

The impact of COVID-19 on educational outcomes in disadvantaged populations in Aotearoa New Zealand. Project report by the University of Auckland Coalition on Applied Cognition/Learning and Thinking/Learning sciences. April 2022.

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The brief for this project is provided as Appendix I.

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Background

This report was developed as a small research project for The University of Auckland Coalition on Applied Cognition/Learning and Thinking/Learning Sciences. Stimulated by a presentation from the Chief Education Scientific Advisor Professor Stuart McNaughton (2020) at a Coalition mini-conference on the topic '*What value do learning sciences add?*', three projects were identified to examine the effects of COVID-19 on learning. This report covers the project entitled 'The impact of COVID-19 on educational outcomes in disadvantaged populations' led by Professor Suzanne Purdy, Head of the School of Psychology at The University of Auckland, and supported by a group of Coalition members.

This report overlaps with the second Coalition project report titled 'Child and Youth Wellbeing in Aotearoa New Zealand, including through the COVID-19 Lockdown and in Digital Wellbeing'. Also, it was initially completed in April 2021, but updated in May 2022.

All three project reports had emerging themes of:

- the value of interdisciplinary research, and ongoing co-ordination and connection

- the need to enhance understanding and acceleration of learning and thinking processes
- the importance of equity issues and child voice.

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Section 1. Executive Summary

Aim: There are several elements of the brief which were focused on:

1. We aimed to carry out a scoping study to look at the key challenges arising from COVID-19, in relation to disadvantaged students, using existing reports and other publications.
2. We aimed to consider what responses to COVID-19 could be made using programmes already in existence. In his presentation to the Coalition mini-conference Professor Stuart McNaughton had noted the value of identifying programmes already available for 'accelerated learning' to address learner needs experienced through COVID-19.
3. We aimed to look at strategies used by the government to address the COVID-19 problems identified, and if possible to start to evaluate their efficacy.

Key outcomes:

- The project outcomes focused on key learning challenges arising from COVID-19, and programmes already available for addressing these.
- Teacher and whānau 'scaffolding' of learning during Covid-19, and teacher focus on the Key Competencies of the New Zealand Education Curriculum (which include 'thinking') were identified as of value for student progress in learning itself and learning self-management.
- Equity issues in relation to access to education during COVID-19 (including digital devices) were clear in the Covid-19 published documents, so programmes reviewed for learning and thinking (cognitive and metacognitive) enhancement were chosen and considered in relation to their value for learners experiencing disadvantage.

- First, 6 programmes with a Vygotskian theoretical base were reviewed, and 2 with a theoretical base similar to a Vygotskian one. The Vygotskian theory, with its strong emphasis on social construction and reciprocity, has a pedagogy used widely in New Zealand schools. Most of the programmes reviewed in this category also had strong evidence for their value for learners from differing cultural contexts.
- Second, 4 programmes reviewed addressed the critical thinking and writing which McNaughton stated are of importance in relation to COVID-19 in his 2020 presentation to the Coalition. Critical thinking is also considered important to ensure digital wellbeing and information rights. The May 2022 International Science Council Report *Unprecedented and Unfinished: COVID-19 and Implications for National and Global Policy* has identified the need to address the challenges of disinformation in its recommendations.
- A number of the learning and thinking enhancement programmes reviewed are taught in lessons separate to other curriculum subjects, but incorporate an essential component of ‘bridging’ to other curriculum learning and real-life problem solving. Leading New Zealand and international advice is that an ‘either-or’ approach should be avoided, and strong teaching of thinking and other curriculum subject teaching are both essential for fulfilling learning potential.
- Several programmes developed explicitly for enhancement of executive functioning are tentatively reviewed in one document.
- The importance of the agency and voice of the child is noted in a number of reports on COVID-19, including in recent reports from the Commissioner for Children and the Children’s Convention Monitoring Group. Partnership with the child and the voice of the child were found to be as important in coverage of a number of the cognitive enhancement programmes reviewed.
- There is now an evaluation of the Ministry of Education’s COVID-19 Urgent Response Fund, which schools could use in a way of their choice. The report, released in April 2022 by the Ministry of Education indicated that learners supported by this fund showed improvements in re-engagement in

learning, wellbeing, and cultural wellbeing. The main uses of the funds were for teacher aides and for wellbeing/hauora.

Conceptual framework used:

Because it was considered important to understand the context in which impacts were experienced, (as well as context factors in term of implementing any strategies and programmes to address problems), the updated Bronfenbrenner (1992) Ecological Systems Theory was used as a framework for the work of both the first and second aims. There is an excellent outline of this framework for use in disability research written by Sontag (1996), and Robin Lane, a member of the Coalition, is expanding this framework for an ecological theory of learning in his doctoral study.

For the second aim, the consideration of programmes already in existence which might help in addressing problems from COVID-19, used as well as the Bronfenbrenner theoretical framework, a set of criteria for evaluating programmes for intellectual skills training by an international expert on cognitive and metacognitive enhancement, Professor Robert Sternberg (1983). These Sternberg criteria align well with the Bronfenbrenner framework.

Appendix II details this conceptual framework.

Summary of findings from the scoping study of key learning challenges arising from COVID-19.

The report on this element of the study is titled 'Key learning challenges arising from COVID-19 in New Zealand: A Scoping review'. It was written primarily by Victoria Burney, one of the two researchers contracted to carry out the project, and a postgraduate researcher in the School of Psychology at the University of Auckland.

It used a methodological framework for scoping studies developed by Arksey and O'Malley (2005), and also carefully defined the key term used in the project, 'disadvantaged learners'.

Three main areas of learning challenges during Covid19 were identified: Those relating to **achievement**, those relating to **access to learning**, and those relating to **attendance**. It is clear that these areas inter-relate.

In terms of **achievement**, the important set of ERO research documents released in early 2021 indicated that a significant proportion of senior secondary school students (26%) felt that they were not coping well with their school work while learning from home, and just over half of primary school students (61%) and only a quarter of NCEA students (24%) agreed that they were 'up to date with their learning'. The roles of teacher scaffolding and the presence of someone at home who could support the learner appeared to be important factors in the impact on achievement. Also positively, where lockdown learning was framed around the Key Competencies of the New Zealand Curriculum, teachers saw progress in self management and student agency. This was supported by teachers applying 'a sound understanding of the science of learning... to pedagogical approaches' (ERO, 2021a, p. 26).

Teachers highlighted lost progress in the writing domain as a main concern, with reading and mathematics easier to engage with in on-line learning. Also, in relation to students with disadvantage, ERO (2021a) reported that 80% of low decile schools considered that progress and achievement was of concern for at least some of their students, with teachers estimating the loss of about a term's worth of learning' (p. 16).

However, such estimations need more supporting evidence from actual assessment data, with standardised data throwing more light on quantification of what effect, on which learning domains, and to what extent lockdown may have affected achievement.

In terms of **access**, what was already known as the inequity involved with the 'digital divide' was demonstrated through COVID-19. For example, an important

collaboration between Ngāti Whātua Orākei and Koi Tū (Hunia and colleagues, 2020) found that of those surveyed ‘over half of the NCEA students...did not have access to the necessary digital devices... to engage effectively with their learning’ (p. 17). This was further complicated by the limited capacities on the devices they did have for on line learning activities (such as Zoom Google, classroom and microphone compatibility), the need to share digital devices, and appropriate space at home to complete their school work.

A study by Flack et al. (2020) which surveyed teachers found that they were particularly concerned for rural, low income and indigenous (Māori) students, relating to limited access to digital devices, and concerned that their relationships with their students would be disrupted which could impact future participation in learning.

A raft of additional Ministry of Education support for digital learning has been made available since this initial report was written. For example, on 1st June 2021 the Ministry announced an initiative called ‘Tackling the digital divide during COVID-19’ which included connecting digitally-excluded homes and coordinating and accelerating action on digital inclusion. On the 8 March 2022 the Ministry allocated an additional \$11 funding to support distance/hybrid learning through the Omicron peak.

The International Science Council Report (May 2022) *Unprecedented and Unfinished: Covid-19 and Implications for National and Global Policy*, identified elimination of the digital divide as one of its recommendations.

In terms of **attendance** the ERO (2021b) report emphasised the impact of lockdown on ‘already disadvantaged students’ who were at greater risk of disengagement from learning prior to the Covid-19 lockdown and move to remote learning. The Ministry of Education has found that students from low decile schools, as well as Māori and Pasifika students in the Auckland region had lower levels of attendance at school after lockdown (Webber, 2020a). This trend was even greater following the subsequent Auckland lockdown. Students in Māori language immersion had markedly lower attendance in 2020 compared to the previous year, and more chronic or unexplained absences from school. The ERO

(2021b) report focused attention on goal setting with students, facilitating student mentoring relationships, providing small group instruction, and celebrating improvement (while avoiding deficit framing) to address this problem.

In May 2022 the Minister of Education announced a Budget allocation of \$88 million to address school attendance issues particularly due to COVID-19, with a truancy focus. The funding is to support initiatives that work for local communities to deal with engagement and attendance, the use of the positive behaviour for learning programme, and \$7.75 million specifically for Māori and Pasifika communities.

Summary of work for the second element of the project, titled ‘Responses to COVID-10 which might be made using programmes already in existence: An overview.

The overview document needs to be read in conjunction with each of the programme summary documents. All but one were written primarily by Dr. Dorothy Howie.

Programmes were selected which had a strong cognitive and metacognitive enhancement aim, had relevant empirical data to endorse their use, including use and evaluation within the New Zealand educational context, and if possible particular advantage for disadvantaged, and Māori and Pasifika learners.

Six programmes were summarized which had a base in the Vygotskian socio-cultural theory of social construction, a pedagogy widely used in New Zealand schools. These are: Reading Recovery, Bright Start, Reciprocal Teaching, Feed Forward Self-Modelling, MATES (a peer tutoring and mentoring programme) and STARS (a mentoring programme).

Two programmes with a theoretical base very similar to the Vygotskian Theory were also summarized. These are: The Feuerstein Programme for cognitive enhancement, and the HIPPY Programme (an early childhood home instruction cognitive programme taught by the parents.)

Four programmes which address critical thinking were summarized: These included the Philosophy for Children programme, Edward de Bono's CoRT programme and the related 'Six Hats' programme, the Self Regulated Strategy in Writing and the Swartz and Parks programme. The last Swartz and Parks programme is generally viewed as an 'Infusion' programme, and is operationalised in Northern Ireland as the ACTS programme.

Finally, several programmes which aimed specifically at enhancing executive functioning were combined into one summary document without a full summary for each, as all but one are recently developed programmes with limited evaluation data from New Zealand.

Strategies used by the government to address COVID-19.

We focused on following up the government Urgent Response Fund which schools could use in a way of their choice. Professor McNaughton in his 2020 presentation to the Coalition mini conference had mentioned the work of one school with many Pasifika students which had used this fund to support more senior students from years 11, 12 and 13 in peer tutoring younger students. In the hope of at least starting some evaluation exercise around such Urgent Response Fund use, contact was made with the Ministry of Education, the local Auckland regional Ministry of Education office, and a local secondary school possibly using the fund in such a way with its high proportion of Pasifika students.

The most promising possibility was the ongoing communication with the national Ministry of Education team with responsibility for evaluating the use of this Fund. This team expressed a willingness to share information with our project team.

In April 2022 a member of this team shared the just available Ministry of Education *Report on the Urgent Responses Fund Outcomes Survey*. Thirty-two per cent of the education institutions that received URF funding responded to the survey. Almost two-thirds of these institutions used the funding for teacher aides. Wellbeing was also a common category selected by 52% schools and kura and 40% of early learning institutions. Overwhelmingly, respondents agree or strongly agreed that learners supported showed improved engagement in learning (93%)

and wellbeing (82%). 71% agreed or strongly agreed that learners supported by the funding showed improved cultural wellbeing. The report identified that two thirds of the respondents (68%) stated that the needs of learners at their institution relating to attendance, re-engagement in learning or wellbeing would not end once URF funding was exhausted. The report also gives information specific to the Auckland region.

More specific examples from regional use of the Urgent Response Fund can be found in the 12 August 2021 Education Gazette article, called *Urgent Response Fund enhances learning in Te Matua-a-Māui*. In this Napier/Hastings region, examples are given of Hasting's Intermediate School employing a 'Māori Mentor', particularly for the empowerment of a group of boys; and Tamatea High School in Napier implemented a programme encouraging cultural connectedness and a sense of belonging, with the aim of reconnection and re-engagement. It also supported NCEA achievement with a new innovative programme for year 11 students involving a rich cultural learning experience on the Marae.

Some issues arising from the project work:

Macrosystem level:

A number of reports on needs associated with COVID-19 express concern about equity issues, including in relation to access to devices and school attendance. Clearly these link to wider socio-economic issues, which may disproportionately impact on Māori and Pasifika learners.

The programmes chosen to summarise for this project were selected as appropriate from an equity point of view, but care needs to be taken that both the choice to use a programme, and which programme, works to mitigate inequity. For example, there may be problems with the Swartz and Parks type of infusion programme in not giving adequate support to learners with greater learning challenges. Baumfield (1997), an international leader in the teaching of thinking, comments that improvement for all should be sought from a programme for teaching thinking, not success for a few.

There is also a danger that only schools able to afford to use a programme for teaching thinking that requires resources for training and implementation, adopt a programme, thus further advantaging their students. An early New Zealand study on the key competencies, which include thinking, carried out by Hamilton, Farruggia, Peterson and Carne (2013) found that the secondary schools studied which were decile 1 schools had less clear implementation plans and accessed fewer resources to guide implementation, which they thought may have been related to budgetary concerns. (One of the authors, Elizabeth Peterson, is a Coalition member.) The New Zealand Government does support several of the programmes summarized in this project, including Reading Recovery and the HIPPY programme, both requiring significant resources. These are precedents which should be expanded on, particularly for programmes such as the Feuerstein one aimed at enhancement of thinking and learning for disadvantaged learners.

According to the Convention on the Rights of the Child (United Nations 1989) Article 29, all children have the right to the development of their personality, talents, and mental and physical abilities to their fullest potential. There is a requirement in the New Zealand National Curriculum (Ministry of Education, 2007) for the teaching of thinking in all schools as a first Key Competency. This requirement has been explained in an important background paper by Hipkins (2008). Two ERO (2019) reports have endorsed the importance of the Key Competencies and found that only a quarter of the schools studied adequately implemented the Key Competencies. The ERO reports reviewed in the scoping study for this project note an encouraging focus on the Key Competencies by teachers during COVID-19. It is hoped that this can be built on and supported by the Ministry of Education. The Labour Party in its Party Education Manifesto prior to return to the current Coalition government did state that it would abolish National Standards and put the Key Competencies at the heart of education. Responses in relation to Covid-19 give further impetus to the fulfilling of this promise.

Another macrosystem issue is the cultural factors of importance for Māori and Pasifika learners in relation to COVID-19. ERO reports (2021 a,b,c and d) gave particular attention to these factors in studying Covid-19 responses. There is

clearly a complex interaction between socio-economic factors and cultural/community/whānau factors for these learners, in relation to COVID-19 impacts.

Added to this is the importance of attention to the cultural appropriateness of programmes for the enhancement of learning and thinking for these groups. We know from the socio/historical theory of Vygotsky that our thinking comes from internalized speech and language, and therefore is culturally embedded. Howie (2011 and 2020) has paid particular attention to cultural factors in discussing internationally used programmes for the teaching of thinking. Choice of programmes summarized for this project, and coverage of each summary, tried to give attention to cultural factors.

Of particular value are the frameworks put forward by Māori scholars themselves which can inform and enhance the implementation of programmes for the teaching of thinking. These are covered in the Overview of programmes section, and are the MacFarlane, Glynn, Grace and Pentito (2005) *He Tikanga Whakaaro, A Response from a Māori Worldview to the Proposed Curriculum Framework Key Competencies*, and the Rauru Whakarere Evaluation Framework (Feekery and Jeffrey, 2019) for critical thinking.

Exosystem level:

Clearly COVID-19 has called for a whole-school approach to meeting COVID-19 needs. Strong leadership, particularly by school principals, has figured in the media. There is a parallel move towards a whole school approach to the teaching of thinking. Some of the programmes summarized in this report are being implemented in a whole school way, with international bodies being set up to build a registrar of certificated 'thinking schools', such as the Cognitive Education Development Unit at Exeter University. Principal and school management leadership is vital for successful whole school teaching of learning and thinking. It is also important that the aim of programmes which enhance individual decision-making and critical thinking fits comfortably within the whole school ethos.

Howie (2011) has put forward a three-tiered framework for the whole school teaching of thinking, with tier one addressing high quality teaching thinking for all students, tier 2 addressing more intensive teaching of thinking for groups of learners with shared learning needs; and tier 3 addressing further support for teaching of thinking for individual learners with significant learning challenges. This three-tiered framework is similar to that used to address the key competencies in the Ministry of Education supported programme 'Positive Behaviour for Learning'. McNaughton (2020b) emphasises the integration of literacy instruction across the school using a similar three-tiered framework. It is of interest that the ERO (2021b) report outlines a three-tiered response to promoting engagement following Covid-19.

The Government 'Urgent Response Fund' available to schools for support during COVID-19 was clearly used by individual schools in ways which they considered most appropriate in meeting their student needs. The third element of this project sought to link to both the Ministry of Education and at least one individual school to explore decision-making around this funding use, and evaluation of its effectiveness. It draws attention to the role of individual schools in deciding which programmes for the enhancement of learning and thinking post COVID-19 might best match with the unique strengths and needs of its students. The final chapter of Howie's 2011 book, called 'Decision making for a whole-school approach to teaching thinking for all', outlines a collaborative decision-making process which could be used by schools in linking such unique school population learning need identification with characteristics of available learning enhancement programmes.

Another issue at this exosystem level is the cross-curriculum work carried out to enhance learning and thinking. Some programmes summarized in this report lend themselves well to this, such as reciprocal teaching. However, most programmes for the enhancement of thinking require skilled teaching of learning and thinking strategies for transfer across curriculum subject areas and aspects of students' lives, as integral to the programme implementation. Also the teaching of such programmes by the normal classroom teacher is encouraged, rather than outside of the ordinary classroom, to maximise opportunities for such transfer. This is also

in line with our Ministry of Education inclusion policy, with its 'wrap around' in classroom support.

The ERO Reports on COVID-19 expressed concern for the needs of students with disabilities through COVID-19, and there is a valuable sharing of concerns by Jane Lee, both a tutor in rehabilitation and disability, and a parent of four children with disabilities (Deguara, 2020) detailed in the scoping report. However, our knowledge is limited on both the needs of schools which cater only for such children i.e. 'Special Schools' through COVID-19, and we also know little about the implementation of the programmes covered in this report for learning and thinking, in such New Zealand schools. The Feuerstein cognitive enhancement programme is widely used internationally to address the learning and thinking of students in such schools, as well as in ordinary schools.

Mesosystem level:

Issues relating to the wider family and peer factors are important at this level, including the ability of family members to support children in their learning. ERO (2021a) sees increased communication and connection with families/whānau as an important protective factor which should be prioritized in moving forward from COVID-19.

The programmes summarized have differing requirements in terms of parental/whānau involvement, including the HIPPY programme which is delivered by the parents.

Similarly, the ERO (2021a) report sees wider peer supportive relationships as important for cooperative learning and learning in collaboration and suggests that post COVID-19 schools establish 'friendship groups' and 'Tuākana-teina' arrangements for students. It sees 'leveraging the power of peer support' as a strategy for going forward' (p. 42). A number of the programmes summarized for this project have peer learning as an important aspect of the pedagogy. The Vygotskian social construction theory informs programmes such as reciprocal teaching, and the role of the peer as model is important in programmes such as the Feuerstein programme and programmes for critical thinking. The complex

relationships and partnerships between the learner and all of the mediating learning influences in the learner's life suggest that for embedding and maintaining enhanced learning and thinking, a narrowly focused 'brain training' computer led programme may be of limited use.

Microsystem level:

This is the learner/teacher direct interaction level. The scoping study identified comments from both the McNaughton (2020a) presentation and the Hunia et. al (2020) study indicating the value of 'accelerated learning' post COVID-19. This could well include acceleration of 'learning how to learn' through the types of programmes summarized for this project.

One issue identified in the reports is the challenge for teachers in meeting the individual learning needs of students through the COVID-19 lockdown. There has been some understanding in New Zealand of the importance of personalized learning, which is seen as part of 21st Century learning (Bolstad and Gilbert, 2012, in a Report to the Ministry of Education). The ERO (2021a) report suggests as a main strategy to support learning post lockdown 'flexible and personalized teaching and learning' (p.20). This involves both preparing every individual student with the skills needed to participate fully in their own futures, and enhancing their personal learning choices.

In summarizing possible programmes for use post COVID-19 Howie made use of the Sternberg (1983) criteria for evaluating programmes for intellectual skill training. One of these is that they are evaluated for individual learner response to each component of the programme. Only a few of the programmes surveyed had available such evaluation criteria, but notably included the original Palinscar and Browne (1984) evaluation of Reciprocal Teaching, the Howie and colleagues' evaluations of their Feuerstein programme implementations, and the Dowrick evaluations of Feed forward video self-modelling. All used some form of single subject research design, and in the case of Howie and colleagues, this was additional to a control group design. These programmes therefore have rich evaluation information about individual response to the programme to inform use of the programme to address individual needs.

Another issue from the reports on needs through COVID-19 is the importance of the teacher/student relationship, involving a learning partnership. This involves reciprocity and respect, and mirrors the identification of the importance of this 'Ako' principle in learning plans for Māori and Pasifika learners. Most of the programmes summarized for this project place important on this reciprocal relationship in learning. The Feuerstein approach has reciprocity as one of its central criteria for mediated learning experience.

The issue of partnership in learning is related to development of self-agency in learning, another issue raised in the reports on learning through COVID-19. The programmes summarized in this project address not just the cognitive thinking processes, but the metacognitive processes, the management of one's own thinking and learning. Enhancing both self-engagement and agency in learning and thinking is clearly an important value in the challenging COVID-19 world and the changing world of the future. The ERO (2021a) report noted that students, teachers, and parents and whānau all commented on the perceived value of self-agency for enhancing learning during the lockdown. Also important to self-agency in learning is the student voice in the learning partnership. New Zealand falls behind a number of other developed countries in not adequately attending to this learning partnership in its education legislation. Although a signatory of the United Nations Convention on the Rights of the Child (1989), which includes the right to a voice, this right is not as yet clearly stated in our education legislation (Howie, 2010). As outlined in the update section of the scoping report, the two reports by the Office for the Children's Commissioner (2020) *Life in Lockdown: Children and young people's views on the nation-wide COVID-19 level 3 and 4 lockdown between March and May 2020*, and the Children's Convention Monitoring Group (2021) *Children's Rights in the Covid-19 Response* both draw attention to the importance of children being informed and having a voice during such a pandemic.

In commenting on how research on schools' responses to earlier crises might help in the COVID-19 recovery process, Professor Carol Mutch (2020) comments 'While of course, we understand that children and young people can be vulnerable in crisis contexts, they are not passive victims. They have a right to participate in

issues that relate to them. We need to listen to their views and engage them in suitable crisis recovery activities’ (p. 6). She suggests that these could include ‘guided discussions through picture books and puppets’, and a range of safe practices such as arts-based activities and story telling, through which children can begin to make sense of what has happened. (p.7).

The self-agency of the learner is related to critical thinking, the ability to independently evaluate information. Professor McNaughton (2020a) identified this as important in outlining COVID-19 needs, and a number of the programmes summarized address this thinking skill. The New Zealand Education Act 1989 states in Part 1AA, (1A) that the Minister may issue a statement of National Education and Learning priorities to (3 (b)) ‘provide development in each child and young person in... (i)... creative and critical thinking’.

Further research questions arising from the project:

1. Need for ongoing study of the actual achievement impacts of COVID-19 in New Zealand. While the reports scoped expected impacts on student achievements, and negative trends foreshadowed, at the time of the scoping of the reports limited empirical evidence was available to validate this potential impact. Research on more immediate impacts, and also long-term impacts through longitudinal studies of cohorts over time would be of value.
2. Need for further study of the needs of Pasifika students in relation to lockdown. The ERO (2021a) report did share some findings which identified both similar concerns for Māori and Pasifika learners, but also some interesting differences. For example, although there were similar levels of concern for both sets of students, ‘Pasifika secondary students in decile 1 – 3 schools were more positive about being able to learn from home’ and ‘more likely to report someone in their home had become more interested in their learning after lockdown’ (p. 28). There were however reported language barriers in some cases with Pasifika families. The scoping report details some interesting comments from a profile on Pasifika students’ responses to lockdown made by Julene Duerksen-Kapao (Education

Gazette, 2020) concerning the importance of face-to-face learning for these students.

The brief for this overall project suggests further work studying Pasifika learning needs both in relation to COVID and beyond that, which proved too difficult to carry out within the time and cost constraints of this small project. Also, Professor Suzanne Purdy, who leads the project group, had a Tongan postgraduate student, Malakai Vaoleti, carrying out a dissertation in 2021 exploring Pasifika response to COVID-19. He studied the views of Pasifika students aged 16 – 18 years. They identified the heroic efforts of teachers through COVID, but recognized that schools, especially decile 1 schools, needed more support. These high school students were achieving, but held their families and church as having primary importance. Some said that COVID gave them time to think about what they wanted to do with their life. It was agreed that a separate study led by a person of Pasifika cultural background to cover the Pasifika student needs identified in the brief would be preferable.

3. Currently, there is a relative paucity of literature identifying the experiences of, or challenges for, learners with additional learning needs or disabilities, related to learning through COVID-19. This, along with understanding of what protective steps were taken to circumvent or avoid poorer achievement for such children would be of value, including for children in both ordinary and special schools.
4. As noted above in relation to the third aim of this project, it would be of value to understand how schools used the Urgent Response Fund from the government, and a Ministry of Education (2022) *Report on the Urgent Response Fund Outcomes Survey* does provide an overview of this. Although some reports are available (and covered in the first aim of this project) concerning how schools and their communities sought to use unique approaches and programmes to address COVID- 19 needs, further research on this and the effectiveness of different uses would be of value.
5. No doubt a lot will have been learnt by school staff and students on how best to engage with remote learning, through this COVID-19 lockdown experience. This project has identified important issues relating to learning

self-management, but also the important role and challenges which the family, peers and teachers, play in ensuring and enhancing maximum benefit in learning through this medium. This is a huge and complex area for ongoing research. The ERO (2021d) report on learning in Māori immersion schools had particularly rich findings concerning access to learning in digital contexts, as reported in the scoping study. The Hunia et. al (2020) study is also helpful in identifying Māori needs in relation to digital learning. Another project group set up after the Coalition meeting with Professor Stuart McNaughton has looked at child and youth wellbeing in a digital age in Aotearoa New Zealand, and identified some of the documentation relating to digital use throughout COVID-19 in 2020. An important issue identified in that coverage is digital safety.

6. Post-COVID-19 is a time which encourages us to consider the immediate changes to our world, and what transformational changes in children's learning experiences will best prepare them for this world. We need to ensure that future evaluations of new policies and programme implementations attend to individual student characteristic needs, such as learning challenges and cultural values, with a greater use of single subject design and obtaining student meanings through student interview.

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Section 2. Key learning challenges arising from Covid-19 in New Zealand: A scoping review.

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Aim: This section details a scoping review of literature outlining key learning challenges that have arisen out of the COVID-19 situation in New Zealand.

This scoping review was initiated to canvas published literature on learning outcomes arising from the emergence of the COVID-19 pandemic and related lockdown/school closures in New Zealand. Particular attention was given to material which referenced the impact of the COVID-19 pandemic on disadvantaged learners (a term which is defined in the context of New Zealand, below). At the time of writing, in early 2021, relatively little empirical literature was available which described in the impact of COVID-19 on New Zealand students. Notable exceptions include the recent series of Education Review Office (ERO) reports titled 'Learning in a Covid-19 World' (2021a, 2021b, 2021c, 2021d), which detail the impact of COVID-19 changes to schooling on students, teachers, and schools (ERO, 2021a).

Scoping procedure

In line with the methodological framework for scoping studies developed by Arksey and O'Malley (2005), search terms and parameters were developed, as well as criteria guiding inclusion / exclusion of published material and analysis of material in line with the aim and intended audience of the study (Levac et al., 2010). Literature was identified using search terms and including Boolean operators to expand search ranges. Search terms included: covid19*, education, learn*, disadvantaged, vulnerable, student*, lockdown, academic, initiative*. Searches were further refined using: New Zealand*, school* and learning*. Electronic databases including ERIC and PsychInfo were searched, as well as general internet browser searches (Google, Google Scholar) to identify grey literature. Further electronic searches of relevant New Zealand organisation websites were undertaken including: Ministry of Education, New Zealand Teachers Council, New Zealand Council for Educational Research, and Education Review Office. Hand searching of reference lists was employed to ensure the full complement of relevant published material was identified. This search strategy yielded a large volume of literature, beyond what was practical in the scope of this project. Unpublished material relating to Stuart McNaughton's presentation to the Coalition (titled: *'What value do learning sciences add?'*) was shared by the second author and included in the analysis.

Given the short timeframe of the Coalition project, only those studies which detailed the situation in New Zealand schools, and impact on New Zealand learners, were explored in this scoping review. While there is thought-provoking research being generated in other countries with a similar pandemic response to that of New Zealand (see: Brown et al., 2020; Drane et al., 2020; Engzell et al., 2021), which could offer some insight into 'where to next' for New Zealand schools and learners, this sits outside the scope of the current report.

Publications which met inclusion criteria are summarised below, under three key thematic headings: impact on student achievement (achievement), relationship to the digital divide and access to learning (access), as well as issues of attendance and engagement (attendance). Review of this literature employs elements of

Bronfenbrenner's updated Ecological Systems Theory model (1992), to position information in relation to broader systems and contexts.

Defining disadvantaged learners

In New Zealand, students who are subject to social and economic hardship, thus classed as having low socio-economic status, are considered likely to experience poorer educational outcomes (Ministry of Education, 2019). For these learners, factors such as household income and education level of parents or caregivers can contribute to families being less able to provide financial support and learning resources (i.e. books and materials), and families with less ability to successfully navigate the education system, all of which can adversely impact learning and achievement of students (Reimers & Schleicher, 2020). Such exosystem factors in the environments of students (Sontag, 1996) are thought to position these individuals as disadvantaged within the education system, and at risk for poor achievement (Goldfeld et al., 2018). There is a longstanding disparity within learning in New Zealand which sees Māori and Pasifika students achieving poorer educational outcomes than counterparts of other ethnic identifications (Ministry of Education, 2009). While this disparity may be again linked to socioeconomic status (and related issues of increased family mobility and absenteeism), Māori and Pasifika students are routinely identified as disadvantaged learner populations vulnerable to lower rates of achievement (Bolton, 2017). Further, students with additional learning needs, diagnoses of physical or developmental delay, and those accessing alternative education settings are also considered vulnerable to poorer educational outcomes (OECD, 2020), and form part of the disadvantaged groups of students in New Zealand education. The wider factors contributing to disadvantage can be considered to occur at the Bronfenbrenner (1992) macrosystem level. The individual characteristics which can disadvantage the learner are expressed at the Bronfenbrenner (1992) microsystem level.

COVID-19 and New Zealand schools

2020 saw novel Coronavirus infections spreading across the world, and the subsequent classification of a Global Pandemic (World Health Organisation [WHO], 2021). Lockdowns were initiated in many countries and the daily activities of people were severely restricted (WHO, 2021). In New Zealand, a national lockdown was imposed in March 2020, meaning all schools in New Zealand were required to close their physical locations and move to teaching and learning online or from home (New Zealand Government, 2020). For a period of 6 weeks, all New Zealand students engaged in learning from home, under Alert levels 3 and 4 (ERO, 2021a). Subsequent returns to lockdown in the Auckland region in August 2020, and February 2021, have seen further disruption to physical attendance at school and shifts to online learning (Ministry of Education, 2021). The impact of this swift change in ways of living, working, and learning has been felt across all sectors. With respect to learning, UNESCO (2020) predicts that the impacts will be significant, with learners who were already positioned as 'disadvantaged' under existing education systems at greater risk of inequality as a result of moving to remote teaching (Giannini, 2020).

Key learning challenge: Achievement

In what is arguably the most comprehensive analysis of COVID-19's impact on learning in New Zealand to date, The Education Review Office (ERO; 2021a, 2021b, 2021c, 2021d) has published four reports generated from mixed method analyses investigating the effects of, responses to, and ongoing challenges arising from, lockdown and remote learning. Data were collected across surveys of students, teachers, and principals during and following the national lockdown, supplemented by interviews and focus groups.

One outcome of the ERO research was the impact of COVID-19 and home learning on student's perception of workload, where '26 percent of senior secondary students (Year 11 – 13) disagreed or strongly disagreed that they were coping well with their schoolwork while learning at home' (p. 7). Additionally, many students reported that they were not keeping up with their learning tasks, with just over half (61 percent) of primary students and only a quarter of NCEA students (24 percent)

surveyed agreeing they were 'up to date with their learning' (p. 19). Here, meeting workload demands while learning at home posed a challenge for many learners, particularly senior students. The Education Review Office reports offer context for this finding, suggesting that some students were less likely to have someone at home who could support them, or that family / whānau may have found it harder to help students with their 'more advanced work' (2021a, p. 7). In this way, mesosystem (wider family and peers) influences (Bronfenbrenner, 1992) may be seen to have posed challenge for learners, with strain on the parent /child dyad impacted by the perceived difficulty of academic tasks. Wider context can also be considered, with parent's own literacy levels and rates of school achievement having impact on their availability to support the learning of their children. In response to challenges around whānau engagement with student learning, ERO (2021a) highlights increased communication and connection with whānau as a protective factor, which could be prioritised as a means to support learners moving forward from COVID-19 lockdowns. Echoed by McNaughton (2020), consideration of 'high dosage' initiatives that encourage whānau engagement in schooling (during lockdown events and beyond) could help students keep up, or catch up, with learning impacted by Covid-19.

In a survey of teachers (251 respondents), parents (64) and students (47) immediately following lockdown (May, 2020), Hood (2020) identified that students who were primarily used to teacher-led instruction struggled to employ skills such as self-motivation, regulation and time management to help manage their workload when learning from home. Students were able to choose which activities to participate in, with limited teacher accountability, resulting in some respondents falling behind in completion of tasks (Hood, 2020). Additionally, some students reported that the quantity of work allocated was too great, and this contributed to their demotivation for learning. These factors may be understood as transecting both the microsystem and mesosystems in environments of these learners (Sontag, 1996). Where skills of motivation and prioritisation had yet to be systematically taught and reinforced, students who suddenly found themselves without teacher proximity and scaffolding fell behind in their workload Hood, 2020). In exploring possible impacts on learners, ERO (2021a) positioned developments in student

skills of thinking about their own learning as protective. Specifically, in situations where schools and teachers ‘framed lockdown learning around the Key Competencies’ in the New Zealand Curriculum (2021a, p.23) teachers reported that they had seen student progress in areas of self-management and student agency resulting from lockdown and home learning. In this way, challenges around completion of learning activities without expected levels of teacher supervision and structure may have afforded students the opportunity to develop their own learning skills, under the broader ‘critical thinking’ domain of the curriculum (McNaughton, 2020). Hood (2020) further suggested that lockdown may have allowed for the development of self-management skills in learners, when teachers applied a ‘sound understanding of the science of learning .../ theory of how people learn... to pedagogical approaches’ (p.26).

Concerns around the effects of lockdown and remote learning on student levels of achievement were strongly signaled in both the ERO (2021a) and Hood (2020) studies. Of schools who engaged with ERO research, 59 percent reported ‘concern about student progress and achievement because of lockdown’ (p. 16). Particularly, teachers highlighted lost progress in writing domains as a main concern (with reading and mathematics considered by teachers to have been ‘easier to engage with’ in online learning contexts, p.16). With respect to disadvantaged students, who are already considered at greater risk for poor achievement (Bolton, 2017), ERO explains that 80 percent of low decile schools reported that ‘progress and achievement was of concern for at least some of their students’, with teachers estimating ‘the loss of about a term’s worth of learning’ (2021a, p. 16). 18 percent of teachers from low decile schools disagreed with the statement that ‘students would be able to catch up with their learning’, three times that of teachers in high decile schools (6 percent). Media commentary on student achievement echoed concerns, with articles citing ‘disadvantage’ from lockdown (Gerritsen, 2020). Auckland Secondary Principals' Association president Steve Hargreaves commented that many principals were worried about the amount of instruction time that had been missed, and the impact on achievement, stating "Right across the board students have lost close to a term now, and this is Year 9 to 13, so I'm

considering the whole student body here. If they've lost that much time we can't just carry on in 2021 thinking it's business as usual." (Gerritsen, 2020, paras. 4-5).

Importantly, while COVID-19 lockdown was perceived to have possible lasting impacts on test scores and rates of achievement, there is currently little assessment data to support these contentions or identify the breadth of this issue (ERO, 2021a). Indeed, many schools have deferred and rescheduled assessment of learning owing to the disruption of lockdown, meaning access to standardised test results is not yet available (ERO, 2021b). Without this data, it is not possible to quantify how significantly remote learning impacted student achievement. In better understanding the impacts of COVID-19 on New Zealand students, and specifically those considered to be disadvantaged in learning, empirical data on achievement levels may help to quantify what effect, in which learning domains, and to what extent, learners were impacted by lockdown. Equally, examination of achievement data may help to guide the development of school-wide responses to future lockdowns, highlighting areas where students are most vulnerable to lost achievement, and identifying ways to remediate lost learning (Flack et al., 2020; McNaughton, 2020).

Key learning challenge: Access

In the shift from the classroom to remote learning inherent in New Zealand's COVID-19 lockdown, studies have highlighted access to learning, and effective environments for learning, as key challenges. This is particularly apparent for learners who are disadvantaged by social and economic factors, and already considered as vulnerable prior to COVID-19 (Giannini, 2020). The 'digital divide' - described extensively in education literature and applied to the New Zealand context (with existing inequalities, see: Starkey et al., 2018) - is relevant to understanding the impacts of COVID-19 on New Zealand students. Defined as the gap between those who have access to digital devices, internet connectivity, and digital literacy skills and those who do not (Department of Internal Affairs, 2019), this factor - which transcends both the exosystem (school level) and mesosystem (family level) of New Zealand learners - means students of low socio-economic status, as well as Māori and Pasifika students, are at risk of falling on the 'wrong

side' of the digital divide, impacting their ability to access curriculum and falling behind in learning (Grimes & White, 2019).

In a collaboration between Ngāti Whātua Ōrākei and Koi Tū: The Centre for Informed Futures, Hunia and colleagues (2020) researched the impact of COVID-19 on families in the Ngāti Whātua Ōrākei (a collective of three hapū from the Ngāti Whātua iwi). The study included survey responses (April 2020) from whānau and students, alongside responses from hui with Māori-medium teachers (kaiako). Hunia et al. identified that of those surveyed 'over half of NCEA students ... did not have access to the necessary digital devices (e.g. Chromebooks, laptops) to engage effectively with their learning, but were instead limited to using smartphones' (2020, p. 17). Further, students reported the need to share digital devices with others learning or working in their home, increasing the strain on learners and whānau to engage with online learning opportunities (p. 11). Many devices available to students in this study did not have 'sufficient capability for software and platforms required for online learning activities' (such as Zoom, Google Classroom and microphone compatibility; p. 12), limiting access to learning even further. Additionally, Hunia et al. (2020) identified that a large proportion of students did not have an appropriate space (within the home environment) to effectively complete their school work, adding to the growing challenge of learning from home for disadvantaged students. Researchers in the study identify that the challenges in access to learning for this group of students may have impacted their educational outcomes in 2020.

In response to the need for digital access identified in this study, and recognition of the potential negative learning outcomes for Māori students within contributing hapū, Ngāti Whātua Ōrākei invested in 400 Chromebooks, which were then distributed amongst whānau identified as most in need by the research findings. Many families expressed gratitude for the access to technology, with one learner stating:

"[I] will now be able to work in total independence, whereas before I was always having to wait my turn, which was never easy and very

limiting. You have just allowed me to have more freedom and access to do my mahi [work], increasing my chances of success in completing my school work and NCEA.” (Hunia et al., 2020, p. 16).

From the perspective of closing the ‘digital divide’ and inviting access to remote learning for economically disadvantaged learners, the provision of devices in this study served as an effective initiative to promote learning in lockdown. Researchers in the study posit that for those who received a device, this may have had positive outcomes on ability to stay on top of their learning, and possibly levels of achievement (Hunia et al., 2020).

Boland and Mortlock (2020) surveyed teachers within the context of Steiner Education in New Zealand, around the impacts of COVID-19 lockdown. Some teachers in this study echoed the concerns of kaiako in Hunia et al. (2020), explaining that they felt the COVID-19 pandemic had highlighted an existing dichotomy in society. From this perspective, students and families who were previously ‘comfortable’ (adequate housing, food availability, financially managing) ‘experienced the lockdown period as positive’ where those suffering financially, in inadequate housing, and lacking in educational resources experienced lockdown ‘much more negatively’ (Boland & Mortlock, 2020, p. 13). Teachers in the Boland and Mortlock (2020) study noted that access to learning opportunities at home could be a factor not only in student wellbeing, but also in educational success after lockdown has ended. Similarly, teacher respondents in an online survey conducted by Flack et al. (2020) reported ‘particular concern for rural, low income and indigenous [Māori] students’ (p. 20). Specifically, lack of engagement with such students using digital media – as a consequence of limited access to digital devices - led teachers to report that their relationships with students would be disrupted, which could impact future participation in learning (Flack et al., 2020). A report by ERO, ‘Te Kahu Whakahaumarū – Ngā mahi a te rāngai mātauranga Māori’ (2021d) echoes concerns with access to learning in digital contexts. In research designed by Māori, for Māori and delivered in the medium of te reo Māori, ERO’s evaluation and research group (Te Pou Mataaho) and review team (Te Uepū ā Motu)

collaborated in gathering qualitative and quantitative data from Māori-medium education providers and stakeholders, to better understand the impacts of COVID-19 across Māori-medium education. This study highlighted that, similar to Māori students in mainstream settings, students in Māori-medium learning were impacted by limited access to digital devices and internet connectivity. Families without strong internet connections or devices such as laptops needed to find different ways to stay connected to teachers during lockdown, including phone calls and texts (ERO, 2021d). Some kaiako (teachers) reported ‘vulnerabilities in relation to distance or remote learning’ (p. 16) explaining that they did not have the skills or confidence to navigate digital tools at the start of lockdown, which may have impacted student learning.

In response to the COVID-19 lockdown, the Ministry of Education provided learning resources across modalities, including: online resources available over three websites, provision of printed learning resources where internet access was not available to students, and broadcasting two television channels – ‘Home Learning TV’ (English) and ‘Mauri Reo Mauri Ora’ in te reo Māori (ERO, 2021a). ERO reported differences in access and use of television learning across school deciles, with ‘students in low decile schools ... more likely to have had to share a device and to have watched Home Learning TV’ (2021a, p.30). Specifically, 19 percent of students in decile 1-3 shared a device and almost a quarter (22 percent) watched home learning, compared with 14 percent of decile 4-10 students sharing a device and 17 percent accessing Home Learning TV. In response to concerns about access to educational resources in some households, ERO identified that ‘around a quarter of early childhood leaders ... provided their own resource packs for children’ (2020c, p.14). To date, investigation of how various tools (i.e. online, paper, and television media) were utilised by students and schools has yet to be published. It seems possible that access to remote learning across modalities could have helped to mitigate some of the inequality implicit in the ‘digital divide’. However, Hunia et al. (2020) caution this interpretation, citing the problem of ‘less complex and less educationally challenging curriculum resources and pedagogy’ being provided in the absence of equitable access to digital technologies, which could be associated with ‘reduced opportunities to learn’ (p. 17). Indeed, educators in Māori-medium

settings reported that ‘Ministry of Education ‘hard packs’ ... were not always appropriate for the learners’ needs and often didn’t align with the richness of culture and language that Māori-medium aspire to provide’ (ERO, 2021d, p. 14).

When considering the exacerbation of existing ‘digital divide’ inequalities stemming from COVID-19 lockdown, Hunia et al. (2020) offer insight into strategies which could be employed to support disadvantaged students’ post-lockdown. In the overlapping contexts of microsystem and mesosystem (Bronfenbrenner, 1992), authors highlight a need for ‘accelerated learning and additional tutoring’ to help students recover from lockdown and achieve ‘equitable success in valued outcomes, including national qualifications’ (Hunia et al., 2020, p.5). One key consideration in the exosystem of learners is to ‘expediate provision of suitable devices and address issues with connectivity’ (p. 5). Echoed by Māori-medium education providers, ensuring access to appropriate devices and reliable internet connections are seen as necessary steps for supporting student learning (ERO, 2021d). Additionally, with a lens to a wider, macrosystem perspective, Hunia et al. (2020) place emphasis on the need for inter-agency and inter-sector relationships to address ‘ongoing structural drivers’ as well as collaboration with iwi to support equitable funding of Māori medium education toward equality in education of Māori students.

Another group likely impacted by a move from in-person learning to delivery of online learning is that of students with additional learning needs or diagnosed disabilities related to learning. For students whose learning is typically highly individualised and scaffolded (i.e. in the context of special education, see: Franks, 2020a for news media commentary), it remains unclear how readily this group were able to access online learning tools (such as video meetings with teachers, google classroom resources), and if they had the necessary prerequisites to engage with these tools to further learning (i.e. attending to a screen, maintained concentration, physical modifications to support visual impairment; United Nations Children’s Fund, 2020), even if access was possible. Recalling the impact of lockdown on her children’s learning, Jane Lee – a tutor in rehabilitation and disability, and a parent of four children with disabilities – commented “What might work for other children didn’t work for ours – they couldn’t participate in Zoom or

engage with the learning on TV as it was not appropriate for them and did not meet their needs” (Deguara, 2020, paras. 10-12). In Flack et al. (2020), teachers of special education students signaled that remote learning created barriers for students with disabilities, particularly relating to executive functioning. Indeed, one teacher commented that “Distance teaching ...[is] near impossible for special education” (p. 20). Respondents in this study highlighted concern that students with disabilities or additional learning needs (such as a dyslexia diagnosis, or English as a Second Language) are not able to have their learning successfully translated into a digital pedagogy, meaning students miss out on learning (Flack et al., 2020). For students who are already less likely than peers to achieve at school (with almost 27% of disabled people in NZ leaving school with no qualification, compared to 12% in the general population; Ministry of Health 2014, cited in Perry et al., 2020), the COVID-19 lockdown may have significantly reduced their access to learning. Current literature on the challenges of lockdown for students with disabilities is limited, and more information is needed to better identify effects of COVID-19 on access to education for these learners.

Key learning challenge: Attendance

In the report ‘Learning in a COVID-19 World: Secondary School Engagement’ ERO (2021b) position engagement as a contributor to educational success for all learners, and one that may have been affected by extended school closures resulting from COVID-19 lockdown. In particular, the report emphasises the impact of lockdown on ‘already disadvantaged students’ who were at greater risk of disengagement from learning prior to the COVID-19 pandemic and move to remote learning (ERO, 2021b, p.5). Defined as: feelings of boredom or emotional distress, negative behaviour at school, skipping class, and/or school dropout (ERO, 2021b), disengagement is a challenge to learning exacerbated by COVID-19. In the newspaper report ‘Coronavirus has made our education system even more unequal’, Manurewa High School Principal Pete Jones identified some of the negative impacts of school dropout – resulting from COVID-19 – on his students, stating “If we don’t look after them [the students] and they leave school and there’s

nothing for them, you end up with this lost generation. The longer they're disconnected, the harder it is to reconnect.” (as reported by Franks, 2020b).

According to a press release by Walters (2020, August) after the first lock down, New Zealand Principals' Federation President said attendance had been an issue before COVID hit, but had been exacerbated by the first lockdown. There was a reasonable collection of pupils who hadn't been back at school since the start of the first lockdown. 'There is a really vulnerable group who have been very difficult to track down'.

Indeed, disengagement from schooling has been connected to lower levels of achievement, and broader impacts on students leaving school such as poorer social and economical standing (Drane et al., 2020).

As a proxy to measuring school engagement after the COVID-19 lockdown, the Ministry of Education analysed trends in attendance data, finding that students from low decile schools, as well as Māori and Pasifika students and students in the Auckland region, had lower levels of attendance at school after lockdown (Webber, 2020a). Following the national lockdown (specifically months of June and July 2020), attendance rates in low decile schools (Decile 1-3) were lower than rates during comparative months in 2019, where rates of attendance in high decile schools (Decile 9-10) after lockdown quickly returned to levels similar to that of 2019. This trend was even more pronounced after the Auckland lockdown (August 2020) for schools in this region. In exploring attendance by ethnic group, Webber (2020a) found that similar patterns were evident. Comparing the month of September 2020 with data from September 2019, 'the proportion of Pacific students with chronic absence increased from 18% to 31% and ... Māori students increased from 19% to 27%' (2020a p. 9). Further, students in Māori language instruction had markedly lower attendance in 2020 compared with the previous year, and more chronic or unexplained absences from school. In evaluation of the data, Webber posits that there is 'strong evidence that COVID-19 is exacerbating inequity in ways that have the potential to flow on to other outcomes, such as learning and broader wellbeing' (2020a, p.7). Further, the report highlights that within the area of attendance 'negative effects of COVID-19 are concentrated in

communities that were already the most socio-economically disadvantaged, and where the largest barriers to attendance were present before the pandemic' (p.7), namely that of Māori and Pasifika students. Applying Bronfenbrenner's theory of development (1992), multiple interconnected systems are at play in this issue. Factors such as insecure housing situations and greater reliance on public transport (features in the macrosystem of learners) are suggested as contributors, where families may feel less comfortable with children using public transport as a means to travel to and from school in the continued COVID-19 environment. Another macrosystem / mesosystem factor which may be considered a barrier to school attendance is the multi-generational living situation of many students from Pasifika and Māori backgrounds (Webber, 2020a). Specifically, Pasifika or Māori students may be more likely to live at home with elderly or immunocompromised family members, which could contribute to families feeling uncomfortable about children participating in school if there is the risk of COVID-19 transmission in this setting (Webber, 2020b). With respect to barriers for school attendance McNaughton (2020) identifies that misinformation and sharing of unreliable information may be relevant. Specifically, for whānau and learners who do not have strongly developed critical thinking skills (i.e. evaluating sources and reasoning based on information), decision making about risks of attending school in-person could be challenging, possibly contributing to missing out on learning, even when risks are low.

Summarising the perspectives of principals and teachers, ERO (2021a) noted that almost half of respondents reported 'ongoing concerns about attendance' (p.11) after the first lockdown with low decile schools (59 percent) more likely to report ongoing concerns than high decile schools (33 percent). Ongoing worries about student engagement were noted, with some principals citing disengagement during online learning in lockdown as a contributor to further disengagement from school-based learning (ERO, 2021a).

While school attendance trends offer some insight into the effects of Covid-19 on engagement, they do not form a complete measure of disengagement levels in student populations. Research by Yates et. al. (2020) surveyed more than 1900 secondary school students across sixty New Zealand schools, to explore their experience of remote learning in lockdown. In this study, motivation was raised by

respondents as a key factor in determining their success in - and sustained engagement with - remote learning, with more than 39% of students listing motivation as the hardest part of learning at home (Yates et al. 2020). According to Yates et al. (2020) analysis of findings, many students disengaged from online learning as ‘the extrinsic drivers of school, routine, consequences, resources and easy access to teacher and peer support’ were not present and students were not able to find the ‘intrinsic motivation to study’ (p. 12). From this perspective, students may have shown behaviours of disengagement during remote learning, which could be predictors of sustained disengagement post COVID-19 lockdown. In a profile on Pacific student responses to lockdown, Julene Duerksen-Kapao, head of teaching and learning at Te Hiringa Alternative Education, highlighted that disengagement from learning over lockdown was a key concern for her school community (Education Gazette, 2020). Explaining that “the success of our learning is all about face to face”, Duerksen-Kapao identified significant challenges in translating an emphasis on laughter, jokes, and interpersonal connection into a remote learning setting. Without these elements to learning, further disengagement for Pasifika students seemed possible (Education Gazette, 2020).

Contrasting perspectives around online engagement were identified by ERO’s ‘Te Kahu Whakahaumarū’ (2021d). Whānau and educators in Māori-medium education suggested that remote learning, and in particular incorporation of digital technologies, increased levels of student engagement during COVID-19 Lockdown. Attributed to younger learners having greater familiarity with digital tools, and teachers becoming more creative with how they were teaching using technology, this study identified that use of technology in innovative ways could foster engagement for Māori-medium students. Respondents felt that this shift could have positive impacts on learning and engagement after lockdown if creative digital solutions were incorporated into a return to the classroom. Further exploration of how Māori-medium kaiako (teachers) and schools utilised technology in lockdown could offer insight into how to best support Māori students past the COVID-19 pandemic. The translation of schooling approaches to online delivery and the impact of this on engagement of students (United Nations Children’s Fund, 2020) warrants further investigation, particularly as it relates to the learning outcomes of

Pasifika, Māori, and other vulnerable groups. Additionally, research exploring various elements of school disengagement (i.e. poor attendance, limited participation or work completion, challenging behaviour within the school setting), and which student groups showed increases in these behaviours post lockdown, could provide greater clarity around the extent to which disadvantaged students were impacted by COVID-19.

Given the potential negative consequences of disengagement from learning (including academic and social barriers to success; Jang-Jones & McGregor, 2019) and the relative impact of disengagement on already disadvantaged learners, identification of strategies to promote re-engagement following Covid-19 lockdown can be considered vitally important. ERO (2021b) outline a three-tiered response to promoting re-engagement, including broad macrosystem interventions (such as making school environment welcoming, and inclusive to diversity), relations which exist in the exosystem (including developing 'educationally powerful connections' with parents and whānau, employing culturally responsive approaches to teaching and emphasising student and whānau safety; ERO, 2021b, p.13). With consideration to mesosystem interactions, ERO (2021b) focussed attention on goal setting with students, facilitating student mentoring relationships, providing small group tuition and celebrating improvement (while avoiding deficit framing). Despite various pressures on health, education, and wellbeing precipitated by COVID-19, participants in Māori-medium education reported 'a heightened level of whānau engagement in children's learning' (p. 12) during lockdown. Here, collaboration and communication between schools and whānau were thought to be strengthened by remote learning and school closures, with whānau showing greater attention to children's learning, pooling resources for learning, distributing kai and learning materials, and hosting online meetings for sharing of information (ERO, 2021d). Consideration of steps taken by Māori-medium education settings during lockdown could identify ways to protect and support the wider population of disadvantaged learners in New Zealand in the face of the continuing COVID-19 pandemic.

Further research questions

Although the body of literature scoped in this report goes some way to identifying learning challenges raised by the COVID-19 pandemic and consequent school closures in New Zealand, there is more to learn about effects on disadvantaged student populations. For a consideration of areas for further research, we refer readers to the overview document included in this Coalition research project.

Updating in April 2022

Some of the key relevant documents which have come out since this initial scoping report was written include the following:

The 'Growing Up in New Zealand' COVID-Wellbeing Survey (2021) had a Part 1 report on health and wellbeing and a Part 2 report on education. This study gives an interdisciplinary perspective. The survey was completed by 2,421 children aged 10 – 11, and the results compared with the responses at age 8. 64% of the children reported feeling connected to their school or kura often or always, and 24% reported an increase in school satisfaction between ages 8 and lockdown. This indicates a good level of engagement.

Some children enjoyed the flexibility of the distance learning routine, having increased independence, more flexible free time, and increased self-regulation to their learning during lockdown (P. 3). This Part 2 report identified concerns with children watching Tik Tok and many other apps which were not permitted until 13+ years of age, and identified the need for increased cyber-safety knowledge for children and young people.

In relation to equity, the report found exacerbation of existing social and educational disparities, although both this report and another by Evaluation Associates (2020) found that larger household 'bubbles' were a protective factor for children's learning. Māori tamariki showed the largest decline in in school satisfaction between ages 8 and lockdown. Bullying also emerged as an important issue in relation to school satisfaction. The report identified the value of families continuing to connect with each other as they did during lockdown as a promising avenue for enhancing learning.

The report on COVID-19 from the Office of the Children's Commissioner (November 2020), *Life in Lockdown: Children and young people's views on the nation-wide COVID-19 level 3 and 4 lockdowns between March and May 2020*, also gives unique perspectives from a range of child voices. The responding population, with an over-representation of students from high decile secondary schools, did include 74 students (6%) with a disability, 156 (13%) LGBTQIA+ or part of this community, 276 (22%) rural, 66 (5%) refugee, and 45 (4%) where Oranga Tamariki have a say in where they live.

Those who identified as Māori or Pasifika were much less likely to do school work on line (74% and 74% respectively), and were more likely to do school work with a package their school sent to them (p. 19). In terms of the 'digital divide', when weighted responses were considered, access to a device during lockdown was about 63%, and 22% indicated that they had to share a device. The report stated 'This 'digital divide' in access to technology and data existed before COVID-19, but the lockdown event highlighted awareness of its impacts' (p.20). The report found Māori and Pasifika children were less likely to have their own device. In spite of this, the report found that those who identified as Māori, Pasifika or as having a disability were more likely to think that life was better or much better during lockdown (35%, 39% and 38% respectively), compared with 29% for the wider group.

The reports made a self-assessment of learning after lockdown and found the following: '8% 'worried about my learning and I won't catch up'; 26% 'worried I'm behind in my learning but I'll catch up; 48% 'I feel like my learning is where it should be'; 18% 'I feel that I've gotten ahead in my learning'. (P.34). There was no difference for Māori and Pasifika children.

Education was a common theme in responses to all of the open-ended questions. In response to the 'one positive' question, 21% focused on having more free time. 'Respondents appreciated being able to have more control over when they did school work and what school work to focus on' (p.34).

In the report's recommendations for ongoing policy post COVID, it raised the importance of government being informed by a range of children's and young

people's views and the differential impacts on them. It wanted opportunities for children to include play and engagement in their communities that are meaningful to them. It stated 'We should challenge the education system to consider how to support young people to have greater flexibility and have options for greater learning on-line if it suits their needs best. Access to the technology needs to be seen as an essential communication and learning tool, not a luxury item for some' (p.44).

The report from the Children's Convention Monitoring group, called *Children's Rights in the COVID-19 Response* (2021), built on the findings of the Commission for Children's study reported above. In the section on wellbeing, it is of concern that the report notes that there were 'increasing exposure to cyberbullying. Incidents of harm skyrocketed both during and after the COVID-19 lockdowns according to data collected by Netsafe" (p.23).

In the section on learning and developing, the report notes that 'For some disabled students, particularly for those who are neurodiverse, the change in routine was disruptive and not conducive to successful learning outcomes' (p.40). However, for some disabled children and young people lockdowns made learning more flexible and accessible and provided respite from negative aspects of the school environment, such as bullying and inaccessible infrastructure (p. 41). There is an important section in the report about remote learning for children and young people with disabilities. The report states 'Remote learning, whether online or by television, was largely inaccessible to a range of disabled children and young people such as deaf or blind children. Some classes in New Zealand Sign Language became available on free-to-air television only after the rollout of general classes, and some blind students received printed educational material rather than a braille or digital version that could be accessed with a screen reader. Many students who require targeted support for their learning, for example, those who receive Ongoing Resourcing Scheme (ORS) funding, were unable to learn effectively by these channels. In an attempt to address this, the Ministry of Education sent 6,400 hard-copy learning packs and 3,200 sensory learning packs to families of disabled students. However, some parents reported these were not set at an appropriate

learning level for some students, limiting their usability and leaving teachers to come up with ways of supporting these students' learning' (p.42).

The report makes strong comment on the importance of the voice of the child in relation to COVID-19. The report states 'the extent to which children and young people are involved and empowered in the response to COVID-19 depends on their participation rights, including rights to good accessible information, being realised. This includes providing children and young people with information, to enable them to have their voices heard and considered' (p.49). Further, it states 'Children and young people have the right to have their views heard, considered and taken seriously especially when it comes to decisions that affect them directly. Children and young people have unique perspectives and valuable ideas to contribute which can inform policies that may mitigate the negative effects of COVID-19, improve long term outcomes, and maintain the gains identified during the pandemic' (p. 51).

Another concern which relates to children's rights is the news report on 7 October 2021 headed 'Number of school students stood down from school has jumped significantly in 2021'. (<http://www.1news.co.nz/2021/10/07/number-of-school-students-stood-down-jumps-significantly-in-2021/>)

It stated that the New Zealand Principal's Federation President Perry Rush is linking the rise to the COVID-19 pandemic. He said that another round of the Urgent Response Fund is required to address the stress and anxiety students are experiencing.

In relation to achievement, The Education Review Office published in 2021 a document *Responding to the COVID-19 crisis: Supporting Auckland NCEA students*. This report outlined the support given by the Ministry of Education in September 2020 to expand Te Aho o Te Kura Pounamu (Te Kura) services (formerly known as Correspondence School), for Auckland NCEA students. This programme was considered successful in reaching at-risk students, with the students enrolled more likely to live in low-socio-economic households and identify as Māori or Pasifika. The focus of the programme was to support students to reengage in education and their NCEA study, and the resulting achievement for these at-risk students was

similar to a matched group of Te Kura’s full-time students from similar communities. The report advocated for the future the maintaining of targeted programmes which could be scaled up when needed in such a pandemic, and the importance of ongoing relationships with school communities both familiar with such programmes, and having a high proportion of at-risk students.

Another positive example of such a relationship or partnership with local communities is provided in the Te One and Clifford (2021) article *Tino Rangatiratanga and Well-being: Māori Self Determination in the face of Covid-19*. It describes as one example of enacting tino rangatiratanga the decision by the Te Kōhanga Reo National Trust to advise all kōhanga reo to remain closed during the alert level 3, despite the Government lifting restrictions and recommending that early childhood programmes could go back to full capacity. The Trust surveyed their kōhanga reo and found that over a third fall in high-risk groups, such as the number of kaumatua who work in kōhanga reo. They identified and managed risk in their own communities.

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Section 3. Responses to COVID-19 which might be made using programmes already in existence: An overview.

Written by Dr. Dorothy Howie, School of Psychology, University of Auckland.

Introduction:

This section addresses the second part of the Coalition project which focusses on possible programmes already in existence which could address the kind of learning needs experienced through the COVID-19 lockdowns, and which could 'accelerate learning'.

Dr. Howie published in 2011 the book 'Teaching Students Thinking Skills and Strategies: A Framework for Cognitive Education in Inclusive Settings' (London: Jessica Kingsley). This book covered a number of programmes for the teaching of

thinking in relation to a three-tiered framework for the inclusive and whole school teaching of thinking.

Aim: The aim of this section is to present summaries of programmes which may be of value in response to the needs arising in New Zealand schools post-COVID, and particularly for disadvantaged students – not those only disadvantaged through living in poorer socio-economic areas, but students from Māori and Pasifika cultural backgrounds who may have been particularly affected by COVID-19.

Background influences:

The overview of possible programmes was initially led by contents of the paper given by Professor Stuart McNaughton to the Coalition mini-conference in October 2020, in which some learning need areas were identified and possible approaches to addressing them discussed. It was also influenced by key publications coming out on the effect of Covid-19 as summarised in the section above.

This project addresses cognitive-related programmes, involving developing thinking and reasoning. Teaching thinking is a ‘Key Competency’ in the New Zealand National Curriculum. This review drew on an important paper by Dr. Rosemary Hipkins, a senior researcher at the New Zealand Council for Educational Research, published in 2006, called ‘The Nature of the Key Competencies: A background paper’. In this paper Hipkins notes that ‘thinking’ is the first key competency, as it is important to all of the other key competencies. She endorsed the early thinking that the key competencies are important in allowing students to participate appropriately in an increasingly diverse society, to use new technologies, and to cope with the rapidly changing world.

However, in two papers on the key competencies published by ERO in late 2019, ‘The Key Competencies: Realising the Potential of the New Zealand Curriculum’ and ‘Developing Key Competencies in Students years 1 to 8’ they reported that of the key competencies, ‘thinking’ was the least well understood and implemented

in the schools which they studied, with the schools from a variety of socio-economic communities.

It is also important to note that in 2008 Macfarlane, Glynn, Grace, Penetito and Bateman published a paper called *Indigenous epistemology in a national curriculum framework*. This group of four Māori and one non-Māori were commissioned by the Ministry of Education to comment and report on the amendments of the New Zealand curriculum Framework, which became the 'key competencies'. At that time the 'Thinking' competency was 'about all kinds of thinking in all kinds of contexts. It includes creative, critical and logical thinking, and the ability to think about thinking-as well as self-awareness, reflection and judgment' (p.104). The second key competency is 'Making meaning'. The writers took five important Māori cultural constructs, embodied in the work of Waiariki Grace, and aligned and discussed these alongside the proposed key competencies. 'Thinking' and 'Making meaning' are aligned to 'Tātaritanga', a construct which 'integrates all those processes within Māori medium learning settings (traditional and cultural) through which Māori students learn to think and make meaning of their own experiences within an environment that represents and respects both their individual and collective identities' (p111/112). Each of the other three key competencies also have aligned Māori constructs with Grace's framework i.e. 'Relating to others' with Manaakitanga (a context of caring relationships); 'Managing self' with Rangatiratanga (taking responsibility for, and control over, one's own learning) and Whakawhanaungatanga (building and maintaining relationships) ; and 'Participating and contributing' relating to Whaiwāhitanga (inclusion: participating and contributing). The writers also note that there was evidence of where the Māori constructs did not 'match' 'because they were from a quite different knowledge and value basis, and their meaning within a Māori worldview was both wider and deeper than the meaning within the majority European cultural viewpoint (p.123).

The overview has also drawn on a paper by Professor Stuart McNaughton presented as Chief Education Scientific Advisor, called 'Full Report: The literary landscape in Aotearoa New Zealand' (August 2020a). Not only did McNaughton in that report address some of the same needs which he addressed in his October

2020b paper to the Coalition, including the need for critical literacy, he looked at wider contextual issues such as transition needs, and the need for a more widely integrated three-tiered TRI framework for the assessment and teaching of literacy.

The framework which Dr. Howie presented in her 2011 book for the more whole school and inclusive teaching of thinking is a similar three-tiered model, informed by the three types of learning needs defined by Norwich (1996), a UK expert on inclusion, and matching the US 'Response to Intervention' (RtI) policy. The three tiers are:

Tier 1 : teaching thinking for all, with approaches which are integral to all classroom teaching and learning

Tier 2 : working with small groups with those needing further particular attention to the teaching of thinking, and having shared learning needs

Tier 3 : working with individuals who need further individual support for the teaching of thinking, because of their individual and complex learning needs.

It is expected that intervention at all of these levels will be as 'inclusive' and as whole class as possible, following the New Zealand inclusive policy of 'wrap around support' in inclusive settings.

A similar three-tiered framework is already being used within the Ministry of Education supported programme 'Positive Behaviour for Learning' which addresses a number of the key competencies.

As each programme is summarized for this part of the Coalition project, a note is made about where in such a three-tiered framework for the teaching of thinking (Howie, 2011) the programme would probably best fit.

Selection of programmes:

The selection had to be limited due to the tight time frame for this project. Some of the criteria guiding the selection were:

1. 'Programmes' only were selected, as outlined in the project brief. This was defined as a complete intervention which had a number of defined training components which could be evaluated. This was in contrast to a pedagogical approach. For example, Gardner's (1983) Multiple Intelligences is a theory and a pedagogy which is used in the enhancement of thinking, but is not covered as a programme in this report. Howie (2011) has given an example of a UK history teacher enhancing his history teaching through use of Gardner's wide range of intelligences, and giving all students more choice in which intelligence they could use for project work. Gardner's theory is about learning preference, rather than learning style. Like Hipkins (2006, p. 17 and p. 37), Howie refers to the UK review of learning style implementations by Coffield, Moseley, Hall and Ecclestone, (2004) which warned of the dangers of stereotyping and labelling children. This can thereby limit students' exposure to a wide array of more abstract learning, which can occur with non-inclusive use of both the Gardner Multiple Intelligences learning preferences approach, and the various learning styles approaches.

Some programmes covered in this project, such as the Feuerstein programme for cognitive enhancement, arise from a theory which has a defined pedagogy as well, as well as a programme for cognitive enhancement.

2. Programmes which have a strong cognitive and metacognitive enhancement aim were selected. This is in line with the expertise of the Coalition contracting this project. It is a developing Coalition in Applied Cognition/Learning and Thinking/Learning Sciences. There is another subgroup of the Coalition carrying out a small project on wellbeing, which was a further reason for tightly selecting more cognitive/metacognitive programmes for this report. However, a number of the programmes selected had strong emotional/motivational aspects, especially those initially developed for children who were experiencing failure in the school system. It is also important to remind ourselves of the way in which the body/mind, and cognition/emotion, interrelate, and avoid traditional binaries (Hipkins, 2008, p. 67).

It is also noted that some of the programmes selected are being led in their use nationally, and/or have been strongly evaluated for their effectiveness in New Zealand, by members of the Coalition.

It is important to note that ERO (2021) in its main report on 'Learning in a Covid-19 World: The Impact of Covid-19 on Schools' stated that 'Some teachers told ERO that they had framed learning lockdown around the key competencies, which are included in the New Zealand Curriculum and are woven into the teaching that goes on at school, and school values. The focus was on developing critical skills like communication, and students' independence and agency'. (p. 23). The report in its last section on implications for going forward advised schools to 'strike a deliberate balance between taking the opportunity to develop student agency and self-management through student directed learning, and using more teacher directed instructional approaches to help students catch up (p.42).

3. In line with the project brief, programmes which may be of particular benefit to students from more disadvantaged communities, and Māori and Pasifika students, were selected. This is, first, in line with the strong equity and inclusive concerns of the Coalition. It is also in line with McNaughton's (2020a) clearly stated need for 'equity and excellence' (p.2) It also reflects the concerns and needs coming through the findings from reports of how schools met the COVID-19 learning challenges. For example, as reported in the ERO (2021) 'Learning in a Covid-19 World: The impact of Covid-19 on Schools: Report', 'teachers and principals in 80% of low decile schools reported that progress and achievement was a concern for at least some of their students...two-thirds of principals in low decile schools indicated that at least a quarter of their students had fallen behind in their learning' (p. 16.) 'Lockdown may have exacerbated existing inequities' (p. 20).

Programmes which were clearly very expensive, and so difficult to implement in such communities, were not selected.

Finally, this choice reflects the criteria set by an international leader on the teaching of thinking, Sternberg (1983) for choice of an intellectual skills training programme, that it be socio-culturally relevant.

Programmes summarized:

The programmes which are covered under this part of the project brief are presented as separate summaries (except for the final set of summaries on programmes for executive control, which are grouped).

They should be read and considered under the following headings:

1. Programmes with a Vygotskian theoretical base

The Vygotskian theoretical approach is a socio-cultural one in which human mediation and the shared social construction of thinking is central. The importance of the process of learning, of peer learning through modelling, of individual differences in learning, and in meaning making are also important. It has led to pedagogical practices such as ‘scaffolding’ of learning. This latter idea should be interpreted as guided assistance to take the student as high as possible in their learning and thinking, gradually withdrawing that assistance for self-regulation. The Vygotskian approach is practiced widely in New Zealand schools, and is reflected in the pedagogy of ‘Ako’ and reciprocity found in Māori and Pasifika learning plan documents.

The Vygotskian theory suggests a partnership approach to learning, with the interactive relationship between teacher and student as central to learning. The 2021 ERO Report on ‘Supporting Secondary School Engagement’ post COVID-19 notes the important role of relationships for learning, involving respect, high expectations for the learner, and relevance (p. 13).

The following programmes clearly come under this section:

Reading Recovery: It has a Vygotskian theoretical base, and a strong focus on metacognitive/executive self-regulation.

Bright Start: It has a Vygotskian theoretical base, with appropriate use of scaffolding.

Reciprocal teaching: This addresses shared learning through social discourse and modelling. It is also important for the development of critical literacy, as questions are asked about texts.

The Feed Forward self-modeling programme. This programme uses a Vygotskian modeling base. It was developed by Professor Peter Dowrick, a late member of the Coalition.

Mates: This programme involves peer mentoring and teaching using peer modelling. It was also selected because it addresses learning support at key transition points, identified as important in McNaughton's (2020a) report. The ERO (2021) 'Learning in Covid-19 World: The Impact on Schools' has a strong emphasis on co-operative learning and learning in collaboration. They suggest among the 'Next Steps' that schools consider establishing 'friendship groups' or 'tuākana-teina' arrangements for students of concern (p. 46).

The ERO (2021) Report on COVID-19 'Supporting Secondary School Engagement' specifically mentions the STARS mentoring programme as a school-based programme that was developed to help transition students into secondary school. Because of this, although this programme uses community members as mentors, rather than peers, and does not involve peer tutoring, it was included in the programmes summarized for this project.

2. *Programmes with a theoretical base similar to a Vygotskian base.*

The Feuerstein programme: Feuerstein's cognitive enhancement programme, Instrumental Enrichment, is based on the theory of Mediated Learning Experience, with, like Vygotsky, human mediation of learning seen as central to learning and thinking enhancement. It is led in New Zealand by Dr. Dorothy Howie, a member of the Coalition.

The HIPPY programme: Professor Avima Lombard was familiar with Feuerstein's work and there are some similarities in this parent led cognitive enhancement programme to the Feuerstein programme, and to the Vygotskian theoretical approach.

3. *Programmes specifically addressing critical and creative thinking.*

In McNaughton's (2020) presentation to the Coalition mini-conference he identified critical literacy as an important need.

There has been a growing concern about misinformation and disinformation as the COVID-19 pandemic has continued, and the importance of children's rights to information are identified in reports by the Commission for Children regarding COVID-19. Also identified as wellbeing issues in the separate Coalition report on Child wellbeing in Aotearoa in a digital age are the exposure of children during lockdown to apps showing material not appropriate for their age, and the higher rate of on-line abuse.

The New Zealand Education Act includes the teaching of critical and creative thinking as a recent new requirement. Hipkins (2006) in her report on the Key Competencies, covers several approaches to the development of critical thinking in the UK context. These include the Simon, Erduran and Osborne (2006) project at Kings College London, on the teaching of many aspects of thinking involved in argumentation (p. 18). In covering the teaching of the 'Participating and Contributing key competencies' she notes the importance of delivering them in ways which are authentic to the student and society. The programmes covered in this section are used in the New Zealand educational and cultural context.

Although not covered in the detailed summary, it should be noted that Dr. Maree Davies (a member of the Coalition) has developed a 'Street Smarts' programme on critical thinking, as part of a wider study trialing two aspects of the 'respectful talk' model (Davies, unpublished, 2018). The intervention involved group discussions, and in a 2019 report on its evaluation using experimental/control conditions and evaluation through student interviews, some interesting findings emerged. Following the intervention, which took place in a variety of socio-economic communities, the students from the high achievement groups in English and Geography had views that were very much aligned with their teachers, whereas the students in the low achievement groups students were less able to express themselves regarding the key elements of the respectful talk model, but

were able to recall pertinent observations. They wanted to be only placed in groups with their friends, held mixed views about topics, and wanted to discuss societal issues and sports issues. However, both groups held sophisticated beliefs about critical thinking, believed in the importance of talking to students outside of their friendships, and that topics to discuss should include societal issues. This emerging work suggests the importance of taking into account individual difference and meaning making in work on critical thinking.

It is important to note that Angela Feekery and Carla Jeffrey (Set 2019_003.pdf) have put forward a Māori informed approach to evaluating information using the Rauru Whakarare Evaluation Framework i.e. It is a holistic spiral framework which is to be used for critical evaluation of information delivered in any medium. It covers:

Whakapaipa: identifies and connects the various layers

Orokohanga: considers the sources origins

Mana: author or organisations credibility and standing in the community

Māramatanga: 'enlightenment'- considers appropriateness of information for purpose, audience and context

Aronga: considering the lens- the perspective and objectivity.

The programmes summarized for this section are:

Philosophy for Children. This is a programme which has a strong evidence based, and has been used in a variety of contexts in New Zealand. Its leader in New Zealand, Dr. Vanya Kovach, is a member of the Coalition.

Edward de Bono CoRT and 'Six Hats' programmes: These are aimed at developing critical and creative thinking. They have been used and evaluated in New Zealand, and could also be helpful at transition from school.

Self-regulated strategy in Writing. This programme includes teaching strategies for writing for general and for struggling learners, and is included in this section because it includes persuasive i.e. critical, writing.

McNaughton (2020) identified both writing itself, and critical writing, as a

key need arising from COVID-19 in his paper to the 2020 Coalition mini-conference. Professor Judy Parr, in a recent Report for the Ministry for Education on Writing, identifies this programme for self-regulated strategy for writing as of value (personal communication). Professor Parr is a member of the Coalition.

The Swartz and Parks 'infused' programme. 'Infused' is the word used for programmes for the teaching of thinking which are not taught as a classroom lesson on their own, but where the skills are embedded within an ordinary curriculum subject lessons. There has been some binary divide between non-infused and infused content lessons. Hipkins (2006) addresses this 'contested issue' and writes 'recent research suggests it is wise to take a "both/and" approach to this question rather than seeing these as either/or alternatives' (p. 14). McNaughton (2020b) endorsed this 'both/and' approach to programmes for the teaching of thinking in his presentation to the Coalition mini-conference.

A number of the major teaching thinking skill programmes presented in other sections are taught as a separate lesson. However, they require as an integral part of the programme and individual lesson delivery, strong 'bridging' or transfer of skills taught to ordinary curriculum content material, and the effectiveness of the programmes relies on the quality of this bridging.

A number of infusion programmes are planned for specific curriculum content areas. One of the most well-known is the CASE and CAME programmes for Cognitive Acceleration in Science and Maths Education, respectively. These were developed by Professor Philip Adey and Michael Shayer (1994) in the UK. Their cognitive acceleration approach has been recently developed for arts and for reasoning skills, and for younger children, as outlined by McGregor (2007, p.69). Howie (2011) details these CASE and CAME programmes in her book, and notes that Adey and Shayer initially saw the choice of science as an opening through which to explore the development of general thinking. Howie reports a masters thesis which she supervised using what is called CASE at Key Stage 1 (Case@KS1), and

implemented and evaluated in a UK primary school, within the science teaching for year 1 students, by Julie Cattle (Cattle and Howie, 2007). Each intervention component addressed one of Piaget's schemata of concrete operations i.e. seriation, classification, time sequencing, spatial perceptions causality, and 'rules of the game'. The activities were designed to provide thinking challenges through cognitive conflict, delivered in small groups in ways that maximise their 'shared construction' (a Vygotskian theoretical underpinning) and metacognition. The students with the intervention did not score better on the Ravens Progressive Matrices test of reasoning and Boehm Test of Piagetian concepts when compared to a comparison group in another school, but did make more positive gains on the motivation test used, particularly for girls. This is of note because in relation to the early CASE findings for science, Leo and Galloway (1996) considered that girls' lower responses to CASE may have been linked to learned helplessness. It is of interest to note this individual difference in response to this infusion programme.

The Swartz and Parks infusion programme is the one chosen for this section as it is able to be used in any curriculum content lesson. It has also been thoroughly evaluated in a large-scale Northern Ireland implementation (using its modification as the ACTS programme), with the reports giving some insights to important factors in implementation, including in relation to use with students with learning challenges.

4. Programmes which specifically address executive functioning.

These programmes include the Meichenbaum cognitive-behavioural approach, several programmes developed and/or evaluated in New Zealand using play as a vehicle for the teaching of executive skills, and Moreau's MovinCog -programme which uses physical exercise to enhance executive functioning. They are presented in one document so that the approaches can be easily compared, and because, for all but the Meichenbaum programme, research evaluation is in its early stages. It was decided to omit programmes which could have some impact on executive functioning, but are delivered in a computerized short term

programme. This includes Cogmed working memory training (Cogmed, n.d.-b) which claims to improve the inattentive and hyperactive symptoms of children with ADHD. The evidence for this claim is discussed with some thoroughness in the audit of cognitive enhancement programmes prepared by Moreau and colleagues (2015) at the University of Auckland. This review does note that far transfer effects have been found with improvements on the Raven's test and the Stroop test, which could both indicate some executive functioning (and the latter is used in Moreau's own evaluation of his MovinCog programme as an indicator of executive functioning). However, overall findings are inconsistent and the authors conclude that although the research suggests that Cogmed has the potential to improve performance on assessments of working memory, it is considered that there is a need to incorporate into Cogmed a wider, more stimulating range of activities which allow for practice into a range of other situations. The Lumosity game-based computer training programme (Lumosity, 2009) is described as designed to improve students' performance at school and to remediate neurological disorders like ADHD. A later study by Kesler, Lacayo and Jo (2011) with children surviving from leukaemia or brain tumours aimed to see if it could remediate impaired executive functioning in these children. A wide range of tests were used, including the WISC for general intelligence, but once practice effects were accounted for only changes in processing speed and the sort test were classed as clinically significant.

In a very substantive and peer reviewed article by Simons, Boot, Charness, Gathercole, Chabris, Hambrick and Stine-Morrow (2016) called 'Do "Brain-Training" program work?' these two programmes, Cogmed and Lumosity, are evaluated, amongst others. The authors pay particular attention to transfer of training, and conclude that "Few studies provide any evidence that training with brain-training software or basic cognitive tasks yields differential improvement (relative to an appropriate control condition) for cognitive performance in the real world' (p. 172). They draw attention to the importance of interactions between context and content in transfer of learning, and at the end of the article state 'providing a quick way to

enhance cognition’ is compared to ‘sustained investment required by education and skill development’ (p.173).

The conceptual framework used to evaluate and summarise the programmes:

A separate Appendix II details the conceptual framework used to evaluate and summarise the programmes. Rather than relying on what is commonly called the ‘gold standard’ used for evaluating cognitive interventions, (which focusses on traditional criteria like random and controlled design, ‘blind’ participation etc.) this evaluation uses the Sternberg (1983) criteria outlined by him for evaluating programmes for cognitive enhancement. These criteria are: the programme is theoretically based, specifying mental processes; the programme is socioculturally relevant; it provides explicit teaching in executive and non-executive information processing skills; there is careful empirical evaluation, which assess facets of the training programme as well as the whole, and durability and transfer of the training; it is sensitive to individual differences, and it is responsive to motivational and emotional needs.

These criteria match well with aspects of the other main approach taken to the summary, which was to use Bronfenbrenner’s updated (1992) version of his Ecological Systems Theory. This has been described well by Sontag (1996) in its use as a framework for disability research, and further richness has been added by Lane in ongoing Ph.D. research on an ecological theory of learning, using Bronfenbrenner. Robin Lane, researcher at the University of Auckland, is a member of the Coalition.

Using this Bronfenbrenner approach allows one to consider the wider contextual factors which need to be considered in choosing a programme for cognitive enhancement/ the teaching of thinking. This is in line with Hipkin’s (2006) emphasis on the holistic and contextual nature of the key competencies, and her use of the Bronfenbrenner ecological system levels to discuss this (pps. 69 – 72). In its ERO (2021) report on ‘Learning in a Covid-19 world: The impact of COVID-19

on school' the final section on 'Implications for going forward' raises suggestions that involve all of the system levels (p.44); key staff at the school level 'ensure a focused and coordinated response across counsellors, social workers in schools, Special Educational Needs Coordinators, Learning Support Co-ordinators, RTLBs, and teacher aides' (p.41); parents and whānau, and students themselves.

The updated Bronfenbrenner model (1992) has an additional focus on the individual person characteristics which interact with these contextual factors, as well as the meaning making by the learner, and the agency of the learner. Particular attention in this project is given to programmes and aspects of programmes which relate to individual characteristics such as disadvantage, learning needs, and cultural needs. This matches the care given to individual needs in the key ERO reports on COVID-19. For example, in the report 'Learning in a Covid-19 world: The impact of Covid-19 on schools', there is a section on supporting students with additional learning needs, with more frequent contact, individualized learning packs, a deliberate transition plans to manage anxiety (p. 15).

Also, there was a deliberate attempt to interview students and find out meanings of Covid-19 for them. 'Only a quarter, 24 % of NCEA students (year 11 – 13) and a third (37%) of primary students thought that learning from home had made them a better learner' (p.17). Separate reports were prepared for disengaged students, Māori and Pasifika students, and Māori immersion contexts.

Unfortunately, many of the published papers on the programmes which have been summarized for this project gave inadequate attention to all of these factors. Most studies still used a limited group control design, although some used a single subject research design, allowing for understanding of how each of the learners responded to each component of the design. Leading international researchers for The Bright Start programme and Reciprocal Teaching used a form of single subject research design, as did the New Zealand researchers Howie and Dowrick for the evaluation of programmes they lead. Only a few studies interviewed students to ascertain their meaning making in relation to the programme.

Appendix II is presented in a way which attempts to line up the key components of the Bronfenbrenner framework, and the Sternberg criteria.

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Section 4. Reading Recovery Summary

Aim: The Reading Recovery intervention ‘aims to improve reading skills to the level of the students’ immediate peers’ (McDowall, Boyd, Hodges and Vliet, 2005, p.16) for all children aged 6 years of age (first year readers) who are the lowest 15 – 20 percent achieving readers.

It also aims to identify students who need ongoing and specialist reading skills.

Summary description of the intervention: The intervention was developed by Dame Professor Marie Clay, based on her Ph.D. research. It has been widely implemented in New Zealand with funding support from the Ministry of Education, and is also widely implemented internationally, in countries including Australia the US, and the UK.

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Website: www.readingrecovery.ac.nz

The intervention is applied on a 1 to 1 instructional basis by specialist trained teachers, and is applied supplementary to the ordinary classroom literacy programme.

It could be considered a ‘third tier’ intensive intervention, for children with the most severe literacy needs. It could also be considered inclusive as the criteria for inclusion apply to all children irrespective of intellectual functioning and there is no diagnostic ‘label’ required.

It addresses reading, writing and oral language skills.

It develops students’ metacognitive skills, building towards a self-extending system. Students are taught a range of reading strategies, including phonemic and phonological strategies (which have been increased in the programme in recent years). McDowall et al. (2005) comment ‘one of the strengths common to Reading Recovery students was the range of strategies they had at their disposal. They comment (national Reading Recovery trainers and tutors) on the embedded

nature and systematic employment of these strategies, and students' ability to articulate their use of these strategies.

The phase components of the Reading Recovery implementation involve identification; several weeks of 'roaming around the known' to learn more about the student, including their cultural, family and school experiences; instructional teaching for 15 to 20 weeks on a half an hour daily basis; transition; discontinuation and monitoring.

Assessment is ongoing through the intervention, making use of an Observation of Early Literacy Achievement measure, and the Running Record reading process assessment developed by Clay (1995).

Underpinning theory for the intervention:

According to Clay and Cazden (1990) in their article 'A Vygotskian interpretation of Reading Recovery' the Reading Recovery intervention uses a Vygotskian understanding of the process of reading, not just the outcome. Clay's 'Running Record' assessment approach used throughout the intervention records the strategies used by the learner while reading aloud, to understand the learner's unique knowledge of and use of reading strategies and how best to enhance them. It also uses the Vygotskian idea of scaffolding to help the learner to construct a self-improving system of knowledge and strategies by 'creating a lesson format, a scaffold, within which [the teacher] promotes emerging skill' and 'passes more and more control to the child and pushes the child, gently but consistently, into independent, constructive activity' (Clay and Cazden, 1990, p.212).

Context:

Macrosystem:

The 2019 Report for the Ministry of Education, titled *Reading Recovery Evaluation* (Appleton-Dyer, Boswell and Reynolds) outlined the then current New Zealand situation which the Ministry of Education supporting Reading Recovery intervention is responding to. This includes: 'indicators of literacy levels (PISA) in

New Zealand are trending downwards and disparities are increasing'; the Reading Recovery guide book was updated in 2016, and the programme is available in English, Spanish, French, Danish, with only one tool in te Reo. McDowall et al. (2005) note that trainers described 'the development of Reading Recovery for delivery in immersion schools in Canada and Northern Ireland' (p.42). They also note the use of research literature on Māori in Reading Recovery in tutor training as well as the Te Mana Kōrero video series www.taiohi.co.nz which is part of the Whakaaro Mātauranga (Think Learning) Project aimed at raising expectations of Māori achievement amongst Māori, the community, and education providers.

Both of these 2005 and 2019 Ministry of Education comprehensive evaluations discuss the issue of limited use of the Reading Recovery intervention in Māori Immersion schools, with the 2005 McDowall et al. study noting 'the national trainers cited examples of students withdrawn from immersion classes and placed in mainstream classes to access Reading Recovery, and in some cases moved back again into immersion classes once discontinued' (p. 42).

It is clear from both studies that the issue of a need to make the intervention more available to Māori immersion schools is complex. On the one hand, the 2005 McDowall et. al study reports that 'national trainers and tutors considered Reading Recovery to be an intervention particularly well suited to Māori and Pasifika students. This was because the one-to-one, open-ended nature of Reading Recovery enabled teachers to build effective relationships with students, tailor instruction to their out-of-school experiences, negotiate the meanings of text content, vocabulary, and language structures unfamiliar to students, and to make new oral language structure in authentic contexts' (p.51). However, they saw the need for more Māori and Pasifika teachers and texts. The individualized instruction is also thought to minimise any Māori student feeling of 'shame' which might occur in a group situation.

This 2005 study also noted that 'tutors described how teachers [in total immersion contexts] did not wish to compromise their total immersion philosophy by offering students Reading Recovery in English, but that Reading Recovery had not been developed for use in te reo Māori' (McDowall et al., p.42.)

It was thought that ‘the provision of Reading Recovery in teo reo Māori would involve a complete research-based reconstruction of Reading Recovery driven by those most involved in Māori medium education’ (p. XV11).

Exosystem:

The two comprehensive surveys on Reading Recovery implementation in New Zealand carried out with funding by the Ministry of Education show that in 2005 ‘Reading Recovery was implemented in 67% of state schools... The schools less likely to offer Reading Recovery were small, rural, or low decile schools, or those with high Māori enrolment...Most principals in schools not offering reading Recovery indicated the desire to do so in the future’ (McDowall et al., p. xi).

By 2019 the percentage of schools participating had fallen to 55%, (Appleton-Dyer et al., 2019, p. 5). This is in spite of the 2018 national allocation of funded hours for Reading Recovery involving allocation of more hours from the Ministry of Education, and the potential of all schools having access to some level of resourcing (Appleton-Dyer, 2019, p. 27). The report raised ‘questions about the current approach to national allocation and its ability to reach those students with the greatest level of need at a national level.’ (p.27). The report found that ‘many schools would have liked an increased funding allocation’ (p. 14).

Other factors found to limit the reach of Reading Recovery in schools were ‘the one-on-one instruction limited the ability to reach children across the school system and was a particular challenge for schools with high levels of need’... ‘School staff wanted reach to be increased through increasing the flexibility of the identification criteria and adapting delivery to enable the provision of small group instruction’ (p.14).

So the 2019 Report saw as key considerations ‘to better meet the level of literacy needs in schools’:

- Revise the national resource allocation to increase the allocation and reach at lower decile schools

- Adapt the delivery of Reading Recovery to include small groups

-Increase the flexibility of the Reading Recovery identification criteria, such as broadening the age range' (p. 18).

The 2015 McDowall et.al. study found that the factors of importance in the effectiveness of Reading Recovery in schools included 'a school-wide commitment to Reading Recovery, the integration of Reading Recovery into and overall literacy plan, strong lines of communication between Reading Recovery teachers, and a commitment to involvement of parents and class teachers' (p.xiv/xv).

Mesosytem:

As noted above, involvement of parents is a key factor in the effectiveness of Reading Recovery, but reported in a number of studies as being inadequate. Glynn, Crooks, Bethune, Ballard, Smith, with Sherrel, Crooks and Mohi (1981) found that contrary to Clay's (1985) recommendation that schools and families work together to develop follow-up activities, this was not happening in any of the nine schools in their study (p.130). In reporting this finding McDowell et al. (2005) note 'They found that parents were enthusiastic about supporting their child's reading at home but in the absence of school support they did not use strategies aligned with those used in Reading Recovery when hearing their child read' (p. 29/30). The McDowall report did recommend 'improving partnership with parents' (p. xv).

The 2016 McDowall study also reported missed lessons as an important factor in the effectiveness of Reading Recovery, with family related factors along with school functions and teacher absence playing roles in this.

However, the 2019 Appleton-Dyer study found that for a few schools 'Reading Recovery was associated with increasing engagement of parents, carers and whānau, as it encouraged them to come into the school '(p. 43.) This was in spite of lack of such engagement being a barrier for a third of the schools who took part in that study's on-line survey, and the teacher observations of frequent child absence for Reading Recovery lessons.

Some studies also report the importance of Reading Recovery teacher communication with the learner's classroom teacher in the learner's subsequent

literacy development. Smith (1994) found difficulties for subsequent development where there were frequent changes of teacher, inadequate reading instruction in the classroom, and inappropriate book reading level use (either too easy or too difficult). Glynn et al. (1989) reported that many classroom teachers in their study considered that there had been little communication between them and their children's Reading Recovery teacher. The 2015 McDowall Report recommended 'improving communication between Reading Recovery teachers and teachers of students who had been discontinued the previous year' (p. xv).

However, the 2019 Appleton-Dyer et al. report gives a more positive picture, with many schools valuing their Reading Recovery teachers for their wider school communications, including the training of teachers in carrying out Running Records, and their monitoring role.

Microsystem:

Studies report a high degree of fidelity in delivery of the programme, relating to the high-quality specialist teacher training, and ongoing professional development and support.

The 2019 Appleton-Dyer study notes a greater effect size based on the number of lessons, 'suggesting that dosage matters for the individuals receiving Reading Recovery' (p. 19).

Empirical evidence:

Both the considerable international research and New Zealand research, if well designed, supports the effectiveness of Reading Recovery in meeting its aim.

The 2015 McDowall report discusses its own and a broad range of other research.

It notes two meta-analyses. First, the meta-analysis by Elbaum, Vaughn, Hughes and Moody (2000) found that the effects for students who were discontinued were substantial and reported that the mean weighted for effect size for the Reading Recovery intervention was 'significantly higher than that for other matched interventions' (p.13).

Second, they report the findings of D'Agostino and Murphy, and Schwartz, which demonstrate that improvements in the performance of Reading Recovery students relative to similar low performing students are not just attributable to a selection by regression artefact and support the conclusion that Reading Recovery 'an effective implementation' (p. 16).

Long term effects have also been found in a number of studies. For example, Rowe (1996) found in a large-scale longitudinal study in Australia that Reading Recovery was effective for the long-term progress of students. The important synthesis of reading interventions which includes Reading Recovery by Neitzel, Lake, Pelligrino and Slavin (2021) suggests that students are more likely to build on gains by being given brief 'booster shot' tutoring at each grade level.

Individual characteristics:

The 2005 study by McDowall et al. found that 'Māori and Pasifika students entered Reading Recovery with lower initial scores than other students and these differences were reduced by the time their series of Reading Recovery lessons ended. However, Māori and Pasifika students received a greater number of lessons than other students. This finding supports the practice of providing more lessons to those students with greatest need 'in order to ensure equitable outcomes' (p. xvi).

The 2019 study by Appleton-Dyer found that, 'after adjusting for relevant factors such as entrance scores and number of Reading Recovery lessons received, students had statistically significantly higher exit scores if they were...female, Pacific, Asian...' (p. 21).

The 2005 McDowall et. al study also notes research does not support the idea that students with a first language other than English are less likely to be successfully discontinued from Reading Recovery, for example, that of Smith (1994).

Two issues of concern that were identified in the 2019 Appleton-Dyer study and the 2015 McDowall study were that children with higher absentee rates would be

less likely to be considered for Reading Recovery, as would children regarded as not ready in terms of personal development to benefit from it.

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Section 5: The Bright Start Programme summary.

Bright Start was developed at the Peabody College of Vanderbilt University, USA, by Professor Carl Haywood and Dr. Penny Brooks. It is a cognitive and metacognitive curriculum for young children aged 3 – 6 years, and including children with intellectual disabilities up to 8 or 9 years. It was developed originally for children at high risk of school failure i.e. for children from poor, culturally different, and ethnical minority families in the US.

It could be considered a tier 2 programme, applied to small groups within ordinary educational contexts.

It is now used widely internationally, with the programme available in a number of different languages, including English, French, Spanish, German, Italian, Portugese, Finnish, Dutch/Flemish and Hebrew. In 2003 Russian and Ukranian editions were in preparation and a Chinese edition under consideration. Norway was the latest country reporting training plans. The 2019 update of the European Commission website reported Canada, Iceland, Switzerland and Denmark also using the programme. Professor Haywood died in 2021, and Penny Brooks is now elderly.

The major research report on the programme, summarizing a number of research findings, was published by Brooks and Haywood in 2003.

Aim:

The curriculum aimed to give ‘total immersion into an atmosphere that promotes cognitive development’ (Brooks and Haywood, p.10). Another major goal is to ‘help children avoid unnecessary and inappropriate placement outside the educational mainstream’ (p.34). ‘The biggest goal has been to help children to use these prerequisites [for effective school learning] to achieve efficient and effective learning of the academic subjects in the early school years’ (p. 36).

Description of the programme:

The curriculum uses ‘mediated learning’ whereby the teacher elicits evidence of thinking from the learners, uses process-oriented questioning rather answer-orienting questioning, challenges answers, both correct and incorrect, requiring justification of answers, works to enhance the learner’s metacognitive functioning (such as making them aware of their own thinking processes), and emphasizes the use of scientific strategies for discovering the order, structure and predictability of the universe. The curriculum units cover Self-regulation; Role and Perspective Taking; Comparison, Classification; Sequence and Patterns extend concepts or seriation; Letter/Shape concepts; Number Concepts; Transformation.

The lessons follow this sequence, and it is recommended that they be given by the teacher to a small group of children, numbered 3 – 6, one at a time. They could be given in a larger class to a small group while other groups are engaged in a different activity.

Underpinning theory for the programme:

For Haywood, understanding the theoretical components of the intervention was important. These are:

1. Vygotsky’s socio-cultural theory, with the importance of social mediation.
2. Piaget’s constructivist position involving children carrying out ‘little conversations’ with themselves regarding metacognitive questions such as ‘Have I seen anything like this before?’, ‘How did I do this the last time I saw

such a problem?' etc.. Also, Piaget's idea of the way thought processes develop in sequential fashion is included.

3. Feuerstein's mediated learning theory and concept of structural cognitive modifiability.
4. Haywood's 'transactional perspective on human ability' which incorporates three essential elements in the development of human ability: intelligence, cognitive processes, and intrinsic motivation. Haywood and Burke (1977) proposed a motivational theory of cognition, 'task intrinsic motivation' where the motivation in the performance of tasks propels cognitive development.
5. Finally, Gibson's (1969) research on children's perceptions of distinctive features of stimuli, was also important.

Macrosystem:

Although developed in the US, it was developed for a culturally mixed population, and has been successfully used in a wide variety of cultural contexts. Its use is advocated by the European Commission, with special attention to the studies carried out with in France, including the Marseille study (Paour, Cèbe and Haywood, 2000) where most children grow up in immigrant families.

This study was included in the summary paper by Haywood and Brooks (2003) along with the following:

The very first study of Bright Start by Haywood, Brooks and Burns (1985) included a group of 'typically developing "high risk for failure" children (from poverty level families, ethnic minorities, inner-city residents)' (p.24).

A study by Paour, Cèbe, Lagarrigue, and Luiu (1993) included a Bright Start group of children in France with unemployed parents and speaking at home a Language other than French, while speaking French at school.

Both of the studies carried out in Israel, that of Tzuriel, Kaniel, Zelinger, Friedman, and Haywood (1998) and Tzuriel, Kaniel, Kanner, and Haywood (1999) were with children from lower socio-economic families, which means children with mixed cultural backgrounds in that context.

Although there is limited discussion in the main Brooks and Haywood (2003) summary research paper on the way in which cultural factors are addressed in and by the programme, they make the following comment in their conclusion:

‘The data reported here bear upon an issue that has become widespread around the world: the apparent low level of educability in children who are from low socioeconomic levels, who are culturally and/or linguistically different or even the objects of social discrimination, or “transcultural” (e.g., of recent immigrant status). These data, especially from the Israeli and French studies, strongly suggest that cognitive early education as represented in Bright Start can at least partially overcome the educational disadvantage that is seen so often in so many places in the world among such children and can effectively close the gap in educational achievement between poor children and children from more advantaged circumstances’ (p.48).

As one of the goals of the programme is to enhance cognitive development in order to avoid placement in non-mainstream contexts, the usual early childhood context for the programme would be an ordinary kindergarten or its equivalent.

Exosystem:

This is indicated in the description of use of the programme on the European Commission (2019 updated) website. It shows the importance of integration of the programme into an ordinary classroom daily programme as follows: ‘The lessons consist of one topic at a time, but include an initial task and a variation to help the children understand the range of the application of the lesson’s problem-solving concept. Later in the same day, the teacher presents the tasks to the entire class requiring the same cognitive functions as in the small-group lesson with more academic content such as spelling or math. At the end of the day, the teacher asks the children to remember the cognitive functions discussed that day and to summarise what they have learned.’

Mesosystem:

The developers of the programme were interested in 'intricate relationship between the parents' and teachers' management of the environment and children's cognitive development' (Brooks and Haywood, 2003, p. 6). 'The question of what parents and teachers i.e. the "context", can do to encourage metacognition is added to the question of what they can do to encourage cognition' (Brooks and Haywood, 2003, p. 8)

The Bright Start curriculum includes a programme of parent participation, but the summary report did not discuss this aspect in depth.

Microsystem: The programme uses a mediational teaching style, which is considered 'the most important and distinguishing characteristic of a teacher's behavior in a cognitive curriculum' (Brooks and Haywood, 2003, p.15). The teacher serves as a catalyst, bringing about an important reaction between children's thought processes and events in their experience. This includes both understanding the generalized meaning of their experiences and extracting generalizable principles and strategies for wider problem solving.

It is also a holistic approach, addressing the meaning of all life experiences, including relationships, and developing task intrinsic motivation.

Empirical evidence:

The main summary of research with the Bright Start programme by Brooks and Haywood (2003) used a unique form of single subject research design in presenting the findings for 10 studies, with the single 'case' being an intervention. They state 'The approach we have taken to evaluation of the effectiveness of Bright Start is not to rely on a single, "critical" study, but instead to aggregate the results of multiple studies in different locations, with samples of children from different populations, under different educational and research circumstances' (p.21). No one study is without design flaws, but the same flaws are not repeated across the group. The consistency of the effectiveness across these individual interventions indicates reliability of the effect.

In all of the studies included which provided an assessment of intelligence in their designs, there was a positive and significant effect on measured IQ compared to

children who received a programme which was not Bright Start. It is of interest to note that in the Marseille study, carried out by Paour, Cèbe and Haywood (2000) application of only two of the units, self-regulation and comparison, was able to yield positive results relating to these two units.

The European Commission report notes the positive findings from studies in relation to school achievement. It states 'Bright Start has been shown to have positive effects for problem solving, mathematical and language aspects at entry to the 3rd grade, which is more than 2 years after the intervention.'

Four of the ten studies summarized by Brooks and Haywood (2003) included measures of school achievement. The Tzuriel et al. (1999) study found that the low SES students who received Bright Start for 10 months showed significantly greater improvement in cognitive development, knowledge of number, intrinsic motivation and several dynamic tests of cognitive functioning at the end of the school year, when compared to children receiving basic skills enrichment. In the one year follow up, reading comprehension and maths scores favoured the Bright Start children (although not significantly different) in spite of the initial superiority of the comparison children on all of the tests.

Paour et al. (1993) tested for general knowledge and reading words one year following the kindergarten Bright Start experience of low SES children, compared with a low SES group who did not receive Bright Start. The mean score of the Bright Start children on both general knowledge and reading words was significantly higher. 'It was on a test of reading novel words, words that the children had not been taught and were unlikely to have encountered, that the difference was dramatically in favour of the Bright Start children' (Brooks and Haywood, 2003, p.37).

In the Paour et al. (2000) study, the effect size of the low SES children receiving Bright Start for overall school achievement on entry to Grade 1 without the comparison tasks was 0.74, and in mathematics at grade 2 the effect size of 0.68.

The Cèbe and Paour (2000) study which looked at learning to read in the primary grades found low SES students receiving Bright Start to be superior on all

subscores of the reading scale used except for speed of reading, when compared to non Bright Start children. This was predictable as an essential part of Bright Start is teaching children to work slowly but carefully.

Measures of intrinsic motivation, to assess the effect of an important ingredient of this programme, were taken in some of the studies. Brooks and Haywood state 'We have to conclude that data on the effects of Bright Start on intrinsic motivation are too sparse to infer that the effects are large or consistent. Even so, in all studies in which this variable has been examined the effects have been positive and as predicted' (p. 29).

Finally, a study carried out in Calgary, Canada, by Samuels, Fagan, MacKenzie, and Killip (1988) with children with severe learning difficulties looked at how Bright Start could avoid special educational placement. In follow up independent psychological assessment, nine of the twelve Bright Start children were assigned to regular classes, while only three of the twelve comparison children were.

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Section 6: The Reciprocal Teaching programme summary.

Reciprocal teaching is presented as Exemplar 4 in the Ministry of Education series of exemplars prepared for Quality Teaching for Diverse (All) Learners in Schooling: Best Evidence Synthesis Iteration [BES]. The exemplar is written by Adrienne Alton-Lee, Julia Westera, and Cathy Pulegatoa-Diggins (2003).

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<http://rteach.co.nz>

Aim:

Reciprocal teaching aims to explicitly teach reading comprehension, with particular attention to four ‘thinking skills’; clarifying, questioning, summarizing, and predicting’ (Alton-Lee, etal., 2003, p.1).

Summary description of the approach:

Reciprocal teaching is seen, not as a comprehensive literacy or learning programme, but as an integrated component of a balanced teaching and learning programme. ‘It blends a range of effective approaches, including co-operative

learning, metacognitive strategy instruction, differentiated learning, self-regulation, and proactive behavior management' (Alton-Lee et al., 2003, p. 5).

Reciprocal teaching takes place in a small group context. 'Teacher and students take turns at being 'teacher' or leading the dialogue while focusing on defined segments of a shared text. The teacher role is rotated among group members to ensure that each has a turn each session. The person in the teacher role structures the dialogue by selecting the length of the passage to be read silently. They then ask for points to be clarified from the text, generate a question on the content of the text to which group members respond, summarizing the text segment in their own words, and predict the content of upcoming text' (Alton-Lee et al., 2003).

New Zealand studies cited in Alton-Lee et.al. (2003) suggest that 16 – 20 sessions of one hour each are required for students to receive sufficient intensive instruction in reciprocal teaching.

As a small group intervention, it could be considered a tier 1 and tier 2 intervention, fully integrated into a whole school and whole class literacy programme for all children, and so fully inclusive. Westera's (2002) study carried out in a secondary context shows how it can be applied by ordinary class teachers in that context, with wider school support. It could also be delivered as small group or individualized interventions. The original development of the intervention by Palincsar and Brown (1984) was studied by them in first, an individualised setting, next a small group 'withdrawn' setting by a specialist, and finally in small groups for slower readers in ordinary classroom contexts. The intervention was effective in all contexts.

Underpinning theory for the approach:

The intervention is built on the ground breaking research and development of reciprocal teaching by Professor Annemarie Palincsar and Professor Ann Brown, in the US, and first published in Palincsar and Brown, 1984.

It uses a Vygotskian theoretical approach with the strong use of a model, peer learning, and scaffolding of each of the thinking processes. Palincsar and Brown

(1984) write 'Vygotzky believed that a good deal of development was mediated by expert scaffolding' (p. 123). Professor Ann Brown has been a leading international researcher in metacognition, so it also draws on information processing theory regarding cognitive and metacognitive functioning.

Context:

Macrosystem:

The intervention was developed in Illinois US. The original Palincsar and Brown (1984) report on the first major study notes that the small number of subjects involved included a 'minority student' with a low I.Q of 70 and a full 4 years of delay on standardized reading comprehension at the outset of the study' (p. 154). By completion of the intervention he had increased his success rate on the comprehension tasks involved in the intervention from 30% to 75%. This gain for such a student is supported by the effectiveness of the approach for a range of culturally different students in the New Zealand studies.

The New Zealand studies include Westera's (2002) study, where the decile 4 Auckland school study population were 30% of Māori and Pasifika ethnicity;

Smith, Timperley and Francis's (2111) study included an entire year 9 cohort at a large multicultural, decile 6 school, of which 21% were Māori, and 23% Pasifika.

Le Fevre, Moore and Wilkinson (2003) carried out a tape assisted intervention in three suburban primary schools with predominantly Māori and Pasifika student populations.

Gilroy and Moore (1988) explored reciprocal teaching with ten primary school Pasifika students who were decoding at their age level but some were two years behind their age levels in reading comprehension.

The effectiveness of Reciprocal teaching in these contexts with such students suggests that it is a programme which can be delivered in a culturally appropriate way, using culturally appropriate texts. The detailed description of the Westera (2002) study in the BES Exemplar notes 'As the result of reciprocal teaching, the staff [of the secondary school] collaborated to tailor resources to address the

diverse needs and interests of students at different year levels, reading levels and of different cultures' (p. 7).

Exosystem:

At the school level, some key studies indicate the value of implementing Reciprocal teaching in a group way in the ordinary classroom.

The original Palincsar and Brown (1984) paper reports of its second main study that the teacher was a 'real' teacher, not an investigator, and the instruction took place in naturally occurring classroom groups for the poorest readers as well as in remedial reading groups. All children in both sorts of groups were not 'labelled' as having a learning disability, and were typically comprehending two years below their peers. The impact on the classroom teachers is noted 'without exception, the teachers expressed a degree of skepticism regarding the students' ability to participate in the reciprocal teaching prior to beginning the study. At the conclusion of the study, the teachers were pleased not only with the progress demonstrated by the students in their reciprocal activities and their improvement with the comprehension measures, but by other results as well. The teachers observed that general 'thinking' skills seemed to improve. The students appeared better able to locate important information and organize their ideas...The students also reported that they were using the instructed activities (primarily summarizing and question predicting) in their content classes' (p.166/167).

The Westera (2002) study is worth studying with care as a model of how to implement Reciprocal Teaching in a school-wide inclusive context, and in an ordinary classroom context. The BES Exemplar gives pertinent details. Carried out in a secondary school context, it ensured that professional development for teachers was given by a whole school planning group (made up of the Head of the English Department, the staff-development co-ordinator, the learning support team, and the psychologist-researcher).

A needs analysis of reading was carried out, revealing that around 20% of the year 9 students score 2 to 4 years below their chronological age, made up for most children by comprehension rather than decoding difficulties. The planning group

decided that reading comprehension was to be a school wide priority, and Reciprocal teaching was decided on as a possible school-wide strategy to address this need.

The plan involved an inclusive approach to professional development, and incorporation of Reciprocal Teaching into the regular curriculum, carried out by ordinary classroom teachers and teacher aides across all subject departments, and timetabled. Ongoing help and support were given, as 'implementing reciprocal teaching would require a significant shift in teachers' thinking' (Westera, 2002, BES p. 6).

Mesosystem:

The peer group features more strongly than the wider family in the intervention outlines. Palincsar and Brown (1984) describe the way in which 'the reciprocal teaching dialogue provided the contextual support for the first emergence of the skills, students and teachers providing examples, support, and feedback for each other' (p.154). They also note 'teachers called on the better students first...because of larger group size, students were able to provide modeling and feedback for each other...as sessions progressed, teachers handed over a great deal of the work to students and acted as a coach' (p.160).

Microsystem:

The BES Exemplar stresses the importance of good implementation by teachers of Reciprocal teaching, with professional learning and support for teachers important. The document states 'if reciprocal teaching is used ritualistically, without careful teacher scaffolding, then the potential opportunity to learn will be lost' (p.5).

Palincsar and Brown (1984) note that individual and gradual development of competency with such high quality scaffolding was possible to observe as they used a unique single subject research design which detailed individual progress on reading comprehension tasks over baseline, intervention, maintenance and follow up phases of the intervention. They state 'Although they differed in terms of starting competence, and responded to the instruction at different rates, in all

cases their individual progress began with a gradual adoption and refinement in the dialogues of the procedures modeled by the teacher. Improvement was first shown in the dialogue, after which it was reflected in the students' individual scores, a pattern of score results that suggests a gradual internalization (Vygotsky, 1978)' (p.154).

The Smith et.al (2011) study was interesting from a teaching thinking perspective in that it explored deep and surface features of reading, with teachers encouraging the SOLO taxonomy highest levels of thinking through use of cue cards to prompt deep questioning, using words such as 'might', 'could' and 'what if'. The teachers used the Structure of Observed Learning Outcomes (SOLO) to assist with this work. The Hattie and Brown (2004) SOLO taxonomy is used as a diagnostic tool across curriculum subjects with categories of responses as: unstructured, multistructured, relational, and the highest level extended abstract.

The BES document notes that the goal of reciprocal teaching is to support learners to gradually incorporate the thinking skills into their classroom repertoire for learning across the curriculum. 'Teachers use the key words in regular classroom learning tasks and conversations to promote the generalised use of these skills.' (p.9)

Empirical evidence:

Hattie (2009) found an effect size of 0.74 for reciprocal teaching on reading comprehension across 38 studies in two meta-analyses. He ranked reciprocal teaching as the third highest-impact strategy out of 49 teaching strategies.

Of the New Zealand studies reported above under the Macrosystem section the following studies obtained effect sizes considerably above the usually obtained gain made without intervention, as follows:

Westera (2002), effect size 1.1, with students gaining an average of more than one year in reading comprehension from the longer 12 to 16 weeks of intervention. These gains were maintained over the following three months. The shorter intervention of 6 to 8 sessions showed no significant gain.

Smith et al. (2011) found an overall effect size of 1.55, with a more significant effect size on deep features of reading comprehension (2.59) rather than surface features (0.30). This result was after 15 weeks of implementation, and with the delivery by teacher aides. 'This improvement occurred for students with different levels of prior achievement, for boys and girls, and for students of different ethnicities' (BES, p.3)

Le Fevre et al., (2003), using tape assisted reciprocal teaching, obtained an effect size of 1.75. Le Fevre concluded that the tapes, which gave the readers access to age-appropriate texts, provided 'cognitive boot-strapping to enable poor readers to escape the cycle of reading failure and engage more meaningfully in the process of reading' (p.38). Even when tapes were not used, students who were adequate decoders but comprehension behind by 18 months obtained a large effect size of 3.27.

Gilroy et al., (1988), note an effect size higher than any other study located by the BES authors. The gains ranged from 3.8 to 4.0 after 21 days of implementation. 'After the intervention, their reading comprehension surpassed that of their average-achieving peers to be consistent with that achieved by the above-average group' (p. 4). They were therefore fulfilling their expected potential.

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Section 7. The Feedforward Self Modeling summary.

The feedforward approach is one in which ‘an image of success is constructed to illustrate achievement beyond the individual’s current capability’ (Dowrick, 2011, p. 217.) It is a form of self-modeling which can be used within the medium of video, called ‘video self modeling (VSM)’ as well as in photos, audio and print. It can be used for enhancement for a number of behaviours, including cognitive behaviours.

The world leader in this approach was the late Professor Peter Dowrick, based in the School of Psychology at the University of Auckland.

Aim of the programme:

The aim is for rapid changes of behavior and improvements in performance.

Summary description of the programme:

The programme is used for enhancement of behaviours which are challenging for the individual. In the 'feedforward' presentation, in a video or through some other appropriate medium, pre-existing component behaviours in the learners' repertoire are reconfigured to achieve a valued goal. It is considered 'most powerful when using explicit video images' (Dowrick, 2011, p. 221.)

It involves self modeling rather than peer modeling, so that the learner is enacting a self stimulation. Instead of responding to a challenging situation with stress and avoidance, components of alternative more positive and adaptive behaviours, using elements of existing behaviours in the individual's repertoire, are isolated rearranged and combined with other elements to form what appear as new skills, in the self modeling presentation. As the individual observes the success of this presentation, identifying with the self modeling, as a sort of 'future imaging', the individual is able to internalise both the skills needed for success, and the feelings of self-efficacy associated with this success, leading to rapidly enhanced use of the valued skills.

It could be regarded as a tier 2 or 3 intervention.

Theoretical background for the programme:

The concept of learning from a model and internalizing learning when one interacts not with a peer, but with one's ideal self, can be considered as relating to Vygotskian theory. Also, the programme builds strongly on neuroscience findings concerning the specific neural activity underlying mental imagery and the role of mirror neurones. Leading international researchers such as Suddendorf and Corballis (2007) refer to the cognitive anticipatory mechanisms within the brain which allow one to not just remember, but to anticipate, to 'forsee, plan, and shape any future-specific event' (p. 299).

Another theoretical strand is that of self-efficacy, defined as ‘the self-belief an individual has that he or she can execute a specific action in a predetermined situation’ (Dowrick 2012, p. 218). This concept was first put forward by Bandura (1977), who, with his colleague Richard Walters (Bandura and Walters, 1963) had previously carried out an early iconic series of studies on modeling. Incidentally, Richard Walters once taught early in his academic career in the Department of Philosophy at the Auckland University College (Sinclair, 1983).

Hitchcock, Dowrick and Prater (2003) note that Bandura, while discussing the efficacy of the self as a model, commented that the advantage of seeing oneself perform successfully ‘provides clear information on how best to perform skills’ and ‘strengthens beliefs in one’s capabilities’ (Bandura, 1997, p. 94).

Context:

Macrosystem:

The video self modelling approach has been used in a variety of cultural contexts, including those in which Dowrick was based as an international academic. Several studies with culturally diverse learners are reported in the section on empirical evidence. Because the self is used as the model, then culturally relevant skills and behaviours may be maximized, and learning from a model is considered an appropriate pedagogy within many indigenous populations.

It could be considered an expensive intervention, because of the equipment and time needed to format the modelled presentation. However, increasingly schools are acquiring the video equipment which could be used in this intervention. Video and video editing capability is now widely available through devices such as iPads and other Tablets.

Exosystem and Mesosystem:

In the review of studies by Hitchcock et al. (2003) it is noted that ‘researchers are investigating the use of video self-modeling as a technique to improve the performance of students with disabilities and students at risk in school-based settings’ (p. 43). It could be considered appropriate in both ordinary and more

separate classroom settings, and as it is used often to address at risk behaviour, to have an important role in enhancing inclusion. However, it is mostly used for individual interventions. Hitchcock et al. (2003) suggest that 'future researchers might wish to investigate the efficacy of self-modeling interventions for small groups of students or whole classrooms' (p. 44).

Not many studies cited involve parents or peers, but the approach has been linked to a peer tutoring approach in the Dowrick et. al. (2001) study reported below.

Microsystem:

Because the approach uses the self as a model, and is aimed at increasing self efficacy, it could be argued to be of value in self management and agency.

The intervention is generally relatively short and positive effects shown quickly, which is another good reason for its use, especially in situations of more long term academic failure and disengagement.

Empirical evidence:

In 2003 Hitchcock, Dowrick, and Prater published a review of video self modeling interventions in school-based settings. They found that prior to 2001 of the 200 studies which met their strict criteria for empirical evaluation, 18 were carried out in the classroom, with children aged 3 to 17. Of these, 5 addressed communication/language needs; 2 addressed reading needs, 2 addressed maths needs, and the remainder addressed a variety of classroom behaviour needs, including on task behaviour, ADHD behaviours, and emotional disturbance. Nine of the studies were carried out in general education classrooms and seven in self-contained classrooms. Two studies reported data from both settings.

Fifteen of the studies used observational recording systems to gather data. Three of the studies used audiotaped or videotaped recordings of the entire intervention. Five studies included self-rating scales. The majority of the studies (13) incorporated some type of multiple baseline design i.e. using single subject research design. Sixteen of the studies assessed maintenance of treatment.

The authors present all of the studies in table form, providing intervention efficacy and maintenance. The authors conclude that 'data in all of these studies provided clear evidence of positive outcomes related to the intervention' (p. 43). 5 of the single-participant studies reported results from statistical analyses that included significant effect sizes. The one study which used a standard group control design found statistical significance for most of the selected group comparisons. Of the 16 studies that measured maintenance, 15 reported successful short term or long term maintenance.

One of the most pertinent later international studies carried out in Hawai'i by Dowrick and Kim-Rupnow (2006) was with ethnically mixed mainly Pasifika and native Hawaiian children who were failing in reading. Teachers selected 10 children in an urban Honolulu school as having the most difficulty learning to read (where the school overall had a 50 – 90% of its students reading below grade level), and at risk of academic failure.

The video modeling was introduced into typical individual tutoring sessions after 3 or 4 weeks of the almost daily tutoring session, provided by tutors from the community. The footage of the self modeling video presentation showed fluent passage reading of a challenging text by the learner, made possible by capturing the learner's 'echo reading' following modeling by the tutor (which was edited out) and making use of the rare successes on individually difficult words. The single subject research design used allowed progress to be mapped in reading word fluency over each phase, over 33 – 55 school days. The greatest gain was made by 9 of the 10 students over the video modeling phase of the video, with the improvement over this phase being statistically significant. All children improved in reading to the extent that they were able to benefit from their second grade classroom instruction.

There is also evidence from a study by Dowrick, Power Ginsbug-Block, Manz, Leff and Kim-Rupnow (2001) that using video self modeling in conjunction with tutoring by 'community partners' was effective in promoting culturally appropriate interventions in diverse urban school districts.

A number of studies have been carried out using video self modeling for language enhancement, such as its use to enhance selective mutism (Kehle, Owen, and Cressy, (1990), and for language delay in five year olds (Buggey, 1995). Buggey (2005) also used the approach with children on the autistic spectrum disorder to enhance communication, as did Bellini, Akullian and Hoft (2007). These examples all show rapid improvements in performance in relatively short interventions.

A meta-analysis of video modeling and video self modeling interventions for children with autism has been presented by Bellini and Akullian (2007).

Another use of feed forward approach was for adolescents with mild to moderate depression (Kahn, Kehle, Jenson and Clark, 1990), where there were significant improvements on standard measures for depression. The 21 minute sessions were spread over 8 weeks, and compared to comparison students receiving cognitive behaviour therapy over the same period.

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Section 8. The MATES programme summary

Aim:

The MATES programme is a mentoring and tutoring programme aimed to help mentees reach their potential in their school years 8 and 13, (prior to transitioning to secondary school and to tertiary education). It is also aimed at helping the mentors, tertiary students, 'to engage in meaningful relationships through which they can develop the skills and confidence to participate, contribute, develop positive relationships and achieve goals' (Pataolo, 2019).

Summary description of the programme:

The programme is delivered by the Great Potentials Foundation, Auckland, New Zealand. It is delivered by low-decile schools to connect students who have potential that they are at risk of not realizing, at years 8 and 13, (key years before a major school/tertiary transition), with tertiary students who have capacity to mentor and tutor these younger people. It includes at least 50 contact hours. Mentors work towards developing a nurturing relationship with their younger peer, addressing mentees' individual and personal academic objectives. They also work on developing their own skills through formal training opportunities, and develop their own knowledge and social commitment.

It could be seen as a tier 1 and 2 intervention, supplementary to normal classroom teaching through homework hours.

The programme is delivered through the Great Potentials Foundation not for profit agency initially set up by Dame Lesley Max, and the programme is financially supported by the Ministry of Youth Development.

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Underpinning theory:

This programme could be considered to have a Vygotskian theoretical base with its emphasis on peer modeling, with social mediation through the learning

partnership as a central component. Positive Youth Development (PYD), Tuākana-teina and Bronfenbrenner's ecological theory were also influences..

Context:

The macrosystem:

The programme was modeled in 2002 on the successful Perach programme in Israel. A website entry on that project notes that in 2012 about 60,000 children from 1,216 schools in 198 cities and towns throughout Israel participated in the programme. Approximately 15% of all students in higher education in Israel had participated in the programme.

In 2017, the initiative was presented in Athens, Barcelona and Lisbon within the framework of the 'Accelerating Change for Social Inclusion (ACS) project' to study its local implementation.

The programme was developed by the Great Potentials Foundation with a strong peer tutoring component, with input from staff in the University of Auckland Faculty of Education and the New Zealand Youth Mentoring Network.

With its peer learning delivery, this programme could be considered to be pedagogically well suited to a Māori and Pasifika learners.

The 2019 report (Patolo) for the Great Potentials Foundation notes that in 2019 the mentees for the year 8 interventions were 55% Pasifika, 29% Māori, 12% Asian and 4% European.

The mentees for the year 13 interventions were 77% Pasifika, 11% Māori, 7% Asian and 3% European.

There was not an exact match in ethnicity of the mentors, with 32% Pasifika, 4% Māori, 38% Asian and 21% European. However, the report (Patolo, 2019) notes that efforts were made to match mentees and mentors. There is mentoring evidence that pairing mentees up with mentors of a different ethnicity can be beneficial to mentee outcomes.

The Exosystem:

The MATES programme was formally developed in 2016 to successfully expand to a wider school uptake. The listing of schools involved for the 2019 report are all Auckland schools:

For the Junior MATES (year 9) the schools were: Avondale Intermediate, Finlayson Park School, Papakura Intermediate, and Mangere East Primary.

For the Senior MATES (year 13) the schools were Aorere College, Auckland Girls Grammar School, De La Salle College, Kelston Boy's High School, Sir Edmund Hillary Collegiate, Southern Cross Campus College, and Waitakere College.

Clearly lower decile schools predominate in the take up, and this is a requirement for programme take up.

The Mesosystem:

No mention of family/whānau is made in the report, but if homework sessions are involved, then family members would need to support this. For the year 9 interventions, the average attendance at homework sessions was 85%. For the year 13 interventions, the average attendance was 86%. These figures suggest a high level of family support.

Although this intervention focusses on peer mentoring and tutoring, it should be mentioned that this is not a use of normally occurring peer relationships, from within the same school and community context. Some of the mentors from the tertiary sector belong to their tutee's community. However, the MATES team provide a wider support network and each pair interact with each other, thus exposing mentors and mentees to people from all walks of life.

The microsystem:

The intervention is carried out for one academic year. It includes at least 50 contact hours. The mentor is provided with the training and support needed to mentor effectively. Peer work is done not only on individualized personal and academic objectives, but to increase resilience, capability, and transition skills.

The resilience skills include ability to deal with difficult situations, making friends and contacts, making the mentee feel happy and positive about what the future holds, increased confidence in oneself, and understanding oneself better.

The capability skills include communicating with other people, making decisions, understanding other people, solving problems that one might face, organizing oneself, and playing more of a role in one's community.

These skills are in line with those listed in the New Zealand National Curriculum's key competencies.

The empirical evidence:

The Israel 2018 Destinations study for the Perach programme found that of the Senior Alumni who graduated from the MATES interventions in 2016 and 2017 89% were attending University, and 97 were full time students.

In New Zealand the Patolo 2019 Evaluation Report was carried out by John Patolo, Research and Evaluation Manager for the Great Potentials Foundation, which delivers the intervention, so it is not an independent assessment. It also does not have a strong research design base.

However, it does provide some data of interest.

For the Senior MATES achievement effect, measured by their National Certificate of Educational Achievement (NCEA) results, data from the seven schools involved (three decile 1 schools, one decile 2 school, and three decile 3 schools) were analysed.

There were 94 individual students involved, and 48 students were awarded NCEA endorsements. STEM related subjects were well represented in the endorsements. Awards with Merit endorsement were highest for English with 11 awards, and Awards for Excellence endorsement were highest for Religious Studies, with awards to 10 students.

The rate of NCEA Level 3 achievement in 2019 was 89%, with the rates of Level 3 achievement for Māori and Pasifika MATES mentees 100% and 86% respectively.

This compares well with the 2018 40% National Average for school leavers in Decile 1 – 3 schools, and the 2018 77% National Average for Māori and Pakeha school leavers aged 18 and over.

Student viewpoint measures were obtained. MATES senior mentees filled out a self-evaluation survey at the end of the MATES year. 83 mentees (out of the possible 122) filled out the survey. Of the 11 domains measured, 8 recorded scores of above 80%. These were: helped you make friends and contacts, made you feel happy and positive about what the future holds, more confident in yourself, understand yourself better, better at communicating with other people, better at solving problems that you may face, and organising yourself better. 96% of the respondents considered that 'MATES helped them feel more confident past Year 13'.

For the MATES junior mentees, data from their beginning and end of the year National Curriculum levels was requested. Three of the four schools provided this.

MATES helped narrow the gap between mentees' expected and actual achievement with good gains in all disciplines (reading, writing and maths).

With the assistance of the MATES Co-ordinator, 62 of the possible 76 junior mentees filled out the self-evaluation form at the end of the MATES year. Overall, 97% showed improved resilience and 98 showed improved capability in one or more of the domains. Of the 11 domains, 2 recorded scores of over 80%. These were: Helped you make friends and contacts and made you feel happy and positive about your future.

Finally, there were in 2019 80 university students registered as a MATES mentor, with 23 of these mentoring in more than one school. 89% were female and 18% male. At the end of the MATES year only 41 mentors filled out the self-evaluation survey, so the results could be biased. Of these students who completed the survey, 100% showed improved resilience in one or more of the domains, and 100% within the capability domains. Of the 11 domains, 6 recorded scores of over 80%: helped you make friends and contacts, made you feel happy and positive about what the future holds, more confident in yourself, understand yourself

better, better at communicating with other people, better understanding of other people, and play more of a role in the community. 90% of the respondents considered that MATES 'helped gain skills and competencies that employers look for'.

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Section 9: The STARS mentoring programme:

The STARS programme is a school-based mentoring programme which was developed in New Zealand to ease the transition of students into secondary school. When the 2012 research review of the programme in New Zealand was carried out by Noonan, Bullen and Farruggia, it was running across five regions: Northland, Auckland, South Waikato, Wellington and Canterbury.

This New Zealand developed mentoring programme has in addition to weekly meetings with mentors to address life skills such as goal setting, time management, and building positive relationships, three activity components made up of an adventure camp, community project, and community adventure.

The programme is specifically mentioned as appropriate for enhancing school engagement in the 2020 ERO report concerning needs following Covid-19, called the 'Supporting Secondary School Engagement Report'. Its development and use has been fostered by the Foundation for Youth Development (FYD) umbrella.

Aim:

According to the Foundation for Youth Development brochure (2010, p.1) the STARS programme has nine objectives that focus on helping students successfully transition to secondary school: increasing academic and social skills; building self-competence and communication skills; building friendships among peers and senior students; forging connections with teachers outside the classroom; building goal-setting skills relating to academics and health and fitness; increasing awareness of healthy behaviours around food, exercise and the risks of peer pressure and substance abuse; forging connections between students and the school community; and fostering positive perceptions of the school. (p. 1.)

Summary description of the programme:

Stars is a group-based peer mentoring programme whereby all year 9 students in a school(mentees) are divided into small groups and matched with a group of year 12 and 13 students. This is considered to be an inclusive approach aimed at avoiding negative stigmatization relating to achievement. Mentors meet weekly with their mentees for 30 to 45 minutes, following a structured programme focusing on the life skills. They are trained for this role by Stars co-ordinators, and are provided with manuals and detailed plans for each lesson.

The three activity components are supplementary to this basic programme, and include an adventure camp in the first term of the school year, with the wilderness camps used to help students to develop self-knowledge, teamwork, outdoor skills and goal setting. The community project component involves mentees planning organizing, and spending one day on a project that gives something back to the community. The community adventure component is aimed at giving students an understanding of what community resources are available to them.

As a 'whole school' intervention it can be considered to be an intervention at the first and second tier level.

Underpinning theory for the programme:

With its original peer mentoring pedagogy, and additionally delivered in small groups, this could be considered to have a Vygotskian theoretical underpinning.

Noonan et al. (2012) notes that it differs to the current traditional one-to-one mentoring programmes which 'are individualistic and may have limited benefit to youth in New Zealand who are more closely aligned with collectivist values (i.e. Māori and Pasifika)...programmes that incorporate an outdoor adventure component may be particularly effective as they are aligned with New Zealand cultural landscape and values' (p. 49).

Context:

Macrosystem:

Noonan et al. (2012) as well as making the comments above about the possible appropriateness of the SATRS programme for the New Zealand cultural context, note that 'there appears to be limited research that examines mentoring within a cultural context' (p.49).

In the 2011 review of 'the Effectiveness of youth mentoring programmes in New Zealand' by Farruggia, Bullen, Davidson, Dunphy, Solomon and Collins, there is considerable attention to cultural factors. These authors do note that 'youth mentoring was well established in New Zealand before the term came into use. Māori traditions of Tuākana-Teina, where older whānau members supported younger members, predate European contact' (p. 53). They report the meta-analysis of one-to-one mentoring programme effectiveness in the United States by Dubois, Holloway, Valentine and Cooper (2002), in which it was found that matching on gender, race or interest, as are commonly practiced among many mentoring programs, did not impact on the effectiveness of the programme. They also consider that the American emphasis on at risk youth may be too narrow within the New Zealand context, where the one-to-one relationships usually involved may conflict with social and cultural structures in New Zealand.

This Farruggia et al. (2011) review covered 22 different mentoring programs in New Zealand, and Stars is not identified by name. 8 fell within the Youth Mentoring Network. They found that 'mentoring tended to be one-to-one for most programmes (73%) with few having group mentoring. 21% matched the mentors and mentees on ethnicity. Programmes most typically targeted low

socio-economic-status youth and at-risk youth. 54% had a significant proportion of Māori youth and 19% of Pasifika youth. Almost all of the programmes (96%) had educational goals, but only a few programmes (20%) had cultural goals. The authors note this limited focus on cultural goals as ‘particularly poignant given that cultural identity is an important component of well-being for Māori and Pasifika youth’ (p. 58).

Exosystem:

The STARS programme is considered to be a ‘whole school’ programme which does not target only at risk students, with the aim of not stigmatizing students. In the Noonan et al. (2012) evaluation the Stars schools were located nationwide in low to middle income communities with the participating schools ranging from deciles 1 to 7. The schools’ ethnic compositions varied ‘with some reflecting the diversity of the New Zealand population, while others were more homogeneous with substantially large proportions of Pākeha,..Māori or Pasifika students’ (p. 51).

Mesosystem:

Farruggia et al. (2011) comment that in the youth mentoring programmes in New Zealand which they studied few (29%) included some level of family involvement. This factor did not appear to be associated with programme effectiveness, although they cited the Dubois et al. (2002) study in the United States that indicated that parental involvement is associated with more effective programmes. They considered that future research should examine this issue in more detail. The Noonan et al. (2002) evaluation of Stars did not comment on family involvement.

Microsystem:

A key premise of youth mentoring is that the mentor and mentee establish a high-quality relationship which is based on trust, mutuality and empathy, according to Farruggia et.al. and authors they cite. These authors also note that they found ‘a positive association between the expected duration of the mentor-mentee relationship, once a minimum threshold of one year was reached, and the effectiveness of the programme’ (Farruggia et al., p. 59).

Empirical evidence:

The STARS programme was studied by Noonan et al. (2002) in the 8 schools, where it was applied to every year 9 student and 'Stars reported that it was uncommon for students or parents to opt out or withdraw from the programme' (p. 52). However, questionnaire (voluntary) data, which was gathered by STARS staff and teachers at the end of each component and at the end of the full programme, was provided as complete from only 3 schools. Another problem is that there was missing data from pupils in schools with high proportions of Māori students, leading to a question about Māori student completion of the components.

Noonan et al. report that the majority of the students (mentees) evaluated the programme highly, 'well above the mid-point' on the questionnaires (p. 59). It is of interest that the authors comment on the links between the outcomes of the Stars programme and four out of the five Key Competencies of the National Curriculum, i.e. 'For example, students reported gaining new knowledge and skills (thinking), learning how to set goals (managing self), learning how to listen and get along with others (relating to others), and interacting and caring for their community (participating and contributing). STARS may have optimized development through joint ventures involving members working together with their peer groups and peer mentors across diverse contexts, which appeared to promote the acquisition of Key Competencies. These findings suggest that academic learning and engagement may be strengthened when links are created between programme objectives and the Key Competencies of the New Zealand curriculum (p. 59).

The students in low decile schools rated the programme's effectiveness significantly higher as compared to students in middle-low or middle schools across all components of the programme. Students attending predominantly Pasifika schools reported significantly greater effects of the programme for all four components of the programme, compared with students attending diverse and majority Pākehā schools. The more qualitative data indicated that students

were highly engaged in the programme, with no variation by school decile or ethnic composition.

The rich qualitative data also indicated that of all the components, the adventure camp component provided an abundance of rich learning opportunities. These generally occurred early in the school year, which Noonan et al. thought may have encouraged friendships so easing transition for the mentees, as well as being relevant to the New Zealand cultural attributes of risk taking and adventure (p. 5).

The quality of the relationship between mentors and mentees was an aspect of the evaluation which did not yield clear results, although the authors considered that 'the peer-mentoring aspect may sit culturally well with these [Pasifika] students for whom learning from and teaching family members is more commonplace.' (p. 61). This aspect of the intervention needs further study.

Only a single self report was used in the evaluation, so there is no hard evidence on effectiveness in relation to actual school attendance, engagement, or academic achievement.

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Section 10: The Feuerstein Programme summary.

The Feuerstein Instrumental Enrichment programme for cognitive enhancement is one of the tools within the Feuerstein approach to the teaching of thinking. This approach includes a number of cognitive assessment and enhancement tools.

The Feuerstein programme addresses and enhances the cognitive and metacognitive processes required for all learning, including academic achievement and real-life problem solving. It also addresses the motivational factors linked to successful use of those processes.

It was developed by Professor Reuven Feuerstein to meet the needs of traumatised children coming into Israel after the Holocaust. It is widely used internationally, particularly with children with learning challenges relating to a number of factors, including disadvantage.

Dr. Dorothy Howie first brought the approach to New Zealand, having studied it in Jerusalem with the help of a Churchill grant and later a New Zealand Royal Society of Scientists' study grant. She and a colleague, John Thickpenny, at the University of Auckland, carried out the early research projects to explore its value in the New Zealand educational and cultural context, and then set up a New Zealand body to train teachers in the programme.

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Aim of the intervention:

The main aim of the intervention is structural cognitive modification. This was a unique aim at a time before it was recognized that intelligence was modifiable. In his early book on his dynamic assessment approach, Feuerstein made a strong statement about the limitations of standardized intelligence testing and the static view of intelligence at that time.

This aim accounts for the programme requiring two years of intense intervention, so that the strategies learnt can become embedded and transferred to all learning.

Summary of the intervention:

The programme consists of 12 units, 'Instruments' covering a broad range of cognitive and metacognitive functions, in a systematic way. For example, the first unit, called 'Organisation of Dots' covers the metacognitive strategies involved in organising our thinking. The second unit, 'Comparisons' addresses the comparative processes involved in all learning.

These units are delivered through a mediational interactive style, with the teacher playing a key role in developing a learning partnership, enhancing meaning, and making links ('bridging') to other learning. Ideally it should be used by the child's classroom teacher to maximise these transfer opportunities.

Because it was initially developed for children experiencing school failure and from a variety of cultural contexts, it is relatively free of school curriculum content, although it gradually builds the tools needed for inputting and understanding information in classrooms such as tables and graphs.

It can be regarded as supplementary to ordinary classroom lessons, but needs to be closely linked to them. It has been used internationally and in New Zealand at all three tiers of the framework for the teaching of thinking. Examples of uses at each tier level are given in both the 2011 Howie book *Teaching Students Thinking Skills and Strategies: A Framework for Cognitive Education in Inclusive Settings*, and in the Howie 2020 (second edition) book *Thinking about the Teaching of Thinking: The Feuerstein Approach*.

There are no assessment or diagnosis requirements for the use of the programme, but users of the programme require specific training.

There is now a version of the programme called Instrumental Enrichment Basic which is used with younger children and children with more severe learning challenges.

Underpinning theory for the intervention:

The Feuerstein programme is built on Feuerstein's theory of Mediated Learning Experience. It is similar to Vygotskian theory in emphasizing the importance of the

human mediator (parent, teacher, peer) in learning and thinking. Feuerstein has been able to develop criteria for mediated learning which include the three central criteria of mediation for intentionality/reciprocity, mediation for meaning, and mediation for transcendence (broader than transfer). These criteria fit well with the New Zealand National Curriculum characteristics of effective pedagogy.

Feuerstein also presents a listing of cognitive functions/dysfunctions which are addressed through the Instrumental Enrichment programme in a systematic way, to overcome and strengthen such cognitive functions which may not have developed due to inadequate mediation. These functions are depicted as belonging to input, elaboration and output phases of the mental act, and line up well with Sternberg's (1979) information processing model of mental abilities.

Context:

Macrosystem:

The Instrumental Enrichment programme was developed within a multicultural context, and has been used effectively in a wide variety of countries, including New Zealand. There have also been a number of studies of the value of the approach for culturally different and immigrant students. Professor Alex Kozulin, a Vygotskian expert and head of research at the international Feuerstein Institute details in his 1998 book *Psychological Tools: A Sociocultural Approach to Education* some of the cognitive skill needs of such children. He has also detailed a number of studies of how such students have responded to the Feuerstein programme.

Exosystem:

The Feuerstein programme is able to be used in a whole school way, at every tier level. An international example of school authority wide use is the UK Scottish Borders use of the Feuerstein mediated learning criteria through all of its schools, (a tier 1 intervention) then the use of the Feuerstein instrumental Enrichment programme in schools to address tier 2 and 3 needs. Dr. Meir Ben-Hur has written extensively about the Feuerstein approach as a model for school reform (2001) and has fostered the use of the programme in a whole school way with schools

serving children from low socioeconomic backgrounds in Dallas, Texas. This work is outlined in detail in Howie's 2020 book, which has a new chapter on the whole school use of the Feuerstein programme (pps. 95 – 96).

Both Professor Reuven Feuerstein and his son, Dr. Rafi Feuerstein (who currently leads the international Feuerstein Institute) have written about the importance of the modifying environment in which the Feuerstein programme is delivered. Reuven Feuerstein identified aspects of a modifying environment as including a high degree of openness, so that a learner could access the full array of society's opportunities. This inclusive feature is stressed by Rafi Feuerstein, who advocates the use of the programme by ordinary class teachers who can provide normal exposure to learning situations, opportunities for peer learning, and increased opportunities for transfer of learning from the programme lessons to the rest of the curriculum.

Ben-Hur (2000) draws attention to the research evidence for the importance of ordinary teachers using the approach. He states 'Transfer is reported more often in studies where the measured academic areas that show achievement are taught by the FIE teacher...if FIE teachers are trained to understand the connection between the target cognitive functions and their representation in the academic areas, the transfer is more predictable' (p. 10).

Mesosystem:

Parental and peer mediation are considered very important in the Feuerstein approach. Reuven Feuerstein uniquely defined 'cultural disadvantage' to occur where an individual or group is deprived of their own culture i.e. where the parents and group are unable to transmit or mediate their own culture to the next generation (Feuerstein, Rand, Hoffman and Miller, 1980). Parental mediation is central to adequate cultural mediation, and if this has occurred, then a child would be 'culturally different' if the family culture differs from the main culture of the country.

Parental and peer partnerships in use of the Instrumental Enrichment programme are also important. The international Feuerstein Institute has always welcomed

parents to its training workshops, with parents learning to mediate the programme to their child.

The programme is normally delivered within a group context, so that peer modeling and sharing, and learning through imitation, can be maximized.

Microsystem:

Central to effective delivery of the Feuerstein Instrumental Enrichment programme are an optimistic view of the possibility for individual learning and change, strong mediation by the mediator (most usually the teacher), strong 'bridging' of each lessons' strategies to other classroom learning and real life problem solving, and sufficiently long intervention to embed the new strategy learning (usually two years).

The central mediation criteria of intentionality/reciprocity fits well with the 2013 Māori Education Strategy document, *Ka Hikitia: Accelerating Success*, where the central principle is the 'Ako' two way learning and teaching process, and 'Ako is grounded in the principles of reciprocity' (p.16). The Pasifika Education Plan 2013 – 2107 stated the need to develop caring interactions, emphasizing reciprocal relationships.

Empirical evidence:

A leading international writer on the teaching of thinking, Professor Robert Sternberg, commented in a 2014 paper on the Feuerstein approach that, in his view, Feuerstein, Piaget and Vygotsky, along with perhaps Luria, stand alone in their scope and power of their contributions to the teaching of learning and thinking.

Hattie (2008) reports the Feuerstein programme as having positive effects for achievement. This is supported by the UK meta-analysis by Higgs, Hall, Baumfield and Moseley (2005), using some more up to date studies, and finding a higher effect size than those in the meta-analyses reported by Hattie.

There are a number of large early international studies which found significant positive effects for both cognition and achievement when compared with control

groups, in a variety of educational and cultural contexts, with these effects being maintained over time. These include the original study carried out in Israel by Feuerstein et al. (1980), which addressed issues important in exploring structural cognitive modifiability effects, the American study by Haywood, Arbitman-Smith, Bransford, Delcos, Towery, Hannel and Hannel (1982), and the UK study by Shayer and Beasley (1987). In discussing these studies Shayer and Beasley considered all showed evidence of what they called 'fluid intelligence', as well as more achievement related tests, which they considered indicative of changes in 'crystalised intelligence'.

Similar positive findings have been reported in other differing cultural contexts such as in the large Puerto Rico study by Alvarez, Santos, Santiago and Lebron (1992) with public school low achieving students and in Brazil by Tinoco Melo and Varelo (2003).

Howie (2020) reports many international studies showing positive cognitive and achievement effects, carried out more recently with a wide variety of learning populations experiencing low achievement for a variety of reasons.

The early New Zealand studies carried out by Howie and her Auckland colleagues all addressed effects of a two year use of the Feuerstein Instrumental Enrichment programme on cognition, achievement, and emotional factors. The three main studies, all reported in international journals and Howie's 2003 book published by NZCER, included children of varying cultural backgrounds. The 1985 study by Howie, Thickpenny, Leaf and Absolum was with students attending a special class at Kowhai Intermediate. The Thickpenny and Howie (1990) study was with students attending the Kelston School for Deaf (now called Ko Taku Reo). Subsequent to these two studies, which found significant gains for students receiving the Instrumental Enrichment programme when compared with a control group of students on all three factors, with particularly notable gains made by individual Māori and Pasifika students, the programme was offered to some South Auckland schools. The then Ngā Tapuwāe secondary school took up this opportunity, and a four year project carried out by Howie, Richard and Pirihi (1993) found that the programme was of considerable value to the low achieving

Māori students receiving the programme. Their ordinary classroom teachers, who delivered the programme in partnership with Howie, reported positively on the value of the programme for their students, and for their own professional development.

In all of these three studies, as well as a control group design, a single subject research design was used to enable tracking of the responses of individual students to each component (instrument) of the programme. This was considered of value in understanding individual student needs in future use of the programme.

There have been a number of more recent New Zealand research evaluations of use of the programme and the Feuerstein approach in general. Of particular interest in terms of Māori and Pasifika learners, a study in a West Auckland primary school with a high percentage of Pasifika (61%) and Māori (20%) students used Feuerstein's Mediated Learning Experience criteria to increase teacher-student talk about thinking and learning, on a whole school basis (Pirihi, McAllum, Mentis and Barrar, 2016). They found an effect size of 0.64 on student writing achievement following this one year intervention. McIntyre (2017) worked with academically able students with diverse Pasifika cultural backgrounds in an Auckland school, using the Instrumental Enrichment programme, with special attention to incorporating their cultural interests.

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Section 11: The HIPPY Programme summary.

The HIPPY Programme originated in Israel, where Professor Avima Lombard in the School of Education at the Hebrew University of Jerusalem developed it to address the inequalities of educational achievement of immigrant children coming into Israel. It is a parent-based pre-school programme used in low income areas where children are at risk of being educationally disadvantaged.

Dame Lesley Max brought the programme to New Zealand, calling it HIPPY to originally mean 'Home Instruction for Preschool and Year One Youngsters' but it was later changed to 'Home Interaction Programme for Parents and Youngsters'.

It was originally established in South Auckland and now there are 40 sites nationally. It is supported by Ministry of Education funding.

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Aim of the programme:

The programme aims to strengthen parents' confidence and skills to become their child's first teacher, to effect positive change in their child's learning and ability to realize their potential.

Summary description of the programme:

HIPPY is a home-based programme. A home paraprofessional (tutor) delivers a two year 60 week curriculum to the parents of children aged primarily three to six years of age, and trains and supports these parents who work with the programme with their children on enjoyable activity packs for 15 minutes a day, for 5 days a week, for 30 weeks of the year, for 2 years. The tutor role-plays aspects of the curriculum, and these are then role-played by the parents to their children. Tutors visit parents in their homes on a fortnightly basis to support parent teaching. On alternative weeks, parents, tutors and coordinator come together for a group meeting, to plan the week ahead and participate in enrichment activities. Role-play is the prime method of teaching throughout the programme, and can be considered an interactive pedagogical approach suited to Māori and Pasifika parents and children. The group meetings provide parents with peer support.

The HIPPY programme can be considered to have a strong potential for cognitive enhancement, as the curriculum addresses both the cognitive (including problem solving) and literacy and numeracy aspects of learning.

It is delivered separately from children's involvement in an ordinary early childhood setting. The 2019 HIPPY Evaluation Report (Patolo) notes that at the time of HIPPY enrolment, 87 % of the children were already enrolled with an early

childhood centre, with 43 % of the children spending over 20 hours at such a centre.

It could be considered to be a tier 1 or tier 2 intervention, ensuring high quality early learning for all children, and preparing school readiness.

Underpinning theory:

The interactive role-playing pedagogy of this programme suggests a Vygotskian theoretical base.

Context:

Macrosystem:

The programme was developed in Israel to be used by immigrant parents coming from a variety of cultural contexts. It has been used effectively in a number of countries including with low-income ethnic minority children (Mexican-American) in California (Necoechea, 2007); in Texas (Brown and Lee, 2014); in Canada (Prairie Research Associates, 2015); in Australia through a 5 year national roll out of HIPPPY undertaken by the Australian Government across Australia, and evaluated in 2011 across 14 HIPPPY sites (Liddell, Barnett, Roost and McEachran), and in one Australian implementation with a large proportion of the children starting HIPPPY with development delay (Godfrey, 2006).

The New Zealand government has supported use of the HIPPPY programme in New Zealand for families in disadvantaged communities. The programme is linked to the New Zealand early childhood curriculum, Te Whāriki, and although the materials are franchised from Israel, parents appreciate the materials and books included with New Zealand cultural content.

Exosystem:

Of the 41 HIPPPY sites in 2019, seven were in main towns in Northland; five were in Auckland East (Glen Innes, Pt. England, Otāhuhu, Otara and Sylvia Park); seven were in West Auckland, four were south of Auckland, fourteen were in the main

towns and cities of the rest of the North Island, one was in Motueka, and three in Christchurch.

Coordinators attract families to the programme by a number of strategies to ensure that those who most need it know about it. In Patolo (2019) 31% heard about HIPPY primarily through friends and family. In the 2019 evaluation, 41% of the families had a household income of less than \$50,000 per annum.

Although in the 2019 evaluation 53% of the children attending HIPPY were also attending an Early Childhood Centre, there is little in the reports about how the HIPPY intervention may have been linked to what was happening at the preschool. However, the 2019 evaluation reports that 34% of these parents whose children attended a preschool centre said that 'HIPPY helped them become more engaged by visiting the centre' and 63% said that 'HIPPY helped them become more engaged by speaking to a teacher about their child's progress' (Patolo, 2019, p. 13.)

Mesosystem:

In the 2019 New Zealand evaluation, 44% of the children were from Māori ethnic backgrounds, 15% Pasifika and 20% Asian. For 36% of all families, English was the second language. The main parent carrying out the programme was the mother (86%).

It is of concern that this 2019 evaluation noted that 75% of the families exiting from the programme after 30 weeks did not attend any group meetings (Patolo, 2019, p.10). This suggests that this peer support component is not generally working as well as intended.

Microsystem:

The 2020 *HIPPY New Zealand Book of Evidence* (Patolo,) states that 'In 2019 the new HIPPY NZ Curriculum was launched in all 41 sites nationally. The new curriculum is specifically designed to accommodate the new younger starting age of children between 3 and 4 years old. This means more time spent on early

learning in the home to create a solid educational foundation before the critical transition to school experience' (p. 5).

The aim of intervention for a full two years, totaling 60 hours, is a challenge, with in 2019, 85% of the families exiting the programme after 30 weeks (Patolo, 2019, p. 9). An early study in 1992 gave as the main reasons for families exiting the programme early as family relocating, parent changed their mind, and parent had started work (Patolo, 2019, p.9). In 2019 77% of the families had lived in their current home for less than five years, so the transitory nature of some of the families in these communities is a challenge in embedding such a long term intervention.

There is little in any of the research evaluation on how the HIPPY programme is modified to meet the needs of children from differing cultural and language backgrounds. Only a very small percentage of the HIPPY children who were also enrolled in another Early Childhood Education Centre were enrolled in a Kohanga Reo, even though 44% of the 2019 Hippy children were Māori.

Empirical evidence:

Findings from the international studies are summarized first, drawing on the reports discussed in the *2020 HIPPY New Zealand Book of Evidence (2020)*.

For cognitive skills, defined in the report as 'any skills than are indicative of a child's ability to use mental processes/constructs to learn and/or problem solve' (p.21) a few studies which clearly measure such constructs include Godfrey's (2006) Australian study. A large proportion of the HIPPY children in her study were diagnosed with developmental delay before entering the programme, which may have biased the findings. However, on an Australian measure that tests children's cognitive development called *Who am I* it was found that during the first year of HIPPY participation children were below the age norm, while during the second year of participation and post HIPPY children were much closer to the age norm.

One of the USA studies measures what is called 'knowledge of concepts and identities' from the Bracken School Readiness Assessment, and the results are

reported under the cognition section of the *2020 HIPPY New Zealand Book of Evidence*. The Colorado study found a significant shift in these concepts from before and after receiving HIPPY.

One international study (Necoeachea, 2007), in California, found significant change in oracy skills with HIPPY attendance, this change after only 15 weeks of HIPPY. The Texas study by Brown and Lee (2014) found HIPPY children to be significantly better on Standardised measures of reading ability than their demographically similar peers at grades 5 and 7. This study also found a significantly better performance in math achievement at these grades by HIPPY children.

Social and emotional development was studied by Liddell et al, in their evaluation of the five year national roll out of the HIPPY programme. They found that parents reported that their HIPPY children had fewer social-emotional difficulties at the end of the programme than at the beginning. Parents also reported that their children had fewer problems with peers.

In terms of HIPPY preparing children for school learning, in a Texan study, Johnson, Martinez-Cantu, Jacobson and Weir (2012) found that HIPPY children adjusted better to formal schooling than non HIPPY children. Fewer HIPPY children had to repeat their first year of school compared to demographically matched control children. In her Australian study, Green (2008) found that parents reported half way through the second year of the HIPPY programme that they believed that HIPPY helped their children perform better at school, and that the children had developed a habit of learning. In a 1999 Israeli study Gumpel rated HIPPY children on entry to school as significantly more likely than non-HIPPY children to pay attention.

Finally, the international Colorado studies found that engagement with HIPPY helped parents to feel more confident in supporting their children's learning (Centre for Education Policy Analysis (2013); Landgraff, 2015; O'Brien, 2014). The Australian study by Green (2008) found from parental interviews half way through the first HIPPY years that many parents believed that HIPPY 'helped them become better teachers to their children' (p. 209).

The New Zealand studies reported in the *HIPPY NEW Zealand Book of Evidence* (2020) do not include a finding regarding cognition. However, Wall (1994) found that first year HIPPY children significantly improved in both their receptive and expressive language, within the first four months of HIPPY. Burgon (1997), of the NZCER, carried out an evaluation of HIPPY for the Department of Social Welfare, which at that time was financially supporting the programme. She found that HIPPY children were considered by teachers to have fewer difficulties in expressive language than demographically similar children. Dosmukhambelova and Riding (2020) found that on entry to school HIPPY children knew more letter symbols than their peers and could read and write more words than their peers, both at age 5 on entry to school, and at age 6. At age 6 they were also reading more advanced books at age 6 and a higher reading age. By age 8 the sample at a West Auckland school showed HIPPY children to be at a more advanced level of the curriculum in reading and writing than their non- HIPPY peers.

This same study found that at age 6, HIPPY children performed significantly better on a standardized measure of numeracy (Junior Assessment of Mathematics) than their demographically similar peers, and that by age 8 HIPPY children were at a more advanced level of curriculum in math.

More generally, these findings may relate to the fact that HIPPY may be facilitating the transition of children to an early childhood education service. The Auckland *Growing up in New Zealand* longitudinal study showed in 2017 that at age four HIPPY children participated in ECE at higher rates after they joined HIPPY.

The annual surveys on HIPPY carried out by the Great Potentials Foundation found that in 2017, 2018 and 2019 parents considered that HIPPY prepares their children for school (92.5%, 94.7% and 96.6% respectively). Dosmukhambelova and Riding (2020) found that HIPPY children had higher rates of school attendance than their peers during the first year of school.

Finally, the Great Potentials Foundation Survey of HIPPY families in 2017, 2018 and 2019 found that parents believe that HIPPY increased their knowledge of how children develop and learn (86.4%, 84.6% and 83.4% respectively). They also considered that it helped them to take a more active role in their children's

education (87.9%, 87.2% and 83% respectively). Cotching (2000) found in a small qualitative Far North study that 11 of the 12 HIPPPY parents interviewed felt that they were more confident in their understanding of their child's development and had improved their knowledge of how to teach their children.

Barhava-Monteith (1998) carried out a study of HIPPPY which found that HIPPPY parents were significantly more likely to be involved with their child's school than non-HIPPPY parents.

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Section 12. The Philosophy for Children programme

Philosophy for Children addresses critical thinking skills through a collaborative philosophical inquiry approach. It is used widely internationally and in New Zealand. Lipman, the creator of the programme, reported an early study he carried out in the US with both white and black students in high and low socioeconomic communities, in which students receiving the programme showed significantly better reasoning ability than those who did not (Lipman and Gazzard, 1987).

This summary has been written by Dr. Vanya Kovach, who heads the Philosophy for Children work in New Zealand. She is also a member of the Coalition.

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Aim: To develop students' critical and creative thinking through collaboration in classroom "communities of philosophical inquiry". To provide opportunities for students to apply these thinking skills to questions of central importance to human life, many of which are intimately connected to living a good life as individuals and communities and with responsible citizenship. To enhance relationships through the development of mutual appreciation, respect and tolerance. To develop the ability to engage with different viewpoints (including one's own) in a spirit that combines criticality and caring.

Underpinning theory for the programme:

Philosophy for Children's deepest theoretical roots are in the work of John Dewey, who held that 'education had to be defined as the fostering of thinking rather than as the transmission of knowledge;... that student reflection is best stimulated by living experience, rather than by a formally organized, desiccated text; that reasoning is sharpened and perfected by disciplined discussion as by nothing else

and that reasoning skills are essential for successful reading and writing; and that the alternative to indoctrinating students with values is to help them reflect effectively on the values that are constantly being urged on them' (Cam, 2006).

Expert facilitation of philosophical inquiry provides scaffolding for children's cognitive development, working within a Vygotskian "zone of proximal development". Matthew Lipman, originator of the Philosophy for Children movement, saw a clear fit between his approach and Vygotsky's emphasis on mediated learning - the internalisation of cognitive practices encountered in a social context (Sutcliffe, 2003). The input of adults (the facilitator, family and others), is central to children's intellectual development. But, perhaps most importantly, children learn from their peers in a community of inquiry that is both caring and critical. These peers are developing different skills at different rates, and are increasingly motivated to share their ideas, gently challenge the thinking of others, and to celebrate the thinking of their classmates.

Summary description of the programme:

The programme engages students from Year 1 to Year 13 in collaborative and student-led inquiry into "big questions" – questions about common, central and contestable concepts such as justice, knowledge, truth, evidence, responsibility, identity, beauty, value, reality, friendship, mind, rights, reason, fairness and freedom. The answers to questions about these concepts cannot be provided by science and experience alone, but must be answered by individuals and communities, through a process of openminded, respectful, committed and rigorous dialogue.

Students are offered philosophically rich stories and other stimuli and are encouraged to pose their own questions in response. This focus on student questions ensures both relevance of the discussion to students and the correct "pitch" of the subject matter. The student "community of inquiry" then works together to create, explore and test possible answers to these questions, with the help of a facilitator – whose opinions are not part of the process! Skilled questioning on the part of the facilitator scaffolds the use of critical and

collaborative thinking and ensures the increasing rigour of inquiry. Structured but open ended activities that help extend thinking can be introduced, and also exercises to build specific skills, such as giving and evaluating reasons, seeing connections, making distinctions, detecting and testing assumptions, making and testing generalisations, seeing alternative points of view, constructing and evaluating arguments...and many more.

Reflection on the processes of inquiry is integral to the conduct of communities of inquiry. Students are invited to identify the strengths of their practice as a critical, collaborative and caring community, and encouraged to propose strategies for further improving on these. This develops meta-cognition, self responsibility and a strong sense of ownership of the process.

Context:

Macrosystem:

Philosophy for Children is practiced in over 63 countries, in 24 languages and with the support of 35 international organizations. In Aotearoa New Zealand, the programme is supported by the Philosophy for Children Association of New Zealand (P4CNZ), a registered charity, and an Associate of the Federation of Asia-Pacific Philosophy in Schools Associations.

Exosystem:

Philosophy for Children is practised by students and teachers in classrooms around Aotearoa New Zealand. P4CNZ provides professional development for teachers to 40 – 100 teachers every year. Introductory professional development, which enables teachers to begin facilitating philosophical inquiry in the classroom, is offered by P4CNZ over two days, and is available in most of the main cities of Aotearoa, and, on request, anywhere in the country. A term's worth of planned sessions, (for different year levels) are made available to participants after workshops, and serve to support teachers through the first phase of their journey.

Advanced practice workshops build facilitation practice, knowledge of philosophy, and the ability to create effective classroom materials.

In some schools, only one or two teachers might engage their students in collaborative philosophical inquiry, but in a growing number of other schools, a whole school approach is implemented, leading to greater gains for students. The greatest uptake of P4C is in primary and intermediate schools, though the processes involved in a community of inquiry are just as valuable in the secondary school context, and many secondary teachers train in, and practise, P4C.

In relation to the New Zealand Curriculum, it is important to note that student participation in communities of philosophical inquiry (as described above in 'Outline of the Programme') develops all of the Key Competencies: managing self, thinking, participating and contributing, relating to others, using language, symbols and text.

Mesosystem:

P4C has the capacity to transform teacher practice. Research conducted in Australia (Scholl, 2012) has demonstrated that: "Teachers' pedagogical repertoire was broadened... Student questions, ideas, and voice within Philosophy lessons surprised teachers, creating critical junctures in teachers' pedagogical transformation. Teachers' belief in students' thinking capabilities improved. Student diagrams of...lessons depicted distinct differences in the hegemonic classroom structures revealing the egalitarian, democratic and interaction-centred pedagogy that Philosophy engendered.... Interactions within Philosophy lessons were transformed in both form and substance forcing open the cognitive boundaries on both the student's and the teacher's side of the Zone of Proximal Development".

Where P4C is implemented in whole schools, involvement of whānau and the wider school community is strongly encouraged. A key factor in gaining family support for P4C is emphasising that students are taught how to think, not what to think. Students are often encouraged to discuss the questions and issues that they explore in class with their whānau and friends, and to bring new perspectives gained from this back to their classroom inquiry.

Philosophical inquiry, while most easily stimulated for novice students and teachers by purpose written philosophical stories and activities, can take place in all parts of the curriculum. Questions concerning ethics, knowledge, reasoning and the meaning of central concepts can be identified in all subject areas, both by teachers and students. Critical skills are naturally transferred by students from the community of philosophical inquiry to other areas of learning.

Microsystem:

Interactions between students and teachers in the community of philosophical inquiry are characterised by mutual respect and equality. Student to student dialogue is encouraged from the outset, with facilitators explicitly departing from a student to teacher interaction pattern. Student ideas are paramount, and the teacher/facilitator does not give their own opinions, but instead praises the content of individual contributions or steers discussion to teacher-chosen outcomes.

Person characteristics and agency:

Philosophy for Children engenders a high degree of student agency. The questions explored are the students' own, and they are also encouraged to suggest topics, stories, films, news and school happenings as stimuli for inquiry. The emphasis on careful reflection, and group responsibility for the quality of inquiry, both calls on, and enhances, student agency. The critical and collaborative skills developed by participation in communities of philosophical inquiry further develop students' ability for effective agency.

Programme sensitivity to individual differences:

An important aspect of collaborative philosophical inquiry is the development of group recognition of the richness and value that different members contribute to the communal endeavour. Students bring different cognitive resources, learning styles, cultural backgrounds, perspectives, beliefs, values, and experiences to the inquiry. The safe space created by the ethos and processes of the community of inquiry allows students to discover, sometimes to their surprise, how diverse and interesting are the views of their classmates. Friends discover that they think

differently from their friends, and those who are not already friends can find unexpected common ground. In a community of philosophical inquiry, difference, and (respectful) disagreement, is a gift to the group, stimulating broader and deeper thinking. A few years ago, a Year 4 student, at a Wellington “P4C” school, was asked by an adult: “How do you feel when someone disagrees with you?” The child replied, “I feel curious!”

Empirical evidence:

Considerable international research has been conducted on the outcomes of Philosophy for Children. Presented here is just a small sample.

Meta-Study

Trickey and Topping (2004) surveyed research published from 1970 – 2002 which report gains in logical reasoning, creative thinking, reading comprehension, mathematical skills, self-esteem, listening skills, expressive language, motivation, concentration, commitment, emotional intelligence, and a reduction in negative interactions with peers, such as bullying. A mean effect size of 0.43 indicates a consistent moderate positive effect for P4C. The authors note that the significance of outcomes is highly dependent upon the quality of interventions, i.e. good training and practice with the methods is essential. The greatest benefits accrue over the long-term, meaning P4C is best implemented school-wide across multiple levels.

The Evolution of Critical Dialogue

In a 2002 study based in Australia, but also utilizing transcripts from Quebec and Mexico, (Daniel and France, 2002) the development of students’ dialogue was analysed. As students’ practice of philosophical inquiry progressed, a movement from monological to dialogical exchanges emerged, and from non-critical, semi-critical to critical dialogue. Critical dialogue is characterised by the authors as follows: “explicit interdependence between peer interventions; striving to construct meaning rather than searching for a single truth; being aware of the complexity of

concepts; respect and consideration of peers' points of view; negotiated and pyramidal elaboration of viewpoints; uncertainty; alternation between acceptance and criticism of peer remarks; open-mindedness toward new possibilities and divergence of perspectives; spontaneous elaboration of justifications; moral preoccupations inherent in certain remarks; statements that are closer to hypotheses than to conclusions". Analysis revealed that, unless the pupils have more than one year of experience with P4C, their discourse is dialogical but not critical.

Marked Gains in Mathematics and Reading

In 2015, an Education Endowment Foundation Study looked at the outcomes of philosophical inquiry for 3000 U.K. students in 48 schools over 1 year. The results, in summary, were:

1. Overall, pupils using the approach made approximately two additional months' progress in reading and maths.
2. Results suggest that P4C had the biggest positive impact on disadvantaged pupils (3 months - maths, 4 months - reading).
3. Teachers reported that the overall success of the intervention depended on incorporating P4C into the timetable on a regular basis.
4. Teachers and pupils generally reported that P4C had a positive influence on the wider outcomes such as pupils' confidence to speak, listening skills, and self-esteem.

More international research can be accessed at <https://www.icpic.org/our-research/> and <https://www.sapere.org.uk/about-us/p4c-research.aspx>

Very little empirical research on P4C in New Zealand has been published to date, though there is growing interest among experienced classroom practitioners in conducting studies. Some of these practitioners have already investigated aspects of P4C in the course of their postgraduate study, though these theses have not yet been published. One exception is a report on a 30-week action research project by

Leon Benade (2011). Benade reports that P4C does lead to increased critical thinking and deep questioning, as shown by student performance in areas of Inference, Deep Thinking and Thinking Critically in asTTle Reading Test, and also by self report from students, and informal observations of teachers. Not all students benefitted to the same extent, and Benade concludes that further exploration of the practice of P4C is needed.

Meaning making:

Making meaning of individual and social experience is central to the community of philosophical inquiry (Splitter and Sharp, 1995). Philosophizing in this way is not “ivory tower” thinking, it is students asking and exploring questions that arise from their own experience, in response to provocations which are rich in philosophical ideas, but are grounded in school, family, community and global life. To convey a sense of how children experience the community of philosophical inquiry, some quotes from students follow:

Responses to a P4C teacher, from a Year 5 class in Auckland:

“I enjoyed getting to know what other people thought about things”

“I like the fact that everyone was really respectful in the way that they talked to each other.”

“I liked the way you let us express ourselves - not all the teachers do that. This programme makes us think of things and ask ourselves questions that we never thought of before.”

“I really enjoyed it. It is one of my highlights at school.”

Selected quotes from the Benade (2011), Year 5, after 3 months of philosophical inquiry:

“My thinking is focused and logical. I try to focus on the subject and try to give my opinions.”

"If thinking helps me with ideas. I would wonder how did I get that idea?"

"My thinking is reasonable because I give my answers' reasons, and I discuss my and other peoples' answers or questions."

"My thinking is strong and checking because when I have an answer in my head I proof-read to see if the answer is suitable."

"My brain stretched because there were heaps of questions ..."

"I've improved in my learning ... it's [P4C] put knowledge into my brain ..."

"I wasn't really good at speaking, like but now I know, like I learnt that I can do it."

From Year 8 students in Auckland:

"You have to know there are different answers to questions about the world. Philosophy helps with this"

"It's good for understanding different people's perspectives"

"It makes you think hard about what you believe"

"It's good to hear about what everyone thinks. Sometimes the quiet people get to talk more in philosophy"

"In P4C everyone gets to be heard and everyone has a voice. If everyone doesn't have a voice you are not doing it right"

Time:

Philosophy for Children can be introduced at Year 1, with simple topics and careful skill building, the most foundational skills being listening to others and giving reasons for what you think. With Year 1, sessions are appropriately short: 10 – 15 minutes. By Year 6, experienced students will enthusiastically commit to 45 minutes of inquiry, or more. Separate skill building activities might take only 10

minutes. International research suggests that weekly sessions, for at least one year, offer the most sustained gains.

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Section 13: Edward de Bono's programme and method for critical and creative thinking

Edward de Bono has developed a programme and method used widely in the teaching of creative thinking; The Cognitive Research Trust (CoRT) programme and the 'Six Hats' method. They bring together the logical and lateral thinking processes involved in both critical and creative thinking.

They can be used in any classroom setting, so are regarded as a Tier 1 intervention. However, because they address the development of creativity, they are a natural choice for learners grouped to enhance high ability, at Tier 2 level. They may also be chosen as appropriate for enhancing learning in ethnic minority groups who have a strong creative interest and ability.

The CoRT programme addresses critical and creative thinking. It uses materials that are different in content to ordinary classroom material, but according to de Bono they can be incorporated into the curriculum in any way that best suits the school and the teacher (de Bono, 1991). They are suitable for students of all ages and abilities. They do require special training for their use.

The 'Six Hats' method also addresses critical and creative thinking, and can be used flexibly in any classroom setting. It does not require the same level of training as the CoRT programme.

Dr. de Bono developed these programmes at Cambridge University.

He then set up the Edward de Bono Institute for the Design and Development of Thinking at the University of Malta. Since 1992 Professor Sandra Dingli has been Director of the Institute and published from there a number of research reviews of the programmes.

Web site: www.debono.com

Aim of the interventions:

The interventions are aimed at teaching both critical and creative thinking. According to de Bono (1991) the CoRT lessons 'are designed to teach students of all abilities to effectively apply their intelligence to any academic, personal or social situation' (p. 3).

Summary description of the intervention:

The CoRT programme consists of 60 lessons covering 6 components: CoRT 1- breadth-to broaden perceptions; CoRT 2-organisation- to teach thinking operations such as to recognize, analyse, compare, select, and how to organize them; CoRT 3- interaction- involvement in interactive, constructive argument; CoRT 4 – creativity- do develop effective new ideas and engender fun; CoRT 5- information and feeling-eliciting and assessing practical information, including beliefs and feelings; CoRT 6-action- to fulfill the purpose of thinking, which is action.

These 6 components are covered in the ten thinking 'tools' in the programme, which are: treatment of ideas (plus, minus and interesting points in an idea); factors involved (considering all factors in a situation); rules (considering the basic purposes and principles of rules); consequences (considering immediate, short, medium and long-term consequences); objectives (considering aims, goals and objectives); planning (considering basic features and processes); priorities (ordering priorities); alternatives (generating new alternatives, priorities and choices); decisions (making a decision, and the processes/operations involved; viewpoint (considering the points of view of all others involved in a situation).

Group work is a central feature of the programme, allowing learners to discuss a problem example given to them, using the thinking tool presented in the lesson. Generalisation is encouraged to other areas of the programme, and to other situations.

The 'Six Hats' method involves 6 'Hats' as follows:

White Hat-focus on information, disputed information, what information is available, what information would we like to have what information do we need, what information is missing, how do we get the missing information?

Red Hat- signal, no explanation, validity, decision, feelings right now, range of feelings, qualifications, (short) time allowed

Black Hat- negative attitudes, does not fit, faults, potential problems, the future, devil's advocate, errors of logic, assessment, thoroughness, honesty

Yellow Hat- judgement, logical thinking, feasibility, benefits, values, savings, competitive advantage, potential, concepts (underlying idea)

Green Hat- time and place for creativity, creative effort, attitude, alternatives, modification, problem solving, possibilities, 'po' for provocation, specific lateral thinking techniques

Blue Hat- thinking about thinking (i.e. metacognition)

Any of these thinking 'Hats' can be used at any point in any lessons.

Underpinning theory:

The methods are based on an information-processing model of thinking, addressing how we process information in our thinking and problem solving.

Context:

Macrosystem:

The CoRT programme has been used widely internationally, including in 'Singapore, Australia, Canada, Mexico and the USA' (de Bono, 2000, p. 14). A review of programmes by Dingli in 2001 also includes summaries of a project with CoRT in Venezuela, and with Six Hats in a community development project in rural villages in Cambodia. It is also used widely in the UK. This suggests that the materials are accessible and appropriate in a wide variety of contexts, including for culturally different learners.

Of particular interest is its use with Aboriginal children, as described by Ritchie and Edwards (1994), and as outlined below. They note that divergent thinking has been found to be a strength of such disadvantaged minority students in Australian

schools, and so they chose the CoRT thinking programme to build on this divergent or creative strength.

The CoRT programme has also been widely used for work-based learners. There has also been interesting use of the CoRT programme in project-based technology instruction by Barak and Doppelt (1999). This suggests there may be potential for this programme with secondary school students in danger of disengagement or in transition to real-life work situations.

Exosystem:

The de Bono programme and method lend themselves to a more whole school approach to the teaching of thinking, as the CoRT programme can be used systemically in a variety of ordinary classrooms, and the 'Six Hats' method used as a pedagogical tool by any teacher. The example below of a whole school systematic approach to the use of CoRT in a high achieving Auckland secondary school indicates the possibilities and challenges involved.

Mesosystem:

The CoRT programme is meant to be delivered in a peer group setting, allowing for exchange of ideas. The CoRT materials are designed to help learners develop alternative viewpoints, encouraging them to be much less egocentric, and to think about other peoples' viewpoints, and this will be enhanced within a peer learning situation.

There is little mention of parental involvement in the studies covered for this summary. Because of the importance of generalization to real life situations, and the importance of parents' acceptance of the critical thinking the programme develops, strong links between parents and school in the teaching of CoRT could well be beneficial.

Microsystem:

Authorised training is required for the teaching of the CoRT programme, and the quality of the teaching for generalization to other curriculum subjects and real-life problem solving is considered important.

According to de Bono (1991,) 'students' success in using the CoRT programme is not contingent upon their prior knowledge, ability to retain information, or reading or writing skills' (p.3). De Bono also considers that it would be appropriate for learners with special educational needs, and at-risk youth (p.3).

Empirical evidence:

Even de Bono himself, in his early 1976 paper reporting a number of experiments using the CoRT programme, carried out by classroom teachers with small samples, which suggest large increases in idea counts (i.e. creativity) cautioned that '[they do not succeed in proving anything, because in each case it is always possible that a special set of circumstances biased the results' (p. 217).

Dingli (1983) reports the Venezuelan (de Sanchez and Astorga, 1983) study which detailed the impact of a group-controlled implementation using an adaptation of CoRT. She notes that the researchers reported increasing gains over three years for treatment students compared with control students on open-ended problems similar to those used in the treatment. This study therefore looks more widely at the teaching thinking impact, not only creative thinking.

Professor John Edwards (who retired to New Zealand) completed his Masters thesis on the CoRT programme at James Cook University, North Queensland, in 1988. This evaluative case study with students in their last year in primary school found positive results after a short intervention (8 weeks), with significant improvements not only in originality and flexibility, but in scholastic ability and language achievement. Subsequent to this, Edwards embarked on what are probably some of the most interesting and effective research evaluations with the CoRT Programme.

In 1989 Edwards presented a paper (Edwards and Clayton) to the Fourth International Conference on Thinking on 12 year old children (the same students as in his thesis?) who had completed 60 CoRT lessons i.e. a more complete use of the programme, 2 lessons per week over thirty weeks. Of particular interest is that the teacher was helped to infuse the CoRT thinking skills through all of the school curriculum. Dingli (2001), who reports this paper, states 'The students

showed improved scores on a range of quantitative measures while the teacher showed growth on a range of measures...The teacher noted that her style had become more interactive...The students achieved outstanding and unexpected results on a set of national tests and contributed many more ideas of a higher quality than they had done before CoRT instruction' (p. 5).

Another interesting paper on CoRT was presented by Edwards and his colleagues (O'Brien, Stapledon, Edwards and Diamond) at a 1994 Conference on Creative Thinking. It detailed the introduction of the CoRT programme throughout the curriculum of a large secondary school. In outlining the perceived benefits and problems, they noted problems with funding, teacher resistance to change, and the constraints on students regarding work which is assessed. Dingli (2001) reports 'An interesting question which the authors raise is how can students be interested in learning something which will not be tested?' (p. 7).

Of particular interest in relation to work with ethnic minority children is the work carried out by Edwards and Ritchie with Aboriginal children (Ritchie and Edwards, 1994). They note that 'Aboriginal children are one of the most disadvantaged minority groups in our school system' (p. 242). However, they found from reading research that divergent thinking was a strength of such groups, and chose to work with them with the CoRT programme because it could build on such a strength. It is also free from academic content, seen as an advantage for these low achieving students experiencing failure with such material.

Six classes from four schools (the schools were classified as disadvantaged) were included in the project, with significant enrolment of students with Aboriginal background. Forty Aboriginal learners formed the study sample, and were divided into The CoRT and the control groups. The age of the students was 11. The CoRT lessons were taught by the regular classroom teachers, once per week.

The results included statistically significant treatment group effects for fluency, flexibility and originality on the Torrance Tests of Creative Thinking (Torrance, 1990). Gains were also made on a standardized measure of scholastic aptitude, but these were not significant, and school achievements for language, mathematics, social science and science ratings by teachers also showed no

significant treatment effects. In their discussion of this project Ritchie and Edwards affirm the use of the CoRT programme for enhancing creative production for these Aboriginal students, but note that there needs to be greater attention to transfer of learning in the programme to different contexts and tasks to enable these learners to generalize learning from CoRT lessons to reading, writing and arithmetic. They also encourage teachers to recognize and support Aboriginal students in using creativity across subject disciplines so as to increase success within the formal context of the school classroom.

In New Zealand, there has been an example of a whole school systematic use of the CoRT programme (of which Howie was an external evaluator), while Coombe led the whole school intervention, as head of teaching thinking in the high achieving school (Howie, Coombe and Lonergan, 1998). The school implemented the CoRT programme systematically and extensively with its third and fourth form students (aged 13 and 14) all completing the 60 CoRT lessons. The sixth formers also completed the 'Six Hats' course. The evaluation used the Costa rating scale of 'Characteristics of Intelligence Behaviour' which allowed a 10 point self rating by students themselves. These ratings were matched with the components of the CoRT programme completed. Some individual case study interviews were also carried out. Although the evaluation was limited, the case study interviews underlined the importance of ensuring that the material was made as meaningful as possible for culturally different learners, and that they needed to be encouraged to reflect on the application of the strategies within their own real-life problem solving situations. As reported in Howie (2011) one learner of Chinese background, when asked what she could do with the skills learnt, responded 'I don't know how to use them.' However, later in the interview she did suggest, in relation to solving one real-life problem, that she could use 'minus and plusses' to address it. She did also mention that the teacher taking CoRT was 'making her think more about it. Not just sit there and listen to it' (an indication of reflective learning, important for learners from diverse cultural backgrounds). She also commented that she enjoyed the thinking skills programme. Students were interviewed from different classroom ability levels, and at all levels the programme was considered by the students to help in their real life thinking, and

could give examples of that. However, one student in a lower ability class reported that ‘things could have been done to help you use it more on your own initiative’. (This relates to the importance of teaching for generalization, with eliciting of meaningful examples from the students themselves.) However, he considered that ‘When I think I am going to do something stupid I think about it rather than going straight ahead with it’. He also appeared to be thinking more about consequences, but there was some indication that his viewpoint was not readily heard by teachers: ‘I could say all that I had to say, but I don’t think the teacher would take into consideration much of it’. This reminds us of the importance of the aims of a thinking programme chosen by a school i.e. in this case, to enhance critical and creative thinking, matching with the overall school ethos.

Finally, it is worth noting from the Batchelor (1996) study carried out with ‘Six Hats’ in a rural community in Cambodia that he found this model a useful tool for ensuring complex analysis of problems, creating a framework for conversations, and preventing conflicts. This report suggest its possible value when working with disengaged students.

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Section 14: Self-regulated strategy development for writing

Self-regulated Strategy Development (SRSD) is an instructional model which has been used to increase writing success by struggling writers. It focusses on developing children's strategic behavior, knowledge and motivation in writing (Graham, Harris and Mason, 2005).

It can be used in a whole classroom setting so would be considered a tier 1 intervention, although it was initially developed for struggling writers with a strong attention to individual needs. Graham and Harris (2003) state that 'SRSD has been used successfully with entire classes, small groups, and in tutoring settings' (p. 124).

Aim of the intervention:

Graham and Harris (1993) developed the instructional programme initially to improve the performance of struggling writers. It is designed to gradually transfer responsibility for the writing over the course of the intervention, helping students to understand and communicate the strategies they learn.

Summary description of the intervention:

Harris and Graham (2009) outline the critical characteristics of SRDS instruction as first, explicit teaching of strategies, accompanying self-regulation procedures and needed knowledge. Next, children are viewed as active collaborators who work with the teacher and each other during instruction. Third, instruction 'is individualized so that the processes, skills and knowledge targeted for instruction and tailored to the children's needs and capabilities' (p. 123).

SRSD is a six-phase intervention involving :

1. Develop and activate knowledge needed for writing and self-regulation (with questions, if it is a persuasive essay, generated such as 'What I an opinion? What are the parts of a persuasive essay? How do you think the author came up with this idea? What would you do? etc.)
2. Discuss it, including exploring the students' current writing and self-regulation abilities, attitudes and beliefs about writing, what they are saying to themselves as they write, and how these may help or hinder them as writers. Also establish the student's commitment to learn strategy and act as a collaborative partner establishing the role of student effort and strategy success.
3. Model it, with teacher modelling and /or collaborative modelling of writing and self regulating strategies. Self instruction is also be modeled including problem

definition, focusing attention and planning, self-evaluation and error detection, coping and self-control, and self-reinforcement.

4. Memorize it, in the early stages, and later as appropriate.

5. Support it, with prompts, guidance and collaboration faded individually until the student can compost successfully alone.

6. Independent performance, with teacher monitoring and plans for maintenance and generalization continuing to be discussed and implemented. (Harris and Graham, 2009, p. 125).

Underpinning theory for the intervention:

The theoretical bases for the approach are the Meichenbaum (1977) cognitive-behavioral intervention model, with the importance of dialogue, and the teacher scaffolding and modeling (a Vygotskian instructional approach), gradually passing over control to the student. A talk aloud component comes from both of these backgrounds.

Macrosystem:

Because the intervention needs to be planned to meet individual needs, and is carried out in a collaborative way, it is considered well suited for culturally different students. One of the important research projects by the originators of the SRSD intervention (Graham, Harris and Mason, 2005) was carried out in the minority cultures attending schools that served primarily low-income families. This project also added a peer support component which would also be appropriate with some culturally different students.

The New Zealand study of SRSD by Hutchinson (2017) was carried out in an urban multicultural secondary school classroom, where 25% were Māori, 14% Pasifika, 7% Asian and 3% Middle Eastern. It was also mixed socio-economically, with a quarter of the homes meeting the criteria for Decile 1 schools and one third for decile 10. The study provides an excellent discussion of the ways in which a SRSD intervention fits within the whole classroom climate which followed the MacFarlane 'Educultural Wheel' used in this classroom to embrace Māori cultural

values, including reciprocity and respect, the later important in allowing for argumentation. The author states 'This [MacFarlane] model positions the pulse of the room Pumanawatanga as an influence on student self-efficacy, self-regulation and knowledge...strengthens the SRSD approach.' (p. 9)

Exosystem:

The flexibility of this programme allows it to be used across the school, in a variety of curriculum subjects. Also, it could be used to enhance the highest level of the SOLO Taxonomy framework, with the addition of suitable mneumonics.

Mesosystem:

As with all argumentation approaches, the role of the peer is important in enhancing appreciation of differing perspectives and viewpoints.

Microsystem:

According to Harris and Graham (2009) throughout the six stages outlined above, the 'teachers and students collaborate on the acquisition, implementation, evaluation and modification of these strategies. The strategies are not meant to be followed in a 'cook book' fashion...the stages can be reordered, combined, revisited, modified, or deleted to meet student and teacher needs' (p. 124).

The lessons the authors have found effective generally lasted between 30 – 40 minutes 3 to 5 days a week, and over a period of 3 – 5 weeks.

Empirical evidence:

Gadd and Parr (2017) carried out an analysis of the writing practices of nine effective New Zealand teachers of upper primary and middle- school students, and found that self regulation was one of the important characteristics of effective practice. They state 'self-regulation is nominated as a probable foreground dimension of effective practice' (p. 1563). This appeared to relate to 'time and opportunities for students to write on self-selected topics (reinforcing the importance of learner involvement in topic selection); time and opportunity for students to write outside writing instructional time; opportunities for students

to work collaboratively; and encouragement for students to take responsibility for seeking support' (p. 1567). These look more like broader aspects of self regulation than the more specific procedures used in Self Regulated Strategy Development (SRSD).

Graham and Perrin (2007) report a meta-analysis of true and quasi-experimental designs in which SRSD had the strongest impact of any strategies instruction approach to writing.

In their important project with struggling third grade students from low income schools, the majority of whom came from minority ethnic backgrounds Graham et al. (2005) expected that the SRSD intervention would have a stronger impact on story and persuasive writing performance, knowledge of writing, and self-efficacy for writing than the comparison condition. In this intervention, the students were taught planning strategies using the following mnemonics:

POW: Pick my ideas, organise my notes, and write

WWW, What=2, How=2: Who are the main characters? When does the story take Place? What do the main characters want to do? What happens when the main characters try to do it? How does the story end? How do the main characters feel?

TREE (for persuasive essays): Tell what you believe, Reasons (why you believe it) Examine each reason. End it (wrap it up right).

There was one intervention condition for SRSD alone, and another with SRSD and an additional peer support component whereby students acted as partners to help each other apply the strategies learnt to other situations and other classes, including when, where and how they could use part or all of what they had learnt in the SRSD intervention.

This Graham et. al. (2005) study looked at the effect of the intervention on a number of writing aspects. First, for composing time for persuasive writing both the SRSD and the SRSD plus peer support students spent significantly more time writing than those in the comparison condition (effect sizes 1.88 and 2.34

respectively). The length of these persuasive compositions was also significantly longer. In persuasive writing there were also significantly more basic elements in their writing, and students wrote qualitatively better persuasive essays. The authors note 'The average quality score of students in both the SRSD conditions at posttest was 4.0 or better. This is important because a score of 4.0 on this scale represents average writing at third-grade level in the participating schools.' (p. 230).

Only the results for persuasive writing are presented here, but general story telling results are similarly positive, and for both instructed genres, the results are maintained. The positive effects were not generalized to the writing genre not instructed in, narrative writing, with the SRSD condition alone, and the authors comment 'It is possible that SRSD effects did not transfer to narrative writing because of our decision to remove two aspects of the instructional routine: (a) explicitly encouraging students to generalize what they had learned and (b) discussion about when, where and how to use the learning writing strategies. These two procedures were removed from the SRSD only condition in the present study to eliminate overlap between the SRSD only and the SRSD with peer support conditions.' (p. 235.)

Self-efficacy shifts were small and not significant.

The peer support component was advantageous in enhancing transfer to the two uninstructed genres that were tested (narrative and informational writing). It also provided more opportunities for planning, including thinking about, discussing and evaluating their application of the learned planning strategies more broadly.

Finlayson and McCrudden (2019) carried out a study of Self-regulated Strategy Development with 6 year olds in a New Zealand whole class setting, as they considered that there was little empirical evidence available for students in the early elementary school years. The intervention was delivered by an ordinary classroom teacher, to address story writing, in a decile 10 school. Only 2 of the students were Māori and 1 was Chinese. Prior to intervention the majority of the students were at or above the national standard for writing for their age. The study was limited to a one group pre-post design. The SRSD instructional model

was used, and the writing strategy represented by the POW + WWW What=2, How=2 mnemonic for 19 lessons over a five week period. Story completion, the use of characters, actions of the character, and the characters feelings in the writing all increased significantly. The word count also increased significantly. There was a clear increase in knowledge of writing, including its structural elements. The teacher rated the scale on social validity highly, stating that 'Most teachers would find this intervention appropriate for helping students with writing'.

It should be noted that some students were still struggling with spelling, handwriting and punctuation, so this needs additional attention. Also, one child in the class who was below the national standard for writing did not show improvement with intervention, so students struggling to grasp SRSD may need additional individualized support at this age.

Finally, the Hutchinson (2017) New Zealand study looks in particular at argument writing. It therefore repays careful reading. Also, it is of value in its use of the SRSD instructional model within a multicultural context as outlined under the Macrosystem section above, and used both a one group pre-post design and individual student interviews to provide a rich view of student performance in relation to the intervention.

In this Hutchinson study the usual SRSD intervention with the use of the POW and TREE mnemonics was supplemented with a RAP (Read, Ask Questions, and Put in your own words), and a FAIL (From Attempts I Learn) mnemonics. It was carried out by the social studies teacher (who was also the researcher) in her year 9 social studies classroom, for two full term, following assessment in writing at the end of term 1. The classroom was classified as a 'mixed ability' one, including 5 students diagnosed with learning difficulties (two with teacher aide support).

The study found in conjunction with the intervention a statistically significant increase across the use of a thesis statement, use of counter argument, use of reasons, use of evidence, use of evaluative statements, and word count (among other aspects of writing which also increased significantly). These are detailed as relating particularly to writing an argument. The more qualitative findings showed

that use of an evaluative statement was still difficult for most students after intervention, suggesting the need for further practice. Few students wrote an ending, so it is possible more time was needed for this. Few students used linking words, although they were starting to, and, again, this sophisticated feature may have improved with more time for revision. Few students used counter argument, with most students focusing on writing multiple TREES in support of their point of view. All students across the three levels of gain competence found it difficult to provide evidence, but even those in the low gain group made small gains in use of evidence. No individual data relating to ethnicity was provided. The students interviewed in the small gains group did appear to be making positive efforts, even in their own time, to improve their writing performance.

Hutchinson (2017) stated that 'Both the teacher and the students have a high level of satisfaction with the intervention. The intervention will be iterated across the classes in future, indicating high social validity' (p.33).

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Section 15: Swartz and Parks infusion programme.

This programme was developed to infuse critical and creative thinking into ordinary curriculum content.

It is an American approach, developed by Swartz and Parks (1994) which is widely used internationally. Not only is it used as a complete and authorized programme, but it has encouraged more generally the use of 'graphic organizers', a key tool within the programme, in subject teaching.

As described by Swartz and Parks, infusion lessons bring into subject content lessons an explicit emphasis on skillful thinking, so that time is spent not only on content, but on the thinking skill or process involved.

As it is used in the ordinary classroom, for all students, it can be considered a Tier 1 intervention programme.

Aim of the Programme:

As outlined above, the aim is to increase critical and creative thinking in curriculum teaching and learning, particularly in generating ideas, clarifying ideas, assessing the reasonableness of ideas, and in complex thinking tasks such as decision making and problem solving.

Summary description of the programme:

The programme addresses the following thinking skill processes: comparing/contrasting; classifying; parts/whole; sequencing; uncovering assumptions; reliable resources/accurate observations; reasons/conclusions; causal explanation; prediction; reason by analogy; generalization; generating possibilities; generating metaphors; decision making; problem solving.

Swartz and Parks (1994) provide a wide range of graphic organizers to guide these thinking processes within the curriculum content learning task. For example, the 'Open compare and contrast' graphic organizer has a space for detailing how aspects of the learning task are alike, and how they are different, with an analysis of the aspects or dimensions on which they are alike or different. Finally, the organizer has a section where patterns of significant similarities or differences can be noted, with a space for a conclusion.

For the 'Skillful problem solving' graphic organizer, the problem is first defined, possible solutions are then listed, and each solution is described under its criteria for consequences, pro and con, and value. Finally, the new solution is noted.

A four-step strategy is suggested for the infused lessons. First, the teacher introduces the thinking skill or process involved and demonstrates its importance. Next, the learners are guided with the graphic organizer to engage in the thinking as they learn the content of the lesson. Then the teacher asks the learners reflective questions so that they are reflecting on their thinking. Finally, opportunities are offered to the students to engage in using the thinking skill more independently.

Underpinning theory of the intervention:

The thinking processes involved and the ways in which these processes are described link to information processing theory. The use of the graphic organizers are as 'scaffolds' for support in the learning process (McGregor, 2007) and so can be considered underpinned by a Vygotskian theoretical approach. The classroom discussion and teacher questioning about reflective thinking also follows this Vygotskian theoretical approach.

McGuinness (2005a) describes the programme as follows: 'The theoretical perspective with regard to children's learning focused on the development of their metacognitive capacities- on their ability to become proactive in their learning in terms of planning, monitoring and appraising' (p. 2). This links to Sternberg's (1979) model of mental abilities, with its metacomponents.

Context:

Macrosystem:

This Swartz and Parks programme for infused thinking has been widely adopted internationally. The main empirical evaluation for this summary is drawn from the extensive country wide use of this programme by a leading UK Professor of Psychology in Northern Ireland, Professor Carol McGuinness (2005b). She not only led this large scale study from Queens University Belfast, but has extensively advised the UK government on programmes for the teaching of thinking. The writer of this summary attended an international workshop on teaching thinking programmes led by Professor McGuinness for the British Council, so had a more personal introduction to the infusion programme there.

Of interest is the report by McGuinness (2002) of the use of her Northern Ireland version of this programme, called 'Activating Children's Thinking' (ACTS) in Wales, with two languages. The ACTS programme is also used in Thailand, where the Prathomsuksa Thammat School (see www.pts.ac.th/thinking.html) have involved all teachers in training for the programme.

Exosystem:

As the programme is designed to be infused in ordinary classroom curriculum teaching, it could be used in a whole school approach to teaching thinking. It is meant to be used over time across the curriculum as teachers proceed through each unit of study, so that strategies taught can be built up as habits of thinking.

The work of Professor McGuinness with the adaptation of the Swartz and Parks' infusion programme in her ACTS project in Northern Ireland is a model of system-wide training in the programme, implementation, and rigorous evaluation.

Mesosystem:

Peer group discussion is an integral part of this programme. There is little mention of family involvement in the literature relating to it.

Microsystem:

Users need to consider what adaptations may be required to ensure that all of the material used is suitable to the cultural context. There is little guidance on this in the literature. Carol McGuinness, who developed ACTS in the Northern Ireland cultural context, with its great poetry tradition, noted in her presentation on the implementation to a Harrogate International Conference on Thinking (McGuinness, 2002) the particular value of the 'brainstorming' thinking diagram (graphic organizer) for the creative combining of ideas, so this tool may be of particular value for students from cultural groups who have this ability as a strength.

It is also important to consider the benefits and disadvantages of this infused approach. Clearly, opportunities to generalize the thinking skills taught are enhanced, and teacher beliefs about learning and thinking, and their students' abilities regarding thinking can be changed. McGuinness (2006) reported that 'The teachers reported changes in their classroom practices, in their perceptions of children's thinking, and in their images of themselves as thinkers' (p.1). The cross curriculum opportunities for transfer are also important. McGuinness reports 'Some teachers emphasised the cross-curriculum effects. They said that thinking skills had general applicability across the curriculum and that they can be transferred from one subject to another' (1997, p.23). Teachers also saw it as tying in with the underpinning principles of the Northern Ireland Curriculum.

One of the disadvantages is the time available in an ordinary curriculum lesson to teach the thinking processes. In her 1997 evaluation McGuinness reported on the following teacher feedback: 'Without doubt, teachers identified time as the main constraint...teachers also commented that thinking lessons went on longer than initially planned; (1997, p. 23). In the video lessons viewed by Howie at the British

Council workshops, teachers had difficulty delivering the final stages of the four step strategy, running out of time to cover both content and thinking processes.

Empirical evidence:

Evidence is primarily drawn from the McGuinness evaluation of the ACTS version of the Swartz and Parks' infusion programme as this was a large, three year intervention, rigorously evaluated.

First, there is evidence that the programme did meet its aim for increasing critical and creative thinking, in that it enhanced cognitive and metacognitive strategy use by the students. McGuinness (2005) reports: 'participating in the ACTS intervention for three years had a positive effect on children's ratings of their use of cognitive and metacognitive strategies...the ACTS children reported more frequent use of the cognitive and metacognitive strategies than do the controls' (p.8). These positive changes appear to have been related to effort, with McGuinness (2006) reporting items from student responses which reflect this.

Given that this programme would normally be used as a Tier 1 intervention one important overall finding of the evaluation was that the positive effects found were not found for all students. Moderate to high ability children (80% of the sample) benefitted the most from the programme, while there were no positive outcomes for the low ability learners. McGuinness (2006) notes 'developing children's capacity to learn and become more skillful thinkers takes time. It needs careful support if children are to become autonomous and self-regulating. When scaling up, particular attention should be paid to children with poorer cognitive and social resources' (p. 1).

Swartz has also addressed the need to cater for learners who have particular difficulties within an ordinary inclusive classroom, when using this approach (Swartz, Kiser and Reagan, 1999). The suggestions made appear to be task differentiation, diagnosing the degree of complexity and abstraction that such students might be expected to achieve, and simplifying the thinking tasks as needed. This may run counter to the raising of teacher expectations for all children which one wants for a thinking skill programme.

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Section 16: Programmes to enhance executive control and learning engagement

Introduction:

In his 2020 paper to the Mini-conference of the Coalition on Applied Cognition/Learning and Thinking/Learning Sciences, Professor Stuart McNaughton

addressed the value that the learning sciences might bring post COVID. As an example he addressed work on self-regulation in early learning.

Traditionally, the Meichenbaum's Cognitive-behavioural approach has been used to cover a variety of social and learning behaviours which need increased executive control, or self-regulation. This summary will first address this approach.

It will then cover the more recent programmes developed in New Zealand to address this need with young children, several of which were mentioned in his address by Professor McNaughton.

Each will be covered briefly, with an outline of the programme and some empirical evidence. As these programmes are new, and with some similar components, covering them in one summary allows for ease of understanding and comparison.

The Meichenbaum Cognitive-behavioral approach:

The underlying principle of this approach is that learner's expectations and appraisals as to what will happen in a situation when they are confronting a problem, be it social or learning, are important cognitive factors in how they behave in addressing and solving the problem.

It uses a talk-aloud self-instruction process, modeled for the student by the teacher, to produce the following:

- Positive appraisals of the situation

- Management of a pre-prepared set of steps to manage a behaviour or solve a problem e.g. 'What am I supposed to do?' (problem definition); 'I have to look at all the possibilities' (problem approach and plan); 'I'd better concentrate and focus in' (focusing of attention); 'I am meant to be...' (self-guiding while performing the task); 'I did a really good job' (self-evaluation and self-reinforcement).

-positive post-event attributions (attributing success or failure to causes in a positive way).

Following a Vygotskian theoretical framework, once agreed with the learner the teacher models the self instruction procedures aloud, while solving the problem, then by whisper, and then covertly (spoken to self, as inner speech or thought). The learner then is asked to copy this modeled behaviour.

Meichenbaum (1985) reports that this approach has been of particular value to learners with Attention Deficit Hyperactivity Disorder (ADHD). Although used mostly with such learners on an individual basis, it can be used with small groups, as demonstrated by Rogers (1994). It is also widely used with learners with other behavioural, social and emotional difficulties, with Novaco (1979) outlining its use for anger management.

Shapiro and Cole (1994) present a chapter on how the approach can be used with learners with more severe learning challenges.

It has also been used with learners with shared difficulties with the problem solving processes in reading, writing and mathematics. Two early New Zealand studies reported by Cameron and Robinson (1980) and James (1980) used the Meichenbaum approach in this way. It is also an integral part of the Self-regulated Strategy Development (SRSD) in writing approach dealt with as a separate programme.

Thickpenny used it in a New Zealand project aimed at teaching thinking, including creative thinking and problem solving, to high ability intermediate school students, as reported in Howie (2020). The project was informed by both this approach and the Feuerstein approach to teaching thinking.

It is important that the teacher works in partnership with the learner in using this approach, and also incorporates culturally and individually appropriate self-instruction statements.

Structured Play (ENGAGE) for self-regulation:

Diane and Matthew Healey, who are based in the School of Psychology at the University of Otago, have evaluated in the New Zealand context the recently developed Structured Play (ENGAGE) programme to help preschool children self-regulate their behaviour in social situations. It is a programme now being used widely in New Zealand contexts.

ENGAGE stands for 'Enhancing Neurobehavioural Gains with the Aid of Games and Exercise'. It involves 'parents playing a range of common games with their children in a structured way for half a day (e.g. puzzles, ball games, musical statues, blocks' (Healey and Healey, 2019, p. 2), and others including Simon Says (which requires executive control in responding to instructions), 'Cognitive Self Regulation Copy Me (involving watching a Sequence and then copying it), Object Copy, sorting, drawing, a number of memory tasks with different materials, and a number of relaxation activities, including 'Emotional Self-regulation Breathing', deep breathing, and Yoga. 'The games all require aspects of self-regulation (e.g. waiting your turn, inhibiting a response, regulating emotion)' (p.2).

In the New Zealand trial implementation of this ENGAGE programme, by Healey and Healey (2019) both parents and their children receiving the programme attended a weekly group session for 5 weeks, followed by 2 weeks of individual home calls and a final session in the 8th week. Each week a group of up to 6 parents were taught together a new set of games and asked to play them with their children for 30 minutes a day. In an adjacent room their children were taught the same games so as to familiarize them with the games, engage them in the activities, and make it easier for their parents introduce the games to them at home.

This programme was compared to what they call a 'Gold Standard' treatment programme for children with behavioural difficulties, the Triple P programme. This programme was delivered as a 'Standard Group Triple P programme, a similar time delivered for 8 weeks where for the first 4 weeks parents were taught a weekly session on 17 core child management strategies, involving 10 strategies used to promote positive development, such as talking with children, physical affection, spending quality time together, setting a good example; and 7

strategies for managing misbehaviour, such as setting rules, ignoring unwanted behaviours, and time-out. After these 4 weeks, parents received 3 weekly phone calls designed to help them continue to implement the strategies taught, and in the final session 8, parents attended a final group session focused on maintenance of the programme. There were 7 small groups involved, ranging from 3 – 6 families in the group.

The study involved 60 families living in Dunedin who rated their child's hyperactivity at the 84% or above percentile on The Behaviour Assessment System for Children (BASC 2). The children were aged 3 and 4 years. 83% of the participating children were of Pākehā ethnicity, with 11% of mixed Pākehā/Māori ethnicity. Parents spanned the full range of income levels, the children involved had to be attending a preschool or day-care programme, and parents and children had to be English speaking. 26 of the parents had University degrees, so this is probably a socio-economically biased sample. Children with a measured IQ of less than 80 on the Stanford Binet were excluded from the sample.

Both the ENGAGE and Triple P parents rated their children on the BASC 2 scale as having significantly improved on the measures of hyperactivity, attention, and aggression, at a high and equal level of significance. These gains were maintained over the 12 months following the intervention. No significant differences were found between the two interventions.

When it came to teacher ratings, there were already significant changes noted by teachers with the waitlist children prior to beginning the interventions, so gains made during the interventions could not be clearly related to the intervention itself.

In terms of the children's neurocognitive functioning, no significantly different effects were found for the two interventions, and there was no consistent pattern within or between the two groups over the times of assessment.

The researchers conclude the 'Despite its vastly different approach, overall ENGAGE was found to be as *effective* in improving the children's behaviour as Triple P, with reductions in hyperactivity, inattention and aggression to within the

typical range for their age at post-intervention, and maintained for 12 months afterward, according to parent report. These results replicate those of past studies' (pps. 6/7)

Diane Healey is one of a group of Otago University researchers (Schaughency, Reese, Healey, Carroll, Cross, Johnson, Fagan and Burrows, 2019) who have a developing project 'Supporting teaching and learning in home-based early childhood education'. This 2 year Teaching and Learning Research Initiative (TLRI) project took place during the years 2017 – 18. It involved developing three professional learning modules to support teaching and learning in home-based ECEC. These cover three areas of learning each of which has its own developmental pathway, but are seen to be complementary. One was ENGAGE, a programme outlined above, and which the authors of the report regard as 'multifaceted and involve developing competencies connected to thinking (focusing attention, holding on to information), emotions (handling feelings) and behaviour (containing impulses, doing things carefully)' (p. 7).

Other modules covered 'Fostering oral language skills through language rich interactions'. These covered both meaning-related skills and sound-related skills, with scaffolding of children's active participation, both during and outside shared reading. It included 'Rich Reading and Reminiscing (RRR)' which focusses on understanding and expressing ideas. 'Strengthening Sensitivity to Sound (SSS); was used to scaffold children's developing phonological awareness.

25 educators participated with more than 55 children in one or more modules over the course of the project. Overall, participation was viewed as a positive experience for participating educators and children. Analyses of education-child interactions from video-recording of reading sessions is underway (Clifford, Schaughency and Reese, 2019), and future analyses will explore benefits of Schmitt

Overall 'educators' ratings indicated they perceived their children to develop new skills from participation in each of the modules' (p. 19). Children have been noticed to use project-related learning from each of the modules, and in different settings from that in which the module was delivered.

The Red Light Purple Light (RLPL) programme.

This programme is a circle times games intervention (Tominey and McClelland, 2011) which includes traditional children's games that have been modified to increase cognitive complexity. It is considered to be cost effective, requiring minimal training for implementation few materials, and able to be flexibly used within a pre-school classroom context. Randomised trials in the USA have shown significant improvement in the executive functioning skills of participating children (e.g. Schmitt, McClelland. Tominey and Acock, 2015).

The RLPL classroom-based intervention 'uses movement and games designed to help children practice EF skills in fun an engaging ways' (Keown et al., 2020, p. 622). The 5 different game activities are Sleeping Game, Freeze Game, Red Light, Purple Light, Conductor, and Drum Beats. In these games, children need to listen to and follow instructions, attend to the group by watching the cues, successfully switch from one rule to another, and inhibit inappropriate responses. The games are played in circle time, twice weekly.

Three University of Auckland researchers, Keown, Franke and Triggs (2020) carried out a recent stringently evaluated intervention with this programme, believing that executive functioning skills play a central role in children's social capacities, learning, and school readiness. (Franke is a member of the Coalition.) They worked with 15 early child education centres in Auckland, with 212 children participating. 8 centres were randomly assigned for the Red Light Purple Light (RLPL) programme while the others constituted the control.

The programme developers from Oregon State University provided a 3 hour preschool teacher training session for implementation of the RLPL programme, and teachers were given a training manual containing detailed guidelines for delivering each session. The RLPL intervention occurred in the children's regular preschool classroom, twice per week.

The researchers report that 'The results show a pattern of greater improvements in EF [Executive Functioning] for intervention group children compared to control group children, at post-intervention and 4-month follow up' (Keown et.al, 2020,

p. 627). Significant short term intervention effects for EF were found. On the teacher ratings of self-regulation, intervention children obtained higher scores than control children (effect size 1.85). 'Teacher interviews highlighted other gains for children, in addition to the EF skills, including listening and following instructions, language learning, and peer learning support. Incorporating opportunities for children to lead games activities helped to promote self-confidence, leadership skills, and cooperation with peers' (pps. 627/628).

It is worth noting that 26 of the children in the intervention sample were from non-English speaking homes, and some teachers reported that some of these children had difficulty understanding some concepts used in the intervention games, such as doing opposite actions. This possibly affected the follow up measure result. The researchers comment 'These teachers' comments indicate that some children may need additional language support to benefit from the RLPL intervention' (p. 629). A particular advantage of this intervention is that it can be used by primary preschool teachers, within their normal classroom routines. The researchers suggest the value of evaluating this approach with a larger number of children from disadvantaged homes (7 of the 8 centres involved were located in low socioeconomic areas); inclusion of measures which tap into other specific EF skills such as working memory and inhibitory control; and also investigation of the components of the intervention with parents, because of the importance of parental behaviour at this developmental time.

The MovinCog programme for enhancement of executive control:

Dr. David Moreau in the School of Psychology at the University of Auckland has created and designed the MovinCog programme, and is currently heading its testing and validation on a large scale (movinco.wixsite.com/movincog/people). He is a member of the Coalition.

The intervention is being applied throughout New Zealand schools.

The programme involves a high-intensity video-based set of exercises, including basic fitness movements, carried out within ordinary school classrooms. The intervention lasts for 6 weeks of daily 10 minutes sessions.

In a research evaluation by Moreau, Kirk and Waldie (2017) (Kirk is also a member of the Coalition), 305 children from 6 schools representing various socio-economic backgrounds participated in the study. Participants formed the randomly assigned intervention and control groups. The study found a moderate effect on the measures of cognitive control and working memory. (The measures used were, for cognitive control, the Farkner, Co/no-go and Stroop tests; and the working memory tests were backward digit span, Backward Corsi blocks, and Visual 2-back. These were short computer based group assessments.

In commenting on this outcome, Moreau et al. (2017) consider that the research indicates 'the potency of short but intensive exercise interventions to enhance cognition' (p. 14). However, they caution that their study did not look at what 'dose' of intervention i.e. time duration, could maximise cognitive enhancement. The study did not look at maintenance of the changes in cognition. They also suggest that 'training-induced cognitive improvements...are best nurtured within complex, dynamic environments...the regimen we have presented in this paper constitutes a potent short-term intervention, but more variety might be required to elicit long-lasting improvement' (p. 17). Finally, they advise that 'it is important to acknowledge that physical exercise, regardless of the specific training regimens considered, is not a panacea when it comes to addressing cognitive deficits-in some cases, especially in the presence of specific conditions or disorders, more targeted or individualised interventions may be required' (p. 17).

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Appendix 1

Research brief for project titled ‘The impact of COVID-19 on educational outcomes in disadvantaged populations’.

The proposal has two parts:

Firstly, we aim to carry out a scoping study to look at the key learning challenges arising from COVID-19, in relation to disadvantaged students. We will consider what responses might be made using programmes already in existence, what evidence there is for successful educational initiatives during COVID-19 and to what extent a considerable re-thinking of how teaching programmes are delivered, and indeed some rethinking of the practice of teaching in general, might be required.

Secondly, some strategies to address the education problems of particularly disadvantaged populations have been instituted by the current government. One such scheme has provided funds to pay Pasifika students to stay in school rather than dropping out to obtain a job to financially help their families. Thus we will start the process of evaluating the efficacy of this government programme. In addition, and more generally, we will start the process of exploring the post-secondary school hopes and aspirations of Pasifika students and their families and to understand how COVID-19 has changed this, and what additional supports they need to stay engaged at school.

We will determine learning challenges and current programmes that could support disadvantaged students more effectively. We will look for evidence of

student aspirations, and how these have been impacted by COVID-19. We will investigate child, family and school attributes that may be protective for vulnerable groups of children within Aotearoa.

Appendix 2:

Conceptual framework for analyzing the value of current programmes which could support disadvantaged students with their learning challenges following Covid-19.

Background papers:

Bronfenbrenner, U. (1992). Ecological systems theory. This is an updated version of his ecological systems theory for child development, and lends itself to a holistic analysis, including the hierarchical context of an intervention.

Sontag, J.C. (1996). Toward a comprehensive theoretical framework for disability research: Bronfenbrenner revisited. This is an excellent application of Bronfenbrenner's updated theory for research with learners with disadvantage.

Lane, R. Ongoing Ph.D. research on development of an ecological theory of learning, using Bronfenbrenner's updated theory. Robin's conceptualization of the person characteristics in the theory, what he calls the 'endosystem', and which include a holistic view of the person, are of particular value to this conceptualization. Robin Lane is a member of our Coalition.

Raworth, K. (2017). *Doughnut Economics: Seven Ways to Think Like a 21st Century Economist*. This is an internationally developed model referenced during Covid-19 as of value in going forward from Covid-19. It is a circular model, with an 'outer ring' highlighting the boundaries across which human kind should not go to avoid damaging the climate, soils, ocean, the ozone layer freshwater and biodiversity. The 'inner ring' covers the minimum we need to live a good life, derived from the UN's sustainable development goals- e.g. food and clean water, a certain level of housing, sanitation, energy, education, healthcare, gender equality, income and political voice. Without these persons could be considered to be living in 'the

doughnut's hole'. This work is worth considering in relation to context factors, and person agency.

Sternberg, R. (1983). Criteria for intellectual skills training. This provides a benchmark set of criteria for evaluating programmes for cognitive enhancement. It is a much more holistic set of criteria than the 'gold standard' still often used to evaluate effectiveness of cognitive enhancement programmes.

The conceptual framework

**Key components of the framework
as used for the programme analysis**

Matched Sternberg's criteria

Aim of the intervention

Summary description of the intervention

Underpinning theory for the intervention

**1. Theoretically based
specifying mental processes**

**Context- the embracing 'systems'
and factors within them**

Macrosystem e.g.

Political policies and values,

Financial costs, sources of revenue for costs

The cultural repertoire of the belief system

2. Socioculturally relevant

Exosystem e.g. the larger settings in which

Learning takes place e.g. whole school

Mesosystem e.g. links and partnerships

between members of settings in which

learning takes place directly

e.g. parent/teacher relationships

Microsystem e.g. patterns of interventions

and learning in face to face learning

**3. Provide explicit training
in executive and non-executive
information processing skills**

Empirical evidence with control such as
group control, single subject control

4. Careful empirical evaluation

**5. Assess facets of the training
programme as well as the whole.**

Transfer of learning from the intervention

**6. Assess durability and transfer of
training**

Findings related to individual person
characteristics interacting with the
intervention

**7. Programme sensitive to
individual differences**

**8. Responsive to motivational as
well as intellectual needs**

The agency and voice of the learner
in both the intervention and evaluation

The meaning making of all participants

in the intervention, including how aspects
of the intervention were perceived

The aspect of time such as appropriate time
of intervention, length of intervention,
maintenance of learning from intervention

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