400.

comprehension and writing of an increasingly diverse range of narrative and informational texts. They include strategies for comprehending, and levels of literate vocabulary[114], as well as in-depth knowledge of features of text structure and pragmatic features of both oral and written language.

(b) The second shift is the development of content-specific literacy skills necessary for different subject areas. This is not just the technical and specialist language of those areas, but also strategies and ways of using language, including those of being critical that are somewhat idiosyncratic. "Reading critically" in fiction has similarities and differences with what counts as "reading critically" in science or history.

(c) The third is the increasing importance of independent reading and writing, especially outside of school. The extent of that reading determines rates of progress. At nine years of age in the United States, the amount of engagement in reading and writing is highly predictive of achievement on national assessments, and is more important than SES.[115]

4. Although this is not an age-related developmental transition (as occurs with going to school), it appears that similar conditions are influential. As noted for the previous transition, entry-level skills are important, as is the guidance provided by teachers and parents for learning and independent activities. There is less evidence for those aspects of personalising instruction needed for differentiation, although these are considered universal properties of effective teaching and learning.

5. Increasingly, RTI models are being implemented from Grade 4 in the United States. The existing studies, which report multiple types of interventions in multiple formats and with different foci, show small (even 'minimal') positive impacts on achievement from extensive interventions, and more variable effects on comprehension than fluency or accuracy outcomes.[116] The conclusion is that more research and development is needed to design better diagnostics, and more targeted interventions for individual needs, especially for the complex language needed on more cognitively demanding tasks.

The transition in Aotearoa New Zealand (universal provision)

1. There is little local evidence about literacy development specific to the transition around Year 4, other than the existing progress and achievement data (reported further below). These indicate that the ubiquitous slowing down of progress is apparent here too. This means that universal provisions (tier 1) need to be modified as described in the next section.

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[114] Biemiller, A. (2006). Vocabulary development and instruction: A prerequisite for school learning. In D. K. Dickinson & S. B. Neuman (Eds.), *Handbook of Early Literacy Research* (Vol. 2, pp. 41-51). New York: Guilford Press. Heibert, E. H. (2017). The Texts of Literacy Instruction: Obstacles to or Opportunities for Educational Equity? *Literacy Research: Theory, Method, and Practice*, Vol. 66, 117-134.

[115] Guthrie, J. T. (2004). Teaching for Literacy Engagement. *Journal of Literacy Research, 36*(1), 1-30.

[116] Wanzek J, Vaughn S, Scammacca NK, Metz K, Murray CS, Roberts G, Danielson L. Extensive reading interventions for students with reading difficulties after Grade 3. *Review of Educational Research*. 2013;83(2), 163–195.

2. Differences in achievement (not progress) in reading comprehension and writing quality are already apparent by Year 4 between Māori and Pasifika students, those from low SES communities, and others. Depending on the measure, the order of difference is between one and two years of growth.

The transition in Aotearoa New Zealand (RTI provision)

1. No systematic screening assessments are used, especially relating to those language and literacy needs suited to differentiated instruction, or as a trigger in an RTI process for tier 2 and tier 3 interventions.

2. It is not known whether the estimates for the US of about 8% of students at this time having specific needs related to language and comprehension also apply here in Aotearoa New Zealand – let alone the distribution of need for different student groups across different schools serving different communities.

3. There is even less known about progress through Māori medium schooling and kura kaupapa Māori. Given that similar needs and patterns for interventions in Years 1-3 have been identified, it is likely similar resources are needed, especially related to vocabulary and complex language in Te Reo Māori.[117]

4. It is unclear whether, over this transition, the specialist services available to schools are activated by the existing measures provided by Ministry of Education tools such as e-asTTle or the Progress and Consistency Tool (PaCT).

Recommended high-value instructional activities

The summary of evidence suggests three activities that would add value to achievement and progress needs of students over the transition.

1. **Screening**. Implementing a screening tool in Year 4 to provide alerts to teachers for differentiated universal teaching at tier 1 is needed, alongside more systematic diagnostics for tiers 2 and 3 interventions. Current tools could be used, but in a directed and more systematic manner than is currently the case. The same caveats and criteria that apply to screening by a new school entry assessment tool apply here. These are about the validity (including cultural), reliability and the teacher friendliness of the tools. Research and development are needed for both English and Māori medium settings.

2. **Research and development**. An extensive research and development programme is needed across both English and Māori medium settings to identify and testtools approprite to each, and to develop intervention infrastructure that enables evidence-based, targeted interventions as needed.

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[117] C. Rau (Ed.), (1998). *He matai ata titiro ki te tutukitanga matatupu panui, tuhi. The Māori reconstruction of the observation survey of early literacy achievement.* Ngaruawahia, New Zealand: Kia Ata Mai Educational Trust.

Years 4-8

General

1. Reading and writing from Year 4 to Year 8 develop in two strands. One involves generic literacy skills and the second is content-specific literacy skills. Generic skills are needed for advanced comprehension and writing of an increasingly diverse range of narrative and informational texts across the curriculum areas. They include strategies and awareness for comprehending, and levels of literate vocabulary[118], as well as in-depth knowledge of text structure features and pragmatic features of both oral and written language. The second strand of content-specific literacy skills includes not only the technical and specialist vocabulary needed, but also strategies and ways of using language for those areas.

2. Two forms of comprehension involving critical thinking become significant across content areas, in both oral and written modes, and are becoming essential for learning through digital platforms and engaging with social media. These are critical literacy and collaborative reasoning (argumentation).[119] Advanced forms in social or collaborative contexts require social and emotional skills,[120] especially perspective taking and empathy. They also require aspects of self-regulation. Children initially understand actions (including reading and writing) from their own perspective and then develop understanding and critique of others' perspectives followed by awareness and critique of their own. Advanced forms of this 'criticality' are difficult to acquire and currently not often taught. Nonetheless, they are teachable through the upper primary years as well as secondary school.[121]

3. The differences in comprehension between groups from earlier years remain or are exaggerated. Across many countries the average difference between ten-year-olds who come from families at the extremes of SES is close to one standard deviation, equating to about two years in progress.[122] In the United States the average difference between black or Latino/a students and their white 4th Grade peers has

[118] Heibert, E. H. (2017). The Texts of Literacy Instruction: Obstacles to or Opportunities for Educational Equity? *Literacy Research: Theory, Method, and Practice*, Vol. 66, 117-134.

[119] Rapanta, C., Garcia-Mila, M. & Gilabert, S. (2013). What is meant by argumentative competence? An integrative review of methods of analysis and assessment in education. Review of Educational Research, 83(4), 483-520.

[120] Kuhn, D. (2015). Thinking together and alone. *Educational Researcher*, *44*(1), 46-53.

[121] Litman, C. & Greenleaf, C. (2018). Argumentation tasks in secondary English Language Arts, history, and science: Variations in instructional focus and inquiry space. *Reading Research Quarterly*, 53(1), 107-126. McNaughton, S, Zhu, T, Rosedale, N., Oldehaver, J, Jesson, R., & Greenleaf, C. (2019). Critical perspective taking: Promoting and assessing online written argumentation for dialogic focus. *Studia Paedagogica* (special issue: Better Learning through Argumentation). 24(4), 119-141.

[122] Mullis, I. V. S., Martin, M. O., Kennedy, A., & Foy, P. (2007). *IEA's Progress in International Reading Literacy Study in Primary School in 40 Countries*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

been up to three grades, again almost one standard deviation.[123] Notably however, in some countries these socially and culturally based differences are much smaller, and in some countries the results for some communities previously not well served by schools, have become more positive over time. So the patterns can be changed.

4. These differences pose a daunting 'acceleration' challenge. One estimate is that it would take a Grade 4 student reading two years below their grade level (i.e. at a Grade 2 level) at least three hours of extra reading a day for two years in order to catch up. After two years, at sixth grade, they would reach grade level.[124] This 600% increase in reading time would need to be more than recreational reading. It would need extensive reading and writing across content areas.

5. Several interrelated features of teaching impact on achievement in reading and writing in the English subject (English Language Arts in the United States), over and above students' initial achievement levels.[125] These are:

    (a) specific instructional supports (scaffolding);
    (b) effective use of classroom time and behaviour management to maximise opportunities to learn; and
    (c) the extent to which teachers engage students in intellectually challenging and demanding talk and activities.

    The latter best predicts gains, and teachers rated highly in these features can accelerate progress by several months. This finding is consistent with an interpretation of meta-analyses of effects on achievement: that a teacher's verbal proficiency coupled with subject knowledge and teaching skills is a 'key determinant' in achievement.[126]

6. The extent of reading and writing outside of school (that is not school-assigned or required) is highly correlated with reading comprehension achievement. At nine years old in the United States the amount of that 'literacy engagement' predicts achievement on national assessments, and is more important than SES.[127] In some

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[123] Vanneman, A., Hamilton, L. B., Anderson, J., & Rahman, T. (2009). *Achievement Gaps: How Black and White Students in Public Schools Perform in Mathematics and Reading on the National Assessment of Educational Progress*. Washington, DC: National Centre for Educational Statistics, Institute of Education Sciences, US Department of Education

[124] Guthrie, J. T. (2004). Teaching for Literacy Engagement. *Journal of Literacy Research, 36*(1), 1-30.

[125] Kane, T. J., McCaffery, D. F., Millar, T. & Staiger, D. O. (2013). Have we measured effective teachers? Measures of effective teaching project (MET). *Bill & Melinda Gates Foundation*. www.metproject.org. http://k12education.gatesfoundation.org/resource/have-we-identified-effective-teachers-validating-measures-of-effective-teaching-using-random-assignment/. Accessed March 2013.

[126] Hattie, J. (2009). *Visible learning: a synthesis of over 800 meta-analyses relating to achievement*. New York: Routledge.

[127] Guthrie, J. T. (2004). Teaching for Literacy Engagement. *Journal of Literacy Research, 36*(1), 1-30.

countries this can take the form of extra tutoring, and in others is related to more general family literacy practices.[128]

7. Other indices of the impact of family literacy practices on 10-year-olds' achievement in reading include parental attitudes to their own reading and number of books in the home. The majority of countries participating in the PIRLS surveys from 2001 to 2016 show a decline in both students' and parental attitudes.[129]

8. Students need to develop independent engagement in and motivation for reading and writing. Across many countries, 10-year-olds' attitudes to reading and their ratings of confidence in reading are related to achievement, and these relationships are bidirectional (achievement levels affect attitudes and vice versa). Experimental studies show that engagement – or more specifically motivation and self-efficacy, as captured in descriptions of interest, dedication and confidence – are major determinants of achievement, and have bidirectional relationships over time.[130] Features of instruction present in programmes for comprehending informational texts, such as collaborative reasoning or concept-oriented reading instruction,[131] are known to increase motivation and engagement. These features include accessing highly relevant texts, making choices, being successful, collaborating with peers, making reading important to the individual, having big ideas for reading, and teacher support.

9. The frequency and types of engagement in literacy practices over summer breaks are associated with ongoing patterns of progress. A seminal study in 1978 showed that each additional hour a day a student in upper primary school spent reading over summer was associated with one to two months of added achievement, irrespective of SES.[132] However, the evidence across countries suggests that differences in family practices (reading and writing) mean that, in general, the progress rates over summer differ by SES and ethnicity – thereby maintaining or exacerbating existing disparities. Experimental studies show that increasing book reading through the provision of well-matched books, and guidance for students and

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[128] Paris, S., & McNaughton, S. (2010). Social and cultural influences on children's motivation for reading. In D. Wyse, R. Andrews, & J. Hoffman (Eds.), *The international handbook of English, language, and literacy teaching.* (pp. 11-20). London: Routledge.

[129] *IEA Compass Briefs in Education* (2020). Number 8 March 2020.

[130] Guthrie, J. T., & Barber, A. B. (2019). Best practices for motivating students to read. In L. Morrow, & L. Grambrell (Eds.), *Best practices in literacy instruction* (5th ed., pp. 52–71). New York, NY: Guildford Press.

[131] Reznitskaya, A., Kuo, L. J., Clark, A. M., Miller, B., Jadallah, M., Anderson, R. C., & Nguyen-Jahiel, K. (2009). Collaborative reasoning: A dialogic approach to group discussions. Cambridge Journal of Education, 39(1), 29-48; Guthrie, J. T., & Barber, A. B. (2019). Best practices for motivating students to read. In L. Morrow, & L. Grambrell (Eds.), *Best practices in literacy instruction* (5th ed., pp. 52–71). New York, NY: Guildford Press.

[132] Heyns, B. (1978). *Summer learning and the effects of schooling*. New York: Academic Press.

family members to support and interact with children using the books, produce achievement gains that can markedly reduce these differences in progress.[133]

Reading and writing: Years 4-8 in Aotearoa New Zealand (universal provision)

1. National monitoring from 1996 to 2010 of Year 4 students showed that they became more accurate readers, and disparities were reduced (from 19% of students reading below expected levels to below 10%).[134] But reading comprehension dropped over this time, and disparities in comprehension achievement for Māori and Pasifika students and those from low-decile schools remained.[135] In writing, little change occurred in overall levels or in reduction of disparities for low-decile schools or for Māori and Pasifika children. The change in accuracy in reading has been linked to greater instructional focus on teaching components such as phonics.

2. Differences in comprehension in English subject reading between Māori and Pakeha Year 4 students are substantial, of the order of 1.5 years.[136] Those differences are unchanged at Year 8. Differences between low- and high- decile schools are large, but differences between girls and boys at these ages are smaller. These differences are corroborated in the e-asTTle national database for reading.[137]

3. The redesigned national monitoring measures (NMSSA) do not show a slowing down of progress in subject English reading between the samples at Year 4 and Year 8, but the national database for e-asTTle reading does, using both cohort data and year-on-year data.[138] The lower annual progress and the achievement level drop might be more marked when measured across different types of texts (e.g. informational texts which are used in e-asTTle) and narrative texts.

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[133] Kim, J. S., & Quinn, D. M. (2013). The effects of summer reading on low-income children's literacy achievement from kindergarten to grade 8 a meta-analysis of classroom and home interventions. *Review of Educational Research, 83*(3), 386–431. https://doi.org/10.3102/0034654313483906. King, E. M. (2015). Designing after-school learning using the massively multiplayer online role-playing game. *Theory Into Practice, 54*(2).

[134] See reading and writing reports at NEMP https://nemp.otago.ac.nz/

[135] Crooks, T., Smith, J., & Flockton, L. (2008). Reading and speaking: Assessment results 2008. (Report No. 49). Wellington: Ministry of Education.

[136] https://nmssa.otago.ac.nz/reports/2014/Reading_Overview.pdf

[137] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0019/185023/20171213-Achievement-and-Progress-in-mathematics-reading-and-writing.pdf;

[138] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0019/185023/20171213-Achievement-and-Progress-in-mathematics-reading-and-writing.pdf

4. Average writing achievement is lower than expected across year levels, and lower at Year 8 than reading; and databases consistently show progress slows down.[139] Similar ethnicity and decile differences are apparent, as for reading. Both reading and writing achievement have a large spread in achievement at all year levels.

5. The drops in achievement between Year 4 and Year 8 are marked in science and mathematics. It is unclear how much of this achievement pattern is attributable to either generic or content-specific literacy skills.[140] Given that explaining thought processes in these assessments is valued, the NMSSA finding that Year 8 students are markedly better at 'recounting' in English writing compared to genres of 'explaining' or 'describing' might indicate limitations in appropriate generic skills. Also, when students receive content-specific teaching in secondary schooling, progress in science and mathematics picks up. This might indicate the significance of an increased focus on subject specific literacy skills from subject specialists.

6. Cross-country comparisons[141] show that our 10-year-olds' reading comprehension remains higher than the average across countries, with a small but significant decrease from 2011, in all achievement groups and across gender, ethnicity and SES groups. The differences between groups are relatively large in international terms. Students achieve higher on literary texts than informational texts. Their abilities to interpret, integrate and evaluate ideas are relatively stronger than retrieving and inferencing. Attitudes to reading have remained unchanged since 2011 – about as positive as students in other countries – although confidence is relatively lower. As at younger ages, both attitude and confidence are related to achievement.

7. There is some evidence supporting general patterns showing that students find it very difficult to identify weakness or flaws in their own reasoning with science or social issues, and that combining 'criticality' with perspective taking is a major challenge.[142]

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[139] https://nmssa.otago.ac.nz/reports/2012_Writing_ONLINE.pdf; https://www.educationcounts.govt.nz/__data/assets/pdf_file/0019/185023/20171213-Achievement-and-Progress-in-mathematics-reading-and-writing.pdf

[140]https://www.educationcounts.govt.nz/__data/assets/pdf_file/0019/185023/20171213-Achievement-and-Progress-in-mathematics-reading-and-writing.pdf; https://www.educationcounts.govt.nz/__data/assets/pdf_file/0005/192920/He-Whakaaro-What-can-NMSSA-tell-us-about-student-progress-and-achievement.pdf

[141] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0007/183697/PIRLS-2016-NZs-Achievement.pdf

[142] McNaughton, S, Zhu, T, Rosedale, N., Oldehaver, J, Jesson, R., & Greenleaf, C. (2019). Critical perspective taking: Promoting and assessing online written argumentation for dialogic focus. *Studia Paedagogica* (special issue: Better Learning through Argumentation). 24(4), 119-141; Rosedale, N., McNaughton, S., Jesson, R, Zhu, T. & Oldehaver, J. (2019) Online written argumentation: Internal dialogic features and classroom instruction. Chapter 15 (pp. 263-278). In Emmanuel Manalo (Ed.), *Deeper learning, dialogic Learning, and critical thinking: Research-based strategies for the classroom.* Oxfordshire, England: Routledge.

Instructional practices in Aotearoa New Zealand (universal provision)

1. Student ratings of opportunities to learn reading and writing in subject English drop between Year 4 and Year 8. In reading, the lowest opportunities are reported for reading books that reflect social and cultural identities;[143] about a quarter of Year 8 students say they have never had that opportunity.

2. Large ethnicity and gender differences are reported in reading outside of school and these are associated with large achievement differences. Year 8 students report one to two hours reading a week, with 19% of Pākehā students reading five or more hours and 11% of Māori Year 8 students reporting five or more hours.

3. Attitudes to reading drop between Year 4 and Year 8. Both teachers and students report that writing for a teacher-directed audience or purpose is the most frequent focus.

4. The teaching of advanced and specialist writing skills, and further learning of these, may be limited. Fewer than 10% of teachers at Year 4 or Year 8 report a specialist qualification in writing and close to a third of teachers report not having observed a colleague teaching writing.[144] More generally, teachers report low rates of collaboration across schools.[145] The lowest gains on national monitoring data from Year 4 to Year 8 are in students' awareness of processes of writing, indicative of their having limited technical and metalinguistic (awareness of their skills) knowledge.

5. Deliberate comprehension strategy instruction is a core part of the reading programme; for example in some studies frequent direct strategy instruction occurs in at least three sessions of 30 minutes in small ability groups per week. It is clear that students need to learn and employ a range of strategies across a variety of texts. But problems have been identified with the focus on explicit strategy instruction. Notably, 'procedularisation', where instruction focuses students on the strategies themselves rather than the gaols of comprehending, and opportunity costs (spending time teaching strategies despite students already knowing them). Shifting the pedagogy to more complex discourse focused on understanding texts is associated with accelerated gains in reading comprehension.[146]

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[143] https://nmssa.otago.ac.nz/reports/2014/Reading_Overview.pdf

[144] https://nmssa.otago.ac.nz/reports/2012_Writing_ONLINE.pdf;

[145] https://www.educationcounts.govt.nz/publications/series/2539/pirls-201516/pirls-2016-reading-literacy-and-the-classroom

[146] McNaughton, S. & Lai, M. (2012). Testing the effectiveness of an intervention model based on data use: a replication series across clusters of schools. *School Effectiveness and School Improvement.* 23(2), 203-228.

6. Compared with other countries,[147] students in Aotearoa New Zealand have higher rates of using computers during reading, more ability grouping for teaching, more frequent silent reading, more critiquing of reading online texts, and more instruction for decoding. Students report less engagement generally in reading and specifically in reading extended fiction texts, and are more likely to consider reading boring. Principals report that schools are better resourced for teaching than international averages, and teachers report being reasonably satisfied with their careers.[148]

7. Experimental studies show that accelerated progress is possible for Māori and Pasifika students in low-decile schools given changes in teachers' and leaders' use of data and in consequent changes to instruction. For reading, acceleration is associated with an increased focus on vocabulary acquisition; comprehension instruction based on extended discourse and focused on meanings; greater personalised instruction; and more systematic practice across texts.[149] For writing in low-decile schools with ubiquitous digital tools, similar aspects have been identified: students engaged more often in extended writing, and engaged more frequently in critical thinking discussions with teachers.[150]

8. There is some evidence that collaborative reasoning (argumentation) and critical literacy are not frequently taught in low SES schools. However, early testing of specially designed digital tools, augmented with teacher instruction, can increase higher order argumentation.[151]

Response to Intervention: Years 4-8 in Aotearoa New Zealand

1. As noted earlier, no systematic screening assessments are used around Year 4 – especially relating to those language and literacy needs which would provide a basis for differentiated instruction, or as a trigger in an RTI process for tier 2 and tier 3 interventions.

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[147] https://www.educationcounts.govt.nz/publications/series/2539/pirls-201516/pirls-2016-reading-literacy-and-the-classroom

[148] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0006/194730/PIRLS-2016-Schools-and-schools-climate-final04.pdf

[149] McNaughton, S. & Lai, M. (2012). Testing the effectiveness of an intervention model based on data use: a replication series across clusters of schools. *School Effectiveness and School Improvement.* 23(2), 203-228.

[150] Jesson, R., McNaughton, S., Rosedale, N., Zhu, T. & Cockle, V. (2018). A mixed-methods study to identify effective practices in the teaching of writing in a digital learning environment in low income schools. *Computers and Education*, 119 (April), 14-30.

[151] McNaughton, S, Zhu, T, Rosedale, N., Oldehaver, J, Jesson, R., & Greenleaf, C. (2019). Critical perspective taking: Promoting and assessing online written argumentation for dialogic focus. *Studia Paedagogica* (special issue: Better Learning through Argumentation). 24(4), 119-141; Rosedale, N., McNaughton, S., Jesson, R, Zhu, T. & Oldehaver, J. (2019) Online written argumentation: Internal dialogic features and classroom instruction. Chapter 15 (pp. 263-278). In Emmanuel Manalo (Ed.), *Deeper learning, dialogic Learning, and critical thinking: Research-based strategies for the classroom.* Oxfordshire, England: Routledge.

2. It is unclear what specialist services available to schools might deliver for Year 4 students identified with needs.

Constraints and enablers of equity and excellence

1. Parents' attitudes and personal reading and home resources enable (or constrain) learning, development and achievement at school. There is a strong relationship between the resources that parents can call upon in the home (e.g. number of books, internet connection and other physical resources) and achievement. At the extremes of access to resources the difference is estimated to be about two years of growth. From 2011 to 2016 parental attitudes to reading increased slightly. But the numbers of books – particularly in Māori and Pasifika homes – decreased over this time period.[152]

2. The role of background knowledge in contributing to higher levels of text comprehension is well established. This means comprehension skills are supported by 'mirror' texts, which reflect cultural and social identity.[153]

3. Despite finding negative relationships between achievement levels and increases in social media use, how they are causally related is not known. The overall understanding at this point for social and emotional skills is that, apart from the extremes of social media use, it is the content and specific uses that determine outcomes. There is evidence from schools serving low-decile communities that, under well designed conditions, being fully digital at school can be associated with gains in writing for Māori and Pasifika students.[154] Similarly, at 15 years of age there is a positive correlation between countries with more digital resources in schools, more time spent in digital learning, and more time on devices outside of school, and achievement.[155]

4. The teaching of advanced and content-specific writing and reading skills may be limited. Our national monitoring (NMSSA) reports show very few teachers at Year 4 (less than 4%) or at Year 8 (less than 20%) have a science major or advanced/additional science training or qualifications.[156] There are limited opportunities to learn via professional development or from systematic observations of colleagues. Added to this, there are limited opportunities for students to learn in science. The 11-20 hours reported on average per term represent less than 10% of

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[152] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0007/183697/PIRLS-2016-NZs-Achievement.pdf

[153] Sweet, A. P. & Snow, C. E. (2003). (Eds.) *Rethinking Reading Comprehension*. New York: Guilford Press.

[154] Jesson, R., McNaughton, S., Rosedale, N., Zhu, T. & Cockle, V. (2018). A mixed-methods study to identify effective practices in the teaching of writing in a digital learning environment in low income schools. *Computers and Education*, 119 (April), 14-30.

[155] educationcounts.govt.nz/publications/series/PISA/pisa-2018

[156] https://nmssa.otago.ac.nz/reports/2017/2017_NMSSA_SCIENCE.pdf

available curriculum time. The two major constraints – opportunities to learn and specialist teacher knowledge – are greater for low-decile schools and for Māori and Pasifika students. The patterns for mathematics, although better than science, are similar.[157]

Recommended high-value instructional activities

A summary of local patterns suggests greater impact on equity and excellence would follow from considerably more time spent reading and writing across a range of text types, both in and out of school, and in digital contexts. This should be combined with teacher discourse and collaborative activities focused on meaningful texts across content areas. Three specific foci within business-as-usual are indicated.

1. **Argumentation (critical reasoning)** across content areas has a strong evidence base. Optimal conditions include establishment of school community norms and practices for reasoning about problems, collaboration with changed discourse patterns, well designed 'big questions' and text sets, and instructional support. Under these conditions, advanced skills are learned which can transfer across modes of responding (oral and written discourse), academic subjects (English, science, mathematics) and context. Recent experimentation also shows applications to digital platforms raising levels with Māori and Pasifika students in low decile schools.[158]

2. **High literacy 'diet'**. Extensive and intensive engagement across sets of different texts with specialist English or Te Reo Māori subject teaching is indicated. Designs exist for topic-based text sets and text 'diets', as well as digitally determined words (e.g. from the 'text genome' project) that need instructional focus within those texts.[159] These designs should be applied to text resources – traditional and digital – which are relevant for our readers and writers, reflecting their social and cultural identities.

3. **Summer learning programmes**. These have a strong experimental and descriptive evidence base.[160] Programmes that use carefully matched texts, and provide detailed

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[157] https://nmssa.otago.ac.nz/reports/2018/2018_NMSSA_MATHEMATICS.pdf

[158] Reznitskaya, A., Anderson, R. C., Nurlen, B., Nguyen-Jahiel, K., Archodidou, A., & Kim, S. Y. (2001). Influence of oral discussion on written argument. Discourse Processes, 32(2-3), 155-175; Reznitskaya, A., Kuo, L. J., Clark, A. M., Miller, B., Jadallah, M., Anderson, R. C., & Nguyen-Jahiel, K. (2009). Collaborative reasoning: A dialogic approach to group discussions. Cambridge Journal of Education, 39(1), 29-48.; Rosedale, N., McNaughton, S., Jesson, R, Zhu, T. & Oldehaver, J. (2019) Online written argumentation: Internal dialogic features and classroom instruction. Chapter 15 (pp. 263-278). In Emmanuel Manalo (Ed.), *Deeper learning, dialogic Learning, and critical thinking: Research-based strategies for the classroom.* Oxfordshire, England: Routledge.

[159] Grossman, P., & Thompson, C. (2008). Learning from curriculum materials: Scaffolds for new teachers? *Teaching and Teacher Education*, 24(8), 2014–2026. doi:10.1016/j.tate.2008.05.002; Heibert, E. H. (2017). The Texts of Literacy Instruction: Obstacles to or Opportunities for Educational Equity? *Literacy Research: Theory, Method, and Practice*, Vol. 66, 117-134.

[160] Kim, J. S., & Quinn, D. M. (2013). The effects of summer reading on low-income children's literacy achievement from kindergarten to grade 8 a meta-analysis of classroom and home interventions. *Review of Educational Research, 83*(3), 386–431. https://doi.org/10.3102/0034654313483906; The

guidance to both students and family members produce large impacts on reading outcomes, can reduce disparities and are relatively low cost with a high benefit-to-cost ratio. Programmes can include both reading and writing and, more recently have been extended to online digital platforms for Years 4-8.[161]

Transition from Year 8 to Year 9

General

1. A dip in achievement as students transition from primary to secondary schooling has been documented in different countries.[162] This is often explained as a consequence of how a major life course transition impacts on aspects of development, both positively and negatively. This developmental transition involves changes in where activities take place, with whom they occur, in how they occur and with what foci. For many students, moving from primary school to secondary school involves a contrast between what has been common and familiar and what is now new and unfamiliar. These changes can create discordance and stress.

2. The most general explanation for this effect focuses on these changes: in how the curriculum is delivered, in the role of teachers who deliver the curriculum, the content of that teaching, and the significance of assessments. These conditions occur at a time when young people are developing more independence, but when aspects of self-regulation are still maturing and there is an increased search for excitement and challenges, especially for boys.[163]

3. Positive relationships with teachers, peers and parents have been found to provide resilience over the transition through various forms of emotional support. Young people have more resilience when there is strong support which is shared among their three major protective influences.

4. Social and emotional skills provide resilience over the transition. Experimental social and emotional learning programmes (SEL) show that well-designed programmes, embedded in school-wide norms, values and expectations, can increase skills related

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Washington State Institute for Public Policy http://www.wsipp.wa.gov/BenefitCost/ProgramPdf/354/Summer-learning-programs-Academically-focused;

[161] Williamson, R., Jesson, R. & Daisy Shepherd, D. (2020). The Summer Learning Journey: Ameliorating the summer learning effect using blogging. *Computers & Education,* 145 (2020) 103738

[162] Benner AD, Graham S. The transition to high school as a developmental process among multiethnic urban youth. *Child Development*. 2009; 80: 356-376. Wang Q, Pomerantz EM. The motivational landscape of early adolescence in the United States and China: a longitudinal investigation. *Child Development*. 2009; 80: 1272-1287. *Perspective on Education 2* (Primary – Secondary Transfer in Science). 2009; 5–21. Available from www.wellcome.ac.uk/perspectives

[163] Duckworth, A. L., & Steinberg, L. (2015). Unpacking self-regulation. *Child development perspectives*, *9*(1), 32-37.

to resilience. In turn, increased levels impact on academic achievement.[164] A combination of school-wide policies and practices to promote well-being with active teaching for wellbeing is associated with the highest effects.[165]

5. There are associations between the drops in achievement and opportunities to learn, the levels of complexity of curriculum activities that students face entering secondary schooling and teacher knowledge.[166]

6. There are differences between groups in the general pattern. It is more marked for some groups, particularly students from low SES groups, or communities and ethnic groups traditionally not well served by schools, and those with fewer economic and social resources. This raises the issue of why some groups of students might be more or less impacted.

7. One reason arises from the 'summer slide', also known as the 'summer learning effect'. Students, particularly from low-income communities, make slower progress in literacy in relation to normative expectations during the summer break, starting from Year 1. The break is estimated as creating an annual achievement gap in the US of about three months.[167] While the break between primary and secondary is one more in an existing pattern, when coupled with the general stresses of a developmental transition, this may exaggerate the impact.

8. A second related reason emerges from the potential effects of low expectations, lowered complexity and lowered teaching quality for these students in secondary schools. There are differences in degree across countries, but they can be stark.[168] In the case of the United States, significantly fewer school resources – ranging from the

[164] Durlak, J. A., Weisberg, R. P. Dymnicki, A.B., Taylor, R.D, & Shellinger , K. B. (2011). The Impact of Enhancing Students' Social and Emotional Learning: A Meta-Analysis of School-Based Universal Interventions. Child Development, Volume 82, Number 1, Pages 405–432. DOI: 10.1111/j.1467-8624.2010.01564.x

[165] Elliot Lawes and Sally Boyd (2018). Making a difference to student well-being—a data exploration. NZCER 2018

[166] see Focus on mathematics / pāngarau Higher achievement in mathematics/pāngarau: a future state description – what could be 5 years on and what this will take qualifications in mathematics, 2015). William H. Schmidt, Nathan A. Burroughs, Pablo Zoido, and Richard T. Houang (2015). The Role of Schooling in Perpetuating Educational Inequality: An International Perspective. *Educational Researcher*, Vol. 44 No. 7, pp. 371– 386.

DOI: 10.3102/0013189X15603982. Aaron Wilson, Irena Madjar and Stuart McNaughton (2015). Opportunity to learn about disciplinary literacy in senior secondary English classrooms in New Zealand. *The Curriculum Journal*. 27 Issue 2. doi.org/10.1080/09585176.2015.1134339

[167] Cooper, H., Nye, B., Charlton, K., Lindsay, J., & Greathouse, S. (1996). The effects of summer vacation on achievement test scores: A narrative and meta-analytic review. Review of Educational Research, 66(3), 227-268.

[168] Schmidt, W. H., Burroughs, N. A., Zoido, P. & Richard T. Houang, R. T. (2015). The Role of Schooling in Perpetuating Educational Inequality: An International Perspective. *Educational Researcher*, Vol. 44 No. 7, pp. 371–386 DOI: 10.3102/0013189X15603982

qualifications of the teachers to class sizes, text books, access to computers and curriculum offerings – are available to schools serving large numbers of low income and black and hispanic students compared with schools serving mostly white students.[169] At a population level, a drop over the transition may reflect the differences in quality provision.

9.   A third contributor is students already becoming disengaged at school. By 4th Grade across countries, there is a noticeable group of students reporting low rates of attendance (15% absent one day every two weeks) and little engagement in reading, and these rates are related to achievement.[170] Experiences of intergenerational discrimination as a 'minority' group, or not having confidence in or trusting school systems further exacerbated by living conditions and are associated with increased disengagement. The transition may add further stress to these conditions.[171]

The transition from Year 8 to Year 9 in Aotearoa New Zealand

1.   The lowest annual progress for both reading and writing occurs in the transition from Year 8 to Year 9.[172] This drop is associated with a number of other patterns which indicate possible influences.

2.   The most general pattern is that, for many students, there is a change in school. This suggests that staying at the same school or not, or going to a different type of school, could make a difference to the stress of transition. However, a recent analysis found no educationally meaningful differences on attendance and achievement in NCEA, between greater or fewer school changes (for example going to intermediate school or staying to Year 8 at the same school before secondary school).[173] Because the drop associated with the Year 8 to Year 9 transition is larger than others (more than two thirds of a year's progress for writing) and is more than double the drop associated with changing schools from Year 6 to Year 7, it is likely that the Year 8 to Year 9 patterns reflect processes over and above a simple change in schools.

3.   Social and emotional skills related to wellbeing are influential. Perseverance, communication and self-management are associated with time taken to adjust to

[169] Darling-Hammond, L. (2007). The flat earth and education: How America's commitments to equity will determine our future. *Educational Researcher, 36*(6), 318-334.

[170] Mullis, I. V. S., Martin, M. O., Foy, P., & Hooper, M. (2017). *PIRLS 2016 International Results in Reading*. Retrieved from Boston College, TIMSS & PIRLS International Study Center website: http://timssandpirls.bc.edu/pirls2016/international-results

[171] McGee, C., Ward, R., Gibbons, J. & Harlow, A. (2004). *Transition to secondary school: a literacy review*. Waikato Institute for Research in Learning & Curriculum School of Education University of Waikato, Hamilton.

[172] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0019/185023/20171213-Achievement-and-Progress-in-mathematics-reading-and-writing.pdf

[173] He Whakaaro | Education Insights. How does school type impact on student outcomes? www.educationcounts.govt.nz/goto/whakaaro

secondary school, after prior achievement and social characteristics are accounted for.[174] Older secondary students have relatively high rates in international terms of not feeling they belong or are lonely at school, and low ratings of wellbeing.[175] There are drops in self-reported wellbeing paralleling those of achievement over the transition.[176] The probability of gaining University Entrance in Year 13 – a measure requiring high levels of literacy across subjects – is significantly increased with high levels of 'attitudinal competence' (composed of self-regulatory, prosocial and self-awareness skills) in the first year at secondary school, adding to the influence of prior achievement at the end of primary school and ensuing attendance rates.[177]

4. The Year 8 to Year 9 dip is also associated with a summer break. As with the international picture, the Year 8 to Year 9 summer may be just one more summer in a series of summers where dips happen for students in low-decile schools. But the summer may compound the effect of the transition.

5. Content specialisation, pedagogy and curriculum materials may be markedly different at Year 9 from those of more generalist teaching in previous years. End-of-year to end-of-year data from the same students show the drop can still be present at the end of Year 9, suggesting that there is an impact through the first year.[178] One study supports this, describing a drop over the course of the Year 9 before a subsequent pick up in Year 10. Experimental evidence from that study showed that changing Year 9 to Year 11 teachers' expectations, plus using evidence about actual levels of achievement prior to Year 9, together with shared attention to literacy teaching in generic and content-specific literacy, accelerated progress and successfully impacted NCEA pass rates.[179]

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[174] Hogden E. Competent learner@16: *Competency levels and development over time*-technical report. Wellington: Ministry of Education; 2007. Wylie, C. & Hogden, E. (2011). *Forming adulthood. Past. present and future in the learning experiences and views of the competent learners @ 20*. Wellington, New Zealand Ministry of Education.

[175] https://www.educationcounts.govt.nz/publications/series/PISA/pisa-2015/pisa-2015-new-zealand-students-well-being-report

[176] Elliot Lawes and Sally Boyd (2015). Well-being and bullying prevalence in New Zealand

schools : Interim report. NZCER 2015

[177] Wylie, C. & Hogden, E. (2011). *Forming adulthood. Past. present and future in the learning experiences and views of the competent learners @ 20*. Wellington, New Zealand Ministry of Education.

[178] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0019/185023/20171213-Achievement-and-Progress-in-mathematics-reading-and-writing.pdf

[179] Lai, M. K., Wilson, A., McNaughton, S., & Hsiao, S. (2014). Improving Achievement in Secondary Schools: Impact of a Literacy Project on Reading Comprehension and Secondary School Qualifications. *Reading Research Quarterly*, *49*(3), 305-334. doi:10.1002/rrq.73

6. Engagement patterns are also implicated, in that the rates of attendance matter to reading and to mathematics more at Year 9 than earlier years.[180]

Enablers and constraints on equity and excellence

1. As noted in the section on Year 4 to Year 8, the teaching of advanced literacy, as well as instruction which promotes content-specific writing and reading skills in the year before the transition, may be limited. Achievement in science and mathematics is low relative to curriculum expectations at Year 8. Two implications for enabling more optimal conditions for the transition may follow from this:

    (a) more direct preparation in specialist content (e.g. science or English teaching) leading up to the transition would increase continuity in pedagogy and curriculum delivery; and

    (b) the expectations Year 9 teachers have of students from Year 8 may be low and curriculum delivery less challenging than it needs to be.[181]

2. There are differences in aspects of pedagogy and professional resourcing in schools serving mostly Māori and Pasifika students and those from low SES communities compared with others. Lower quality resourcing (e.g. in access to professional learning), or different emphases in pedagogy (e.g. ability grouping or enquiry methods in science) exist in schools on either side of the transition.[182] Given that some Year 8 students may be arriving at secondary with lower achievement in subject areas, there is increased need for being prepared through and entering well-resourced schools with well-qualified and experienced teachers skilled in accelerating learning.

Recommended high-value instructional activities

1. **Student records** that provide teachers and parents/whānau with descriptions of achievement and progress across the transition years are needed. The role of evidence and data discussions in supporting more effective teaching is clear.[183]

2. **School-wide practices for wellbeing**. Experimental social and emotional learning programmes (SEL) show that well-designed programmes, embedded in school-wide norms, values and expectations, can increase skills related to resilience. This, in turn, impacts academic achievement.[184] A combination of school-wide policies and

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[180] https://www.educationcounts.govt.nz/publications/series/he-whakaaro/he-whakaaro-what-is-the-relationship-between-attendance-and-attainment

[181] McGee, C., Ward, R., Gibbons, J. & Harlow, A. (2004). *Transition to secondary school: a literacy review*. Waikato Institute for Research in Learning & Curriculum School of Education University of Waikato, Hamilton.

[182] See reports for science, mathematics and English: https://nmssa.otago.ac.nz/reports/; https://www.educationcounts.govt.nz/publications/series/insights-for-teachers

[183] http://www.wsipp.wa.gov/BenefitCost?topicId=4

[184] Durlak, J. A., Weisberg, R. P. Dymnicki, A.B., Taylor, R.D, & Shellinger , K. B. (2011). The Impact of Enhancing Students' Social and Emotional Learning: A Meta-Analysis of School-Based Universal

practices to promote wellbeing, with active teaching for wellbeing, is associated with the highest ratings.[185] Having programmes in place either side of the transition would contribute to achievement. In addition, practices in Māori medium settings provide a cultural basis for building wellbeing.[186]

3. **Summer learning programmes**. These have a strong experimental and descriptive evidence base.[187] Programmes that use carefully matched texts, and provide detailed guidance to both students and family members, produce large impacts on reading outcomes (both decoding accuracy and comprehension). They can reduce disparities and are relatively low cost with a high benefit-to-cost ratio. Designed specifically for the summer before starting secondary school, they may be particularly significant in mitigating the drop in achievement from Year 8 to Year 9. Further research and development is need to test appropriate programmes for Māori medium schooling.

Years 9-11

General

1. Further development takes place in content-specific literacy skills. The texts (and the knowledge and strategies required to read and write those texts) become increasingly more sophisticated and subject-specialised. This is due to the different norms that discipline communities have established for representing, communicating, evaluating and defending ideas.[188] Without specific intervention, differences between students tend to persist. Limitations in content-specific literacy skills are associated with low progress over the secondary years.[189]

Interventions. Child Development, Volume 82, Number 1, Pages 405–432. DOI: 10.1111/j.1467-8624.2010.01564.x

[185] Elliot Lawes and Sally Boyd (2018). Making a difference to student well-being—a data exploration. NZCER 2018

[186] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0003/198642/He-Whakaaro-Importance-of-Maori-identity-language-and-culture-for-akonga-Maori.pdf

[187] Kim, J. S., & Quinn, D. M. (2013). The effects of summer reading on low-income children's literacy achievement from kindergarten to grade 8 a meta-analysis of classroom and home interventions. *Review of Educational Research, 83*(3), 386–431. https://doi.org/10.3102/0034654313483906; The Washington State Institute for Public Policy http://www.wsipp.wa.gov/BenefitCost/ProgramPdf/354/Summer-learning-programs-Academically-focused;

[188] Shanahan, C., Shanahan, T. and Misischia, C. (2011). Analysis of Expert Readers in Three Disciplines. Journal of Literacy Research, 43(4), pp. 393-429. DOI: 10.1177/1086296X11424071. Wilson, W., Madjar, I & McNaughton, S.(2016): Opportunity to learn about disciplinary literacy in senior secondary English classrooms in New Zealand, *The Curriculum Journal*, DOI: 10.1080/09585176.2015.1134339

[189] Ricketts, J., Sperring, R. and Nation, K. (2014). Educational attainment in poor comprehenders. *Frontiers in Psychology*, 5. 445. DOI: 10.3389/fpsyg.2014.00445

2. One necessary component of content-specific literacy is acquiring two specialised forms of vocabulary: technical vocabulary, and low frequency academic or literate words used in different content areas. Both sets of words need to be taught explicitly using a variety of strategies, often by deliberately creating a specialised language community.[190]

3. Aspects of collaborative reasoning (argumentation) and critical literacy become even more important. Many systems aim to promote students' ability to reason effectively, navigate sources of information confidently, and engage critically with the systems of knowledge in content areas. The Programme for International Student Assessment (PISA) 2018 increased the focus on these skills for reading, with items assessing how well students evaluate the credibility of a writer's arguments, recognise an author's point of view or biases, and judge the reliability of sources.[191] In collaborative reasoning (argumentation), being able to critique one's own position and empathise with others', either in face-to-face or online interactions, are difficult skills to promote.

4. Access to information online, online communities and social media markedly increase the potential for misinformation, manipulation and prejudice. Educational systems are not good at promoting the critical skills needed.[192] In one study of online civic reasoning, fewer than 10% of advanced college history students could successfully judge whether a website was a reliable source of information by using multiple sources to verify a claim. The International Computer Information Literacy Study (ICILS) 2018 found only 2% of Grade 8 students (our Year 9) were able to critique online information.[193] Capability is dependent on content knowledge, but high levels of knowledge are not sufficient; rather, specific skills in critical literacy are necessary.[194]

5. To learn disciplinary literacy, students need to be explicitly socialised into classroom or online communities of practice, setting norms, values and discourse rules associated with the discipline, and having access to explicit instruction for skills.[195]

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[190] Nagy, W. & Townsend, D. (2012). Words as Tools: Learning Academic Vocabulary as Language Acquisition. *Reading Research Quarterly*, 47 (1): 91-108. DOI: 10.1002/RRQ.011

[191] www.oecd.org/pisa/test

[192] National Literacy Trust (2018). Fake news and critical literacy. The final report of the Commission on Fake News and the Teaching of Critical Literacy in Schools; McGrew, S., Ortega, T., Breakstone, J. & Wineburg. S. (2017). The Challenge that's bigger than fake news. Civic reasoning in a social reasoning environment. *American Educator* Fall 2017. 4-9.

[193] Fraillon, J., Ainley, J., Shulz, W., Friedman, T. & Duckworth, D. (2018). Preparing for life in a digital world: IEA International Computer and Information Literacy Study 2018 International Report.

[194] Kahne, J. & Bowyer, B. (2018). 'Educating for Democracy in a Partisan Age: Confronting the Challenges of Motivated Reasoning and Misinformation'. *American Educational Research Journal*, February 2017, Vol. 54, No. 1, pp. 3–34 DOI: 10.3102/0002831216679817

[195] Litman, C. & Greenleaf, C. (2018). Argumentation tasks in secondary English Language Arts, history, and science: Variations in instructional focus and inquiry space. *Reading Research Quarterly*, 53(1), 107-126.

There is an emerging technology of serious games that can add value to instruction. Although most games have focused on knowledge acquisition, early examples of games for more complex cognitive skills suggest the possibility for foci such as critical literacy.[196]

6. The amount of 'literacy engagement' continues to be significant. Highly engaged 15-year-old readers from homes with lower material advantage have higher achievement scores than less engaged readers with higher material advantage.[197]

7. A variety of instructional approaches is used in secondary schools, reflecting in part different pedagogies preferred for different subjects. As noted for the Year 4 to Year 8, at the most general level, Language Arts (subject English) teaching in the United States that involves scaffolding, time management to maximise opportunities to learn, and extensive engagement in complex and challenging discourse, accelerates learning over and above students' initial achievement levels.[198] The positive role of classroom discourse as well as teachers' verbal proficiency are identified in meta-analyses.[199]

8. 'Discovery learning' and 'inquiry' are often preferred approaches in mathematics and science. Inquiry-based science teaching is correlated with lower achievement across countries.[200] This may seem inconsistent with our ideas of good practice and also with the evidence for the role of classroom discourse. The negative relationship likely reflects three potential risks in using the approaches: teachers often switch to a more didactic or performance mode as students find problems difficult; teacher instruction which is well-designed and direct is needed for both approaches to be effective; and high levels of content knowledge are needed to 'discover' and 'inquire' accurately and effectively.[201]

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[196] Boyle, E. A., Hainey, T., Connolly, T. M., Gray, G., Earp, J., Ott, M … J. Pereira, J. (2016). An update to the systematic literature review of empirical evidence of the impacts and outcomes of computer games and serious games. *Computers & Education*, 94, 178-192.

[197] Guthrie, J. T. (2004). Teaching for Literacy Engagement. *Journal of Literacy Research, 36*(1), 1-30.

[198] Kane, T. J., McCaffery, D. F., Millar, T. & Staiger, D. O. (2013). Have we measured effective teachers? Measures of effective teaching project (MET). *Bill & Melinda Gates Foundation*. www.metproject.org. http://k12education.gatesfoundation.org/resource/have-we-identified-effective-teachers-validating-measures-of-effective-teaching-using-random-assignment/. Accessed March 2013.

[199] Hattie, J. (2009). *Visible learning: a synthesis of over 800 meta-analyses relating to achievement*. New York: Routledge.

[200] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0017/180611/PISA-2015-Science-Context_v2.pdf

[201] Richland, L. E., Stigler J. W. & Holyoak. K. J. (2012). *Teaching the Conceptual Structure of Mathematics. Educational Psychologist*, 47(3), 189–203. DOI: 10.1080/00461520.2012.667065.

9. Opportunities to learn (OTL) are significant. Across countries, OTL is strongly associated with achievement. OTL is also strongly associated with SES and contributes to more than 30% of the effect of SES on achievement across PISA countries.[202] The most affluent students generally receive more rigorous opportunities to learn important mathematics concepts. Major analyses of OTL have been completed with mathematics literacy, but the findings are very likely generalisable to other domains (e.g. English, science literacy).

10. OTLs reflect the resources that are available within classrooms and schools, and across schools. Within schools these include practices such as grouping and tracking which shape pathways of learning, and the quality of everyday teaching such as the cognitive challenge of tasks and focus of interactions that enact the curriculum.[203] The resource differences that relate to OTLs between schools range from the qualifications of the teachers to class sizes, text books, access to computers and curriculum offerings.[204]

11. Increasingly through secondary schooling, the social and emotional skills related to self-regulation and sociability determine outcomes.[205] This means that the wellbeing of students is a major enabler of learning, including the learning of literacy skills.

Literacy: Years 9-10 in Aotearoa New Zealand (universal provision)

1. The most recent international study of 15-year-olds shows that our students rank highly across the OECD for reading literacy and science literacy, and around average for mathematics literacy.[206]

2. Following high scores (and rankings) from 2000 to 2009, there were marked drops in all three domains in 2012, with a variable non-significant downward trend from 2012 to 2018. The overall trend is similar to some countries (e.g. Finland, Australia), but not others (e.g. Canada, Ireland). The long-term declines from 2000 have been

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Kirschner, P. A., Sweller, S. W. & Clark. R. E. (2006). Why minimal guidance during instruction does not work: an analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist*, 41(2), 75–86.

[202] Schmidt, W. H., Burroughs, N. A., Zoido, P. & Richard T. Houang, R. T. (2015). The Role of Schooling in Perpetuating Educational Inequality: An International Perspective. *Educational Researcher*, Vol. 44 No. 7, pp. 371–386 DOI: 10.3102/0013189X15603982

[203] Wilson, W., Madjar, I & McNaughton, S.(2016): Opportunity to learn about disciplinary literacy in senior secondary English classrooms in New Zealand, *The Curriculum Journal*, DOI: 10.1080/09585176.2015.1134339

[204] Darling-Hammond, L. (2007). The flat earth and education: How America's commitments to equity will determine our future. *Educational Researcher, 36*(6), 318-334.

[205] Kautz, T., Heckman, J. J., Diris, R., ter Weel, B., & Borghans, L. (2014). *Fostering and measuring skills: Improving cognitive and non-cognitive skills to promote lifetime success.* OECD Education Working Papers. Retrieved from https://doi.org/10.1787/5jxsr7vr78f7-en.

[206] educationcounts.govt.nz/publications/series/PISA/pisa-2018

across the whole distribution of achievement, but particularly for high-performing students.

3. Large gender differences have markedly reduced, mostly because girls' achievement has dropped. Similarly, the large SES differences reduced in 2018, mainly because of a drop in the high SES scores. However, the differences between Māori and Pasifika students and other students have remained, especially when considered across the distribution of achievement (e.g. percentages of those students across the achievement bands compared with the overall national pattern, or with expected percentages).

4. A marked decline in amount or enjoyment of reading was reported from 2009 to 2018 on seven indicators (e.g. 18% students reporting that reading is a waste of time increased to 28%), and there are marked gender (e.g. 40% of boys and 26% of girls report rarely or never read books), SES and ethnicity differences.

5. The patterns of achievement in reading literacy in international assessments in 2018, both the high overall level and the drops and disparities, occurred with a greater emphasis on assessing critical literacy. The items required students to evaluate the credibility of a writer's arguments, recognise an author's point of view or agenda/biases and weigh up which source is likely to be more reliable across different text types (e.g. book-like (paginated) texts as well as hyperlinked & scrolling texts).

6. There is limited evidence about critical literacy skill levels and collaborative reasoning across content areas. General collaboration skills appear to be well developed. Collaborative problem solving on computers (working with others to solve a problem through shared understanding and group focus) in a game-based format is a strength of Aotearoa New Zealand's 15-year-olds.[207] Our students achieve significantly higher than international averages and the country overall ranks very highly. This strength may also be related to the finding noted earlier that our students score relatively highly in evaluating and designing scientific enquiry. Subject knowledge contributes to achievement, but collaborative skills that are generalisable across subjects also appear to contribute and are more important than ethnicity and SES.

7. A series of studies in low-decile schools show that without curriculum resources (e.g. a digital platform with sets of texts focused on a challenging environment science or social issue) and deliberate instruction, there are generally low levels of the specific argumentation skills.[208] Students tend to write or orally argue from their own

[207] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0009/183483/PISA-Collaborative-Problem-Solving-Report.pdf

[208] McNaughton, S, Zhu, T, Rosedale, N., Oldehaver, J, Jesson, R., & Greenleaf, C. (2019). Critical perspective taking: Promoting and assessing online written argumentation for dialogic focus. *Studia Paedagogica* (special issue: Better Learning through Argumentation). 24(4), 119-141; Rosedale, N., McNaughton, S., Jesson, R, Zhu, T. & Oldehaver, J. (2019) Online written argumentation: Internal dialogic features and classroom instruction. Chapter 15 (pp. 263-278). In Emmanuel Manalo (Ed.),

perspective and as noted above, find it difficult to critique their own position and empathise with others', either in face-to-face or online interactions.

8. From Year 9 onwards, students' motivation and social and emotional skills including those of self-efficacy and self-regulation make a major contribution to achievement.[209] The probabilities of achieving NCEA and UE are significantly increased with higher levels of these skills. In one estimate, controlling for prior achievement, motivation accounted for 30% of the variance in Grade Point Average calculated from UE. More generally, ratings in PISA of 'growth mindset' (the belief in perseverance and that intelligence can change) relate strongly to achievement. Although two thirds of 15-year-olds have a 'growth mindset', there is a major achievement difference between those with or without a growth mindset, representing about two years of progress.[210]

Literacy instruction: Years 9-11 in Aotearoa New Zealand (universal provision)

1. We are not an outlier in terms of learning time in reading literacy. The time reported by students is around the OECD average, similar to Ireland, Norway and Australia.[211] However, in 2018, students reported less reading of books, less use of longer fiction chapter books, less systematic teaching of new vocabulary, and less reading out loud, and more silent reading. Each of these was related to lower achievement scores.

2. In general, students report receiving levels of teacher, academic and emotional support; feedback; enthusiasm; personalisation' and varied instructional strategies that are higher than OECD averages.[212]

3. Taken together, these features of instruction might indicate that overall our instruction supports high achievement in English. However, the 'diet' of texts both within and outside of schools may be not as extensive, intensive or varied as it has been and may contribute to explanations for the reduced levels of performance at the upper levels.

Deeper learning, dialogic Learning, and critical thinking: Research-based strategies for the classroom. Oxfordshire, England: Routledge.

[209] Hodis, F. A., Meyer, L. H., McClure, J., Weir, K. F. & Wallery, F. H. (2011). A Longitudinal Investigation of Motivation and Secondary School Achievement Using Growth Mixture Modeling. *Journal of Educational Psychology*, 103(2), 312–323. Hogden E. Competent learner@16: *Competency levels and development over time*-technical report. Wellington: Minstry of Education; 2007. Meyer, L. H., McClure, J., Walkey, F., Weir, K. F., & McKenzie, L. (2009). Secondary student motivation orientations and standards-based achievement outcomes. *British Journal of Educational Psychology, 79,* 273–293. doi:10.1348/000709908X354591; Wylie, C. & Hogden, E. (2011). *Forming adulthood. Past. present and future in the learning experiences and views of the competent learners @ 20.* Wellington, New Zealand Ministry of Education.

[210] educationcounts.govt.nz/publications/series/PISA/pisa-2018

[211] educationcounts.govt.nz/publications/series/PISA/pisa-2018

[212] educationcounts.govt.nz/publications/series/PISA/pisa-2018

4. Substantial SES and ethnicity differences in both OTL and instructional support across subjects have been found, paralleling the wide disparities in achievement.[213] Comparing high SES and low SES quartile groups (i.e. top 25% and bottom 25%), Aotearoa New Zealand has the highest country-level OTL gap. When examined between schools and within schools, the gaps are still large in international terms. These gaps have a very strong relationship with achievement.

5. The OTL differences are found in specific instructional patterns such as lower participation rates in complex English standards for level 2 NCEA (30-40% lower), and instruction which is more supportive. The latter may seem paradoxical, but generally reflects a balance of instruction towards support rather than to challenge and building generalisable and independent skills. In English, Māori and Pasifika students and students from low-decile schools tend to receive shorter, simpler and less challenging texts; fewer episodes of extended dialogue; and instruction focused on surface features rather than more complex aspects of literacy. In both science and English these students receive higher rates of feedback. Across the OECD, higher rates of feedback are associated with lower performance in science (even after accounting for SES differences), and this negative relationship is found in Aotearoa New Zealand.[214]

6. The differential patterns can be interpreted in a number of ways (not necessarily mutually exclusive). More scaffolding of activities (seen in the reduced complexity of tasks and high feedback) is consistent with trying to optimise learning with more targeted instruction. But it also carries risks of a reduced curriculum offering and maintenance of disparities, which is the core finding in the OTL literature.

7. Another interpretation focuses on expectations and relationship of respect. This was tested in the intervention programme Te Kotahitanga.[215] At the core of the programme was a change in relationships between Māori students and their teachers, including changed teacher expectations. These changes were associated with higher engagement levels and achievement at NCEA Level 1. The perception of Pasifika students mirrors that of Māori students in commenting on the need to feel respected, challenged and appreciated by their secondary teachers.[216]

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[213] Schmidt, W. H., Burroughs, N. A., Zoido, P. & Richard T. Houang, R. T. (2015). The Role of Schooling in Perpetuating Educational Inequality: An International Perspective. *Educational Researcher*, Vol. 44 No. 7, pp. 371–386 DOI: 10.3102/0013189X15603982; Wilson, W., Madjar, I & McNaughton, S.(2016): Opportunity to learn about disciplinary literacy in senior secondary English classrooms in New Zealand, *The Curriculum Journal*, DOI: 10.1080/09585176.2015.1134339

[214] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0005/195737/Teaching-In-NZ-Feedback2.pdf

[215] Bishop R, Berrymen M, Cavanagh T, Teddy L. Te Kotahitanga: addressing educational disparities facing Maori students in New Zealand. *Teaching and Teacher Education*. 2009; 25: 734-742.

[216] Amituanai-Toloa M, McNaughton S, Lai MK, Arini, with Turner R, Widdowson D, McClue R, Hsiao S, Pale M. Ua Aoina le Manogi o le Lolo: Pasifika schooling improvement research – final report. 2009. Wellington: Ministry of Education.

8. The patterns also reflect the extensive choice offered by the standards-based assessment system (NCEA), schools wanting to support students through to a qualification, and a high stakes environment. The stakes were raised in 2016 with a public target to reach an 85% pass rate in NCEA Level 2 accompanied with media reporting league tables.[217]

9. The within-class achievement differences have been linked to less whole-class teaching and more same-ability grouping, underlining their role in constraining teacher expectations.[218] The between-school differences are linked with a common finding of differential resourcing, such as fewer specialist subject teachers for some low-decile schools serving Pasifika and Māori students or small rural schools serving mostly Māori students.

10. A particular strength in teaching on which we could build is the focus on critical literacy in subject English classes. Up to 80% of students report learning about aspects such as the consequences of making information public online; judging whether to trust information from the internet; or comparing different webpages and deciding the relevance of information.[219] This contrasts with observations of a low focus in critical literacy teaching in primary schools.[220]

11. Inquiry teaching is frequent in science classrooms and, like the general finding across countries, is correlated with lower achievement. The negative correlation is even higher in our national data.

12. One large-scale professional learning and development programme (SLP) used a cascade model (from trainers to facilitators to teachers) to increase both generic and content-specific literacy instruction in low- to medium-decile English medium schools.[221] The programme foci were implemented in variable ways, a common and problematic feature of programme implementation schools. There was evidence for accelerated achievement in writing and reading for Māori and Pasifika students in Year 9 and 10 under optimal conditions of implementation. These included setting

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[217] Wilson, W., Madjar, I & McNaughton, S.(2016): Opportunity to learn about disciplinary literacy in senior secondary English classrooms in New Zealand, *The Curriculum Journal*, DOI: 10.1080/09585176.2015.1134339

[218] Schmidt, W. H., Burroughs, N. A., Zoido, P. & Richard T. Houang, R. T. (2015). The Role of Schooling in Perpetuating Educational Inequality: An International Perspective. *Educational Researcher*, Vol. 44 No. 7, pp. 371–386 DOI: 10.3102/0013189X15603982

[219] educationcounts.govt.nz/publications/series/PISA/pisa-2018

[220] Jesson, R., McNaughton, S., Rosedale, N., Zhu, T. & Cockle, V. (2018). A mixed-methods study to identify effective practices in the teaching of writing in a digital learning environment in low income schools. *Computers and Education*, 119 (April), 14-30; McNaughton, S, Zhu, T, Rosedale, N., Oldehaver, J, Jesson, R., & Greenleaf, C. (2019). Critical perspective taking: Promoting and assessing online written argumentation for dialogic focus. *Studia Paedagogica* (special issue: Better Learning through Argumentation). 24(4). 119-141.

[221] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0004/116284/National-Co-ordination-and-Evaluation-of-the-SLP-2009-2012.pdf

up a group of students with a shared focus across different subject teachers. The focus group has committed leadership, including a dedicated literacy leader guiding discussions about progress and achievement, and inquiry with planned extension to the wider staff.

13. The SLP identified an increased impact of the summer break on Māori and Pasifika students where progress against expected gains dropped between Year 9 and Year 10 relative to other students in the same low- to medium- decile schools.

Intervention and Response to Intervention

1. There is no widespread RTI system in place across secondary schools. Many schools have had a specialist reading teacher, but anecdotal evidence suggests what they do is very variable. One common feature seems to be 'round robin' reading. Kia eke Panuku, a whole-school programme focused on low-decile schools and Māori students included the tutoring programme 'Pause Prompt Praise' in some secondary schools.[222] Both are read aloud programmes originally used to build early accuracy and fluency in reading and likely not to be what low-progress readers and writers in secondary school need for rapid acceleration in content literacies.

2. The Resource Teachers of Literacy (RTLits) only service Years 1-8. The Resource Teachers of Learning and Behaviour (RTLBs) are available for students in Years 1-10. For students with low comprehension, some RTLBs are likely to use the intervention programme 'Reciprocal Teaching' (RT) as indicated by links to the best evidence synthesis (BES) on RT on their professional website.[223] The BES identifies this cooperative learning intervention for teaching generic comprehension strategies as very effective for generic comprehension skills at Year 9. It is not known how widespread implementation of this is, but it has large effect sizes including for Māori and Pasifika students, low-achieving students, students with special needs, and English language learners. As noted in earlier sections, and on the RTLB web site, there are risks associated with strategy interventions, so they need to be carefully designed, monitored and evaluated.

Enablers and constraints on equity and excellence

1. **Māori wellbeing, Māori medium and Māori teaching.** A major enabler of Māori achievement over this period is living in a whānau with strong Māori identity, language and culture. This is highly predictive of NCEA Level 2 and UE achievement.[224] In addition, attending Māori medium schools increases the odds of achievement even more. Finally, a major impact on achievement, is having teachers who are Māori. Achievement is higher in English medium secondary schools with high numbers of Māori teachers.

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[222] https://kep.org.nz/resource-page/ebooks

[223] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0017/107108/BES-Exemplar4.pdf

[224] https://www.educationcounts.govt.nz/__data/assets/pdf_file/0003/198642/He-Whakaaro-Importance-of-Maori-identity-language-and-culture-for-akonga-Maori.pdf

2. **Wellbeing.** New Zealand 15-year-olds report a relatively low sense of belonging at school.[225] The composite measure used by the OECD shows a downward trend from 2000 to 2018, with marked drops in the last three cycles used in PISA (2012, 2015 and 2018). However, only one measure of wellbeing from the composite is significantly related to achievement: 'I feel like an outsider'. Instances of frequent bullying are common and rates have risen significantly: around 20% of students report that they don't feel safe at school, and one in three report bullying occurring at least three times a month. Māori students have lower levels of a sense of belonging at school but report lower experience of bullying than some other groups. The feelings of not belonging or being undervalued have been identified in other research and suggests such feelings are a major constraint on the effectiveness of literacy instruction.

3. **School climate.** Behavioural or disciplinary climates for learning and teaching are important and are related to achievement, over and above SES. The overall ratings for our classrooms are poor in international terms and worsening. Forty-one percent of students report noise and disorder in English classes. There are large SES differences, with lower SES students reporting less conducive climates. Classroom climate is an additional major constraint on the effectiveness of literacy instruction. Although there are various possible explanations for the trend for which there is no clear evidence (e.g. parenting practices, social media use), at the very least it indicates important foci for preparing teachers and for ongoing professional learning.

4. **Engagement.** Attendance is more strongly related to attainment at higher year levels (particularly NCEA) than at earlier year levels. For some students (e.g. those in low-decile schools), attendance appears to be particularly important because it reduces OTLs even further[226]

5. **Professional learning and development.** The secondary literacy project highlighted problems with cascade models for professional learning and development to build capability in schools. Constraints include limited resourcing of leadership – and specifically literacy leadership – in a school as well as capability for data discussions and redesign of instruction within and across content area teaching.[227]

Recommended high-value instructional activities

1. **RTI design for secondary schools.** The evidence about the transition to secondary schooling and the patterns of progress and achievement after transition suggest a rigorous RTI process should be in place. Even with substantial changes in earlier patterns of progress, there will be a need for early identification and systematic interventions for low progress and students with ongoing learning needs. Research

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[225] educationcounts.govt.nz/publications/series/PISA/pisa-2018

[226] https://www.educationcounts.govt.nz/publications/series/he-whakaaro/he-whakaaro-what-is-the-relationship-between-attendance-and-attainment

[227] Wilson, A. & McNaughton, S. (2019). Literacy Leadership Learnings From a Large-Scale Program With Mixed Results. *Journal of Adolescent & Adult Literacy*. 63(4), 462–466 doi: 10.1002/jaal.1024

and development programmes are needed to determine the most culturally appropriate designs.

2. **Summer learning programmes** have a strong experimental and descriptive evidence base.[228] In addition to the programme features that were identified for the transition from Year 8 to Year 9, a coordinated focus on reading and writing texts in content areas should be added. Research and development programmes are needed to determine the most culturally appropriate designs

A note on explaining trends in international comparisons and the 2009-2012 'drop'

1. The international studies suggest an overall downward trend in excellence as measured by levels of achievement, and overall, limited changes in disparities. But the most noticeable drop in international achievement occurred from 2009 to around 2012 in reading, mathematics and science literacy.

2. As indicated by the scenario introducing this paper, there are a number possible explanations for the overall trends, levels and the specific drop – some more reasonable than others. By adopting a developmental or life course perspective it is possible to identify high-value activities in sensitive periods of learning – including over transitions – that would increase levels of achievement and reduce disparities at a system level.

3. The proposal from this life course approach is that only changing one variable at one point is unlikely to make an overall difference. Rather, changes during sensitive periods and at transitions are needed to alter the problematic patterns.

4. The recommended activities are proximal to children's learning and development at particular points in their development. They mostly address aspects of the quality of teaching and curriculum resources. This is not to say that more encompassing conditions – such as changes in disparities in living circumstances or in structural inequalities and discrimination – wouldn't make a difference. Clearly, they do and they would.[229] The recommended changes proposed here would be more powerful given changes in these conditions.

5. However, the noticeable drop in international achievement from 2009 to around 2012 across subjects is a phenomenon in need of a more specific explanation. It is seen in both country ranking and in terms of overall scores. The 2012 15-year-old cohort would have entered school in 2002 and would have been the first of later

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[228] Kim, J. S., & Quinn, D. M. (2013). The effects of summer reading on low-income children's literacy achievement from kindergarten to grade 8 a meta-analysis of classroom and home interventions. *Review of Educational Research, 83*(3), 386–431. https://doi.org/10.3102/0034654313483906; The Washington State Institute for Public Policy http://www.wsipp.wa.gov/BenefitCost/ProgramPdf/354/Summer-learning-programs-Academically-focused;

[229] McNaughton, S. (2011). *Designing better schools for culturally and linguistically diverse children: A science of performance model for research*. New York NY: Routeldge.

cohorts to experience conditions associated with the drop. A variety of single-variable explanations have been proposed – ranging from those quite distal, identifying influences which might not have given the right 'push' for development (e.g. phonics for reading or the numeracy project for maths), to those that introduce a 'pull' factor (e.g. a shift to standards-based assessment). Four explanations relate specifically to literacy.

(a) One explanation focuses on inadequacies in the teaching of phonics in foundational literacy instruction.[230] The standard programme, criticised as not teaching phonics, was largely put in place around the 1960s. The International Association for the Evaluation of Educational Achievement (IEA)[231] and early PISA results established very high literacy achievement in 9-year-olds, 14-year-olds (both in 1992) and 15-year-olds (in 2000), presumably reflecting this well embedded programme. There is no reason to assume that the teaching of phonics in foundational literacy suddenly and markedly changed in 2002. Moreover, any change was likely not dropping the teaching of whatever phonics teaching taking place. The resources for teachers up until 2000 in fact did not reflect the need for children to decode.[232] However, starting in 1999 with a Literacy Task Force Report followed by select committee hearings, and then adopted by the National Literacy Strategy, a change to more direct teaching of aspects of decoding began. The national guidelines, Effective Literacy Practice Year 1-4 (2003)[233] which had extensive professional development and resourcing, recommended teaching of phonics, phonological knowledge and phonemic awareness. The increases in reading accuracy at Year 4 from 1996 to 2010 established by national monitoring suggest this focus did have an effect.[234] This is not to say we shouldn't teach phonics systematically. Apart from examples in the resources of 'deliberate acts of teaching', there is little direction of how best to do this, and evidence shows there are now variable practices in systematic phonics instruction. The evidence clearly indicates we should, as has been recommended in the section on Years 1-3. But a sudden lack of phonics teaching with an ongoing absence of phonics teaching is not a reasonable explanation by itself for the drop in 15-year-olds' achievement in 2012 and thereafter, and for ongoing disparities.

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[230] Chapman, J. W., Greaney, K. T., Arrow A. W. & Tunmer, W. E. (2018) Teachers' use of phonics, knowledge of language constructs, and preferred word identification prompts in relation to beginning readers , *Australian Journal of Learning Difficulties*, 23:1, 87-104, DOI: 10.1080/19404158.2018.1467937.

[231] Elley, W. B. (1992). *How in the World Do Students Read? IEA Study of Reading Literacy.* International Association for the Evaluation of Educational Achievement.

[232] McLachlan, C. & and Arrow, A. (2011). Literacy in the early years in New Zealand: policies, politics and pressing reasons for change. *Literacy,* 45(3), 126-133.

[233] Ministry of Education (2003) *Effective Literacy Practice in Years 1 to 4*. Wellington, NZ: Learning Media.

[234] See reading and writing reports at NEMP https://nemp.otago.ac.nz/

(b) A second explanation focuses on the major change in assessment in upper secondary (NCEA) that took place between 2002-2004. The 2009 cohort of 15-year-olds who were still relatively high in achievement would have experienced the new assessment. But modifications were being made between 2008-2010, for example to moderation and to standards.[235] The changes were well in place by 2012 and were being coupled with a high-stakes environment in which media outlets published league tables. In 2012 a Better Public Service Goal was set to meet a target of 85% of school leavers having NCEA Level 2. This explanation puts the fragmented and idiosyncratic pathways students could take through NCEA, together with the high-stakes context to explain a reduced focus on integrated complex learning and a greater focus on compartmentalised topics, pushed down into the teaching and learning three years from Year 9. [236]

(c) The use of social media has changed markedly, suggesting a third explanation. In 2009, a quarter of students chatted online daily. This increased to three-quarters in 2018. There are two possible explanations for a direct effect on achievement. One might be that the greater use of social media for communication competes with reading and writing extended texts outside of school. This would be consistent with the drop in reported rates of reading and interest in reading, but the current evidence doesn't establish a direct link. That is, we don't know if a student uses social media more they necessarily read and write less; or where cut off points might be. Writing and reading achievement can be increased in ubiquitous digital environments which include outside of school digital usage for non-school purposes, with deliberate and comprehensive in-school programmes.[237] A second is that the use of social media has been claimed to change the focus of reading and writing practices: from being able to process and comprehend extended texts at a deep level, to reading at a surface level with punctuated or 'bite-sized' texts, thereby reducing high-level cognitive processing.[238] Again, direct causal evidence is missing and frequency and duration effects are not known. The relationships are complex and likely not to be linear. For example, in terms of digital usage more broadly, the OECD estimates that screen time of six or more hours per day may be an extreme tipping point for a range of achievement and wellbeing measures.[239]

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[235] https://www.nzqa.govt.nz/ncea/understanding-ncea/history-of-ncea/

[236] https://www.noted.co.nz/currently/currently-education/why-kiwi-teens-are-sliding-on-international-tests

[237] Jesson, R., McNaughton, S., Rosedale, N., Zhu, T. & Cockle, V. (2018). A mixed-methods study to identify effective practices in the teaching of writing in a digital learning environment in low income schools. *Computers and Education*, 119 (April), 14-30

[238] Wolf, M. (2018). *Reader come home: the reading brain in the digital world*. New York: NY. Harper Collins.

[239] OECD (2017). *PISA 2015 Results (Volume III): Students' Well-Being,* PISA, OECD Publishing, Paris, https://doi.org/10.1787/9789264273856-en.

(d) A further explanation is the impact of introducing National Standards.[240] These were introduced in 2010 across reading, writing and mathematics, from Year 1 to Year 8. Because of their public and relatively high-stakes purposes, they could have impacted the cohort who entered school in 2002 and who then experienced them as upper primary students. National Standards would have been more extensively experienced by subsequent cohorts. The international evidence is very clear on side effects of high-stakes assessments, and they include a narrowing of the curriculum and opportunity costs (what isn't being taught because of the test).[241] The evidence is unclear as to whether the implementation of National Standards generally had these untoward effects. The implementation may have narrowed the curriculum focus and teaching resources may have become more focused on getting as many children as possible to achieve expected levels.[242] The consequence of this may have been less focus on high levels of achievement through challenging and complex curricula. There may also have been a subsequent effect on those children traditionally not well served at school because of a reduction in the full range of curriculum experiences, which would be compensated for others by having access to the cultural capital associated with higher SES and living in 'mainstream' communities. But the major evaluations note positive effects as well, and how schools co-opted the standards for other more effective purposes (such as being clearer about expected progress). Given that the National Standards have now been removed, there is the possibility of a 'natural experiment' which the discontinuity creates. However, the major claim of this paper is that we need to look at multiple and combined causes for patterns rather than single explanations.

6. In summary, it is unlikely that there is a single explanation for the drop and perhaps a combination of each of the major explanations is the most reasonable approach to take. More importantly, there are clear indications from this landscape about where resources could now be deployed more effectively that are likely to have a longer term and broader impact on our Equity and Excellence objectives. This final comment raises an issue which is beyond this paper to address. It is the paucity of evidence in some areas to help untangle issues such as this one. This in turn leads directly to an issue about the overall funding for research and development and evaluation in education, and system-level data.

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[240] https://www.nzcer.org.nz/research/national-standards

[241] McNaughton, S. (2018). *Instructional Risk in Education: Why instruction can fail*. New York: NY. Routledge.

[242] Thrupp, M. (2017). New Zealand's National Standards policy: How should we view it a decade on? *Teachers and Curriculum*, 17(1), 11–15.