Manaiakalani Evaluation Programme

Summary of 2013 Data Analysis

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Acknowledgements

We warmly acknowledge the substantial contribution that different groups in the Manaiakalani innovation are making to this on-going evaluation project. We hope that this evaluation provides useful input to the Manaiakalani Education Trust's continual development of the teaching of e learning in primary and secondary schools.

We especially acknowledge the students, parents, teachers and Principals at the schools with whom we worked for their time and contribution to our interviews and for allowing us to carry out classroom observations. Your time and helpful assistance is greatly appreciated.

As part of the Manaiakalani innovation community, due mention is afforded to Pat Snedden, Dorothy and Russell Burt, and Fiona Grant, for their on-going communication, organisation and assistance with the project.

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Summary

The purpose of the Woolf Fisher Research Centre evaluation over three years is to determine the effects of the Manaiakalani initiative by analysing the variability in implementation across classrooms and schools, and using the analyses of variability to make judgments of what the innovation adds to student outcomes. This report draws evidence from a range of data sources, collected within the schools in 2013. It is complemented by, and complements, three other research focused projects and together these will enable us to provide detailed feedback to our partners to help the further redesign and development of the innovation.

The three evaluation questions to which this interim report contributes are:

1. What are the patterns of Valued Student Outcomes (including achievement, critical literacy and engagement) for different student groups (Māori, Pasifika; male and female) over three years across year levels; at class, school and cluster levels?

2. What are the patterns of classroom teaching (including use of Netbooks within the Literacy Cycle) over three years across year levels; at class, school and cluster levels?

3. How do the variations in classroom teaching relate to Valued Student Outcomes?

The evidence from 2013 suggests a major increase in optimising valued student outcomes compared with 2012. Efforts to achieve acceleration in achievement have been very successful in writing, and mathematics from Year 4 to Year 10. Overall the cluster gains in these two areas were significantly greater than national expectations (while in reading were at nationally expected rates of gain). Impressive evidence for capability is found at the level of individual classes indicating that cluster's response to the feedback in 2012 to bring to scale the 'pockets of promising practice' has been very successful. The majority of classes in writing and almost half the classes in mathematics accelerated their rates of achievement in 2013. The on-going challenge is to maintain and sustain this acceleration such that students' average achievement is at levels commensurate with national expectations. A second on-going challenge is maintaining acceleration when students' achievement is higher than nationally expected, and to ensure that students are as likely as other students across the country to be in the highest achievement bands, that is, to match the distribution of

achievement. At the end of 2013 35% of classes were at national levels in writing, 19% of classes were at national levels in mathematics, and 24% of classes were at national levels in reading. Four classes in reading made accelerated gains.

On-going work of Manaiakalani has been to explore and describe the practices that effective teachers are currently using that achieve these two aims. Based on the on-going evidence collected through classroom observations and student and teacher surveys, we suggest that there are four avenues within which Manaiakalani might focus their energy to increase effectiveness:

1. Judging, designing, and setting appropriate levels of cognitive challenge
2. Increasing the connections between the Learn / Create / Share components
3. Further increase in extended discussion about texts
4. Building parental support for increased engagement

Valued Student Outcomes: Achievement in Reading, Maths and Writing Years 4 – 13

Overall Achievement: Levels and Gains 2012 – 2013 (Primary Schools)

At the cluster level:

We have examined the achievement patterns in reading, maths and writing for the cluster as a whole across 2013 and compared with 2012. Across the cluster, we have evidence of accelerated gains in writing, for those students who were present for both testing points. On average, students made 34 more asTTle writing points than expected for their year level. There is also some evidence of acceleration in mathematics, but of a lesser size gain; for those students who sat the asTTle test at both time points, the average gain was 8 asTTle points more than the national average gain for their year level. In reading, for the 1001 students who sat the tests at both points, average progress across the cluster was at the expected level nationally. There was no evidence of a difference in the size of gains by gender or ethnicity.

The patterns of acceleration show that average achievement is making gains towards but not fully reaching, nationally expected levels in writing and maths. In writing, students' scores were significantly lower than nationally expected levels in Term 4. On average, students' scores were 88 asTTle points below the expected level for their year level. In mathematics, students were also significantly lower than nationally expected levels, on average by 70 asTTle points. In reading, average levels are highest, but still lower than national expectations, on average 57 asTTle points lower than the score expected for their year level. In reading, girls achieved scores that were significantly closer to those of the normative sample (on average, 46 asTTle points below the norm) than males (on average 66 points below the norm).

At the school level:

Progress: The patterns for schools were not consistent across subjects. In writing, five schools made gains that were greater than expected gains, while three schools (School 5, School 6, and School 8) made gains that were at national expectation. In mathematics, students at four schools (School 2, School 4, School 6 and School 7) made greater than expected gains, while students from all other schools made gains that were no different to those in the normative sample. In reading, students in three schools (School 4, School 7 and School 8) made higher than expected gains, while students in School 3 and School 5 made lower than expected gains. .

Levels: In writing, there was one school which had reached average achievement levels (that were not significantly different from norm). The remaining schools achieved lower scores than national norms at the end of 2013, at variable levels. In mathematics, all schools achieved scores that were lower than national norm at the end of 2013, however, there were differences across schools: All schools' scores were closer to national norm than School 8, and School 6 was closer to national norm than every other school. In reading, one school had reached mean achievement which was not significantly different from national norms. The remaining schools' average achievement was lower than national norm at the end of 2013. Within this group there were also some differences between schools: two schools achieved scores that were significantly closer to national norm than the others.

Attendance: The cluster requested an analysis of the effects of attendance (usually measured in half days present). The average attendance across the cluster was 92% (i.e., one day absent from school per fortnight). There were differences between schools in levels of attendance. But at the most general level from Years 4 to 10, and not considering sub groups (such as ability level or ethnicity) there was no relationship between students' progress in writing, mathematics or reading and attendance at school. This lack of relationship is replicated when analysed at the individual school level. There also appears to be no relationship between difference between Term 4 reading norm and time spent at the same school.

At the classroom level:

Patterns for classes were examined in the primary schools. In writing, the majority of classrooms made accelerated gains throughout the year (21 classrooms out of 37), and 13 classes across the cluster achieved, on average, at the national level in Term 4. In

mathematics, 15 classrooms made accelerated gains compared to national norm across 2013, with 7 classes at national levels in Term 4 . In reading, four classrooms made accelerated gains across 2013 with nine classes at national levels in Term 4.

National Certificate of Education Achievement (NCEA)

Initial evidence collected by Tamaki College for 2013 suggests increases in pass rates noticeable over time in percentages of students achieving Level 1 in Year 11, Level 2 in Year 12, Level 3 in Year 13 and University Entrance. Figure 1 illustrates the size of the gains, based on proportions of students enrolled. Marked gains are apparent in Level 2 NCEA which was for 2013 at 80%. A slow steady increase in UE and Level 3 pass rates indicates 'flow on' to higher achievement at Level 3 and UE is occurring but can be further increased. Note that 2013 data are based on provisional results.

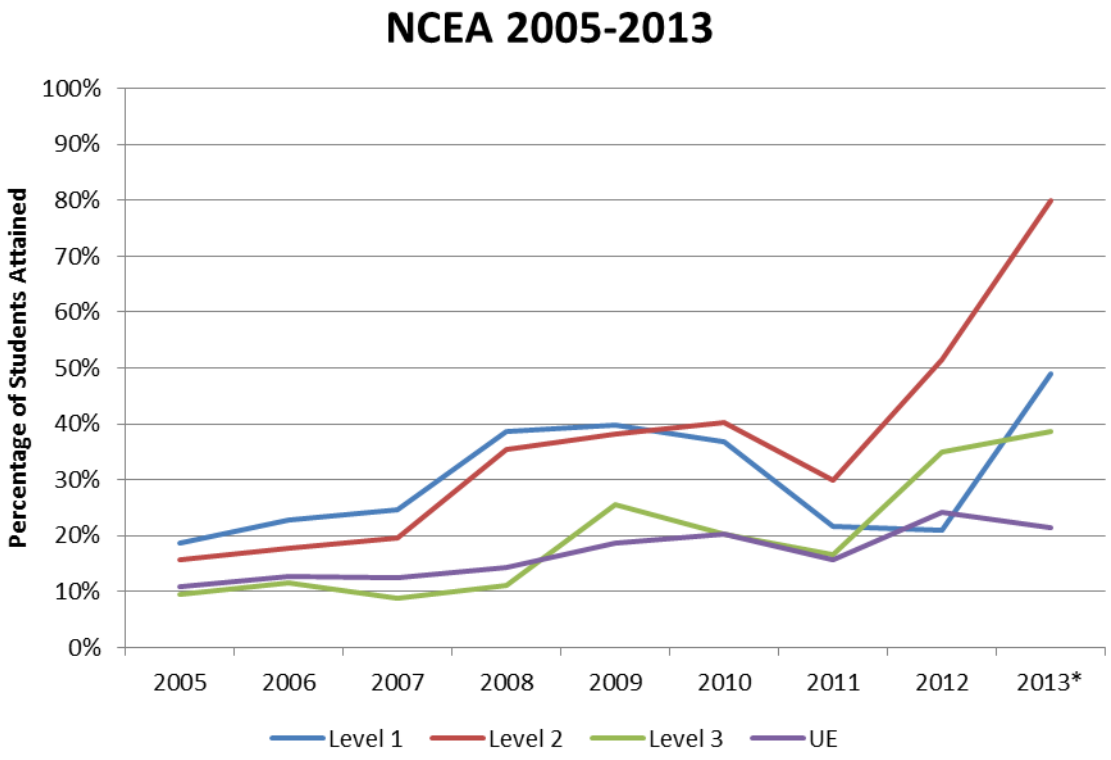

Figure 1. Percentage of students attaining NCEA Levels 1, 2, 3 and UE across 2005-2013 (roll based).

Classroom Pedagogy and Student Learning

Classroom observations were carried out with 30 teachers in 8 schools. which produced a total of 134 observation blocks (of 3 minute intervals). Interviews were carried out with teachers and with two students in each class. This was a 'light' sample to provide a basis for understanding the properties of the pedagogical framework and how the digital environments are designed to promote Manaiakalani goals. Here we summarise the general themes in the classroom observations in comparison to beginning of the year observations.

General Features of the Classroom Pedagogy

The observations revealed consistently high levels of behavioural engagement in Manaiakalani classes, continuing the high engagement we found in 2012. The end of the year (2013) observations signalled a possible shift in the focus of the activities that students were participating in when working with the teacher. End of year observations revealed an increase in activities focussed on reading and listening, that is, a shift to receptive, rather than productive activities (see Figure 2). In relation to Manaiakalani pedagogy this might indicate a shift in balance in the Learn/Create/Share learning cycle, in terms of the activities that teachers focus on with the students in their teaching group.

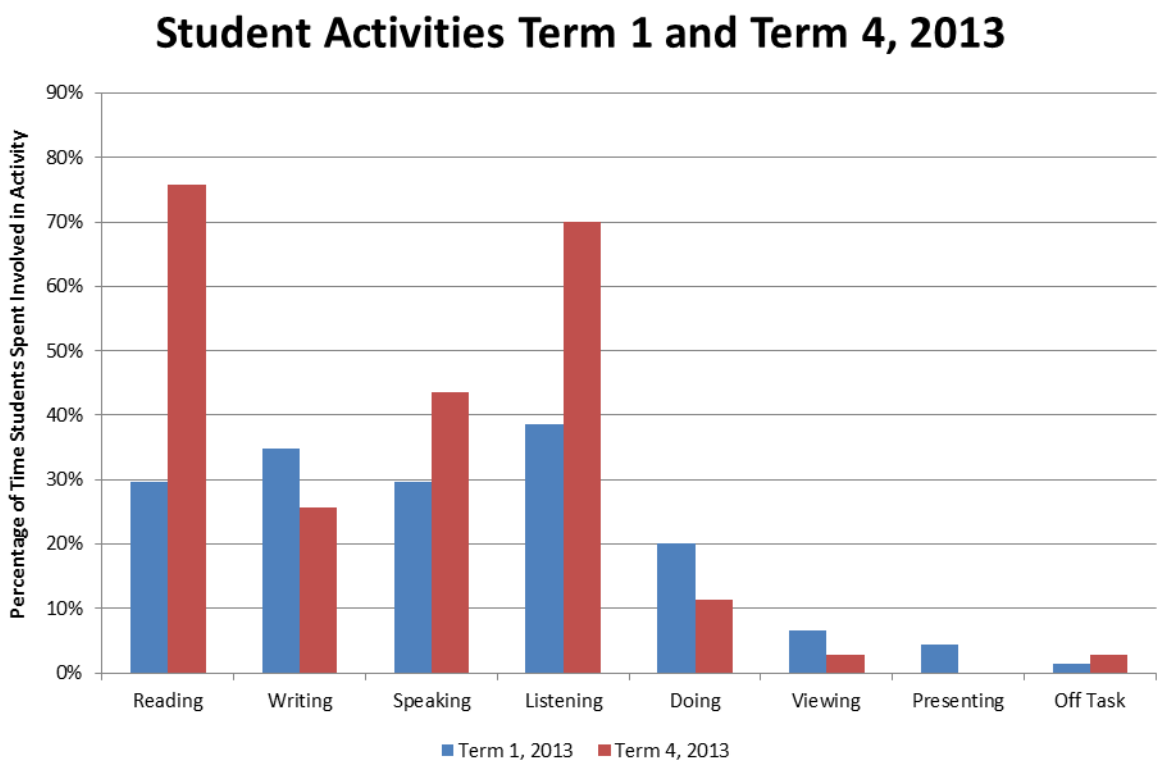

Figure 2. Student activities in Term 1 and Term 4, 2013.

This possible shift in emphasis is also revealed in an altered pattern of teaching. Proportions of extended discussion in classes decreased at the end of the year, toward interactions that looked more like short answer or closed questions, with short answer student response. One way to interpret this altered pattern is as increased teacher 'input', consistent with consolidation of content at the end of the year, but also consistent with an increased focus on acceleration. Corresponding with this interpretation, we observed an increase in blocks which included feedback to students, and in blocks with an identified teaching focus, and in a small increase in blocks which include teaching of critical literacy. There was additionally an increase in blocks where teachers made explicit connection to students' prior knowledge. For visual representation of these patterns, see Figures 3 and 4.

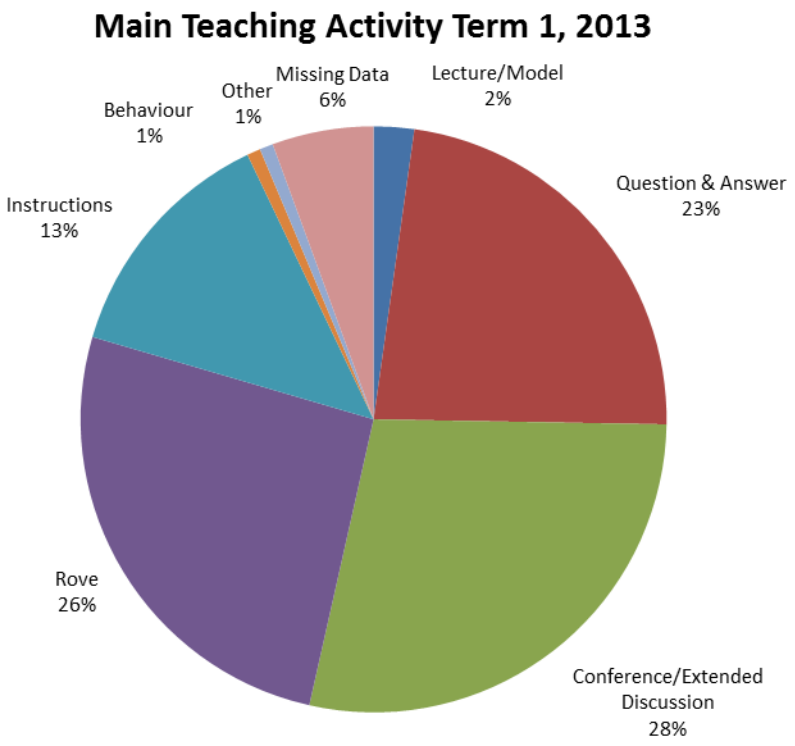

Figure 3. Main teaching activity in Term 1, 2013.

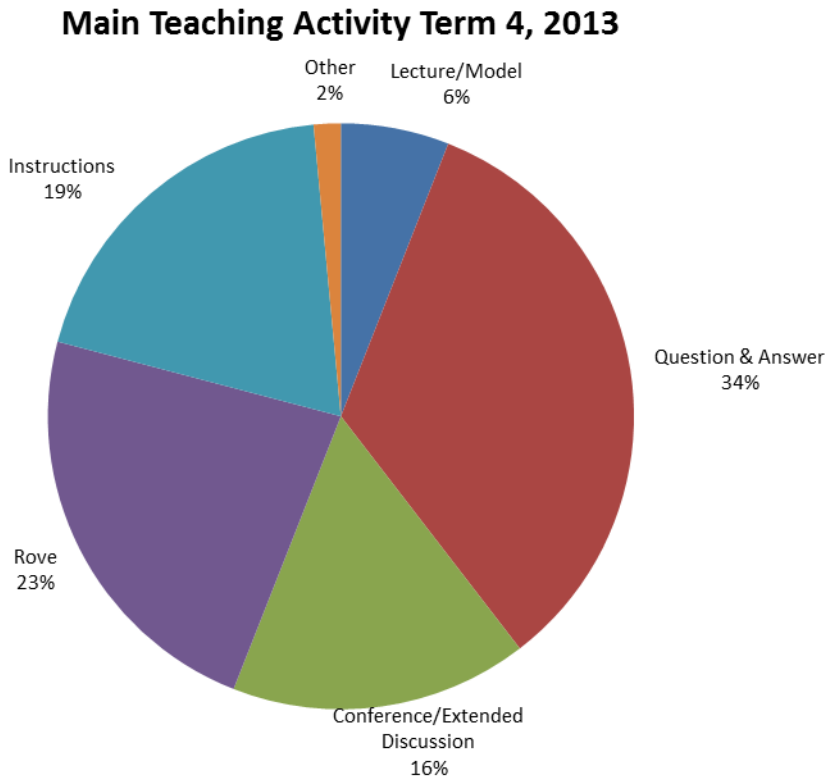

Figure 4. Main teaching activity in Term 4, 2013.

Student and Teacher Surveys

Students and teachers were asked about the tasks that students were engaged in while working independently of the teacher. Teachers reported setting 17 types of activities for students that were not working with the teacher. Of these activities, constrained practice worksheets (35%) constituted the predominant activity type, followed by online maths practice programmes (14%), DLO creation (12%), writing online – blogging & 'zining' (8%), writing – narrative, recount, review (8%), information finding & management (8%) and reading (of analog extended text; 4%). There was only one occurrence of all other main activity types, namely movie making, dictagloss, reading of an online extended text, vocabulary sentences and open-ended templates. The distribution and percentages of each main activity is presented in Figure 5.

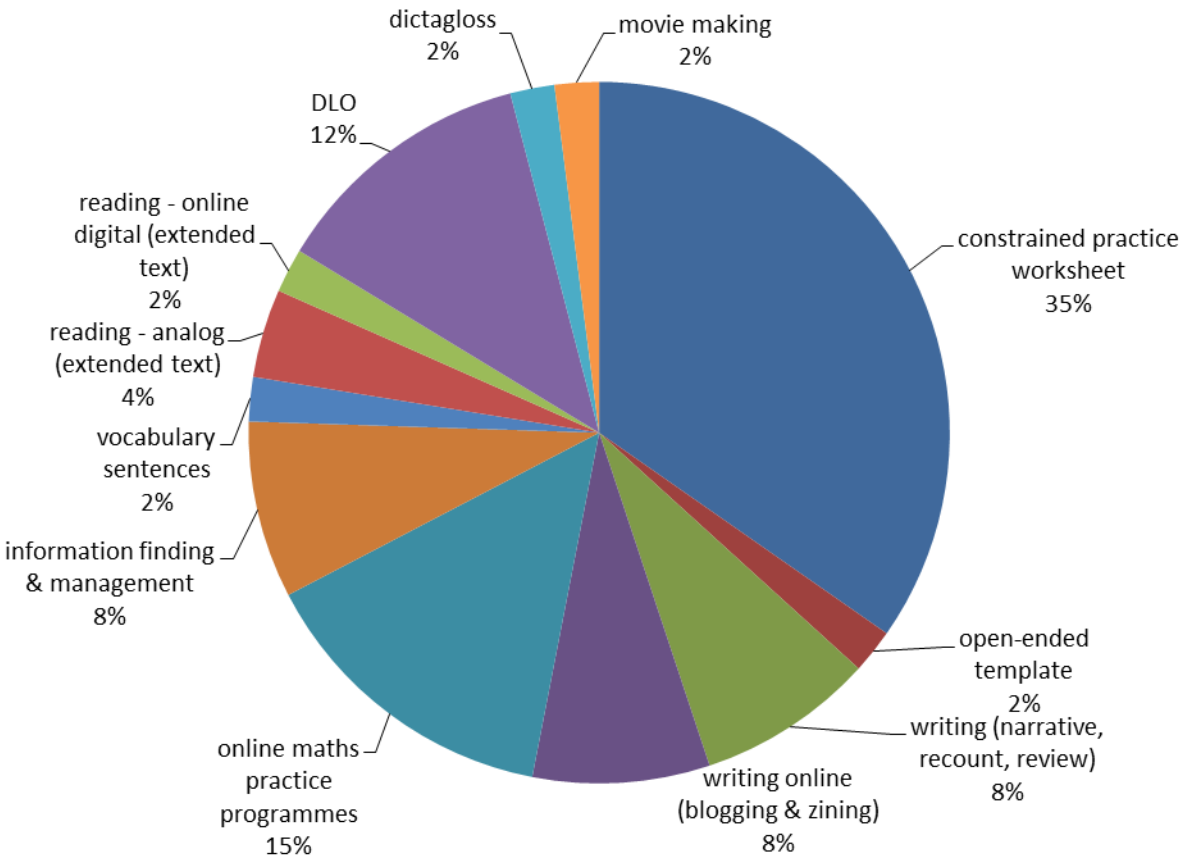

Figure 5. Teacher reported activities for students not working with the teacher.

In relation to these tasks, students were asked what they were doing; teachers were asked both what they would have liked the students to be doing, and what they thought the students would actually report doing. Analysis of the match between those responses revealed that 96% of students reporting doing something that matched what the teacher reported wanting them to do. The match between what students reported doing and what teachers thought they would report doing was not as high. In total 75% of students gave responses that matched what the teachers said they would report. Thus, there is evidence here of high behavioural engagement, with students reporting engaging in the activities expected. There is slightly less of a match in the levels of teachers' knowledge about how students understand the tasks and the purpose of the tasks, and how they engage in the activities. Overall, these results are consistent with the conclusion reached in 2013 of high levels of 'coherence' between teachers and students, in the present analysis at the level of task enjoyment.

As a measure of cognitive engagement (in this case the challenge of activities), students were asked how hard they found the activity (which in many cases involved practice activities – see Figure 6). Students generally reported finding the activity in the easy range ('Easy' = 58% and 'Too Easy'= 12%, total = 70%) rather than challenging range ('Hard' = 26% and 'Too Hard' = 1%, total = 27%). Some students (3%) chose both easy and hard, which might be interpreted as a 'just right' answer, or might relate to different aspects of the activity. Teachers were asked both how challenging they would *like* students to report it was, and how challenging they thought students *would* report it was. In general, teachers would have preferred that students report that the activity was hard more often than they did. Moreover, teachers thought that students *would* report that activities were hard more often than they did. The suggestion here is that there is still more cognitive complexity and challenge that could be present in independent activities.

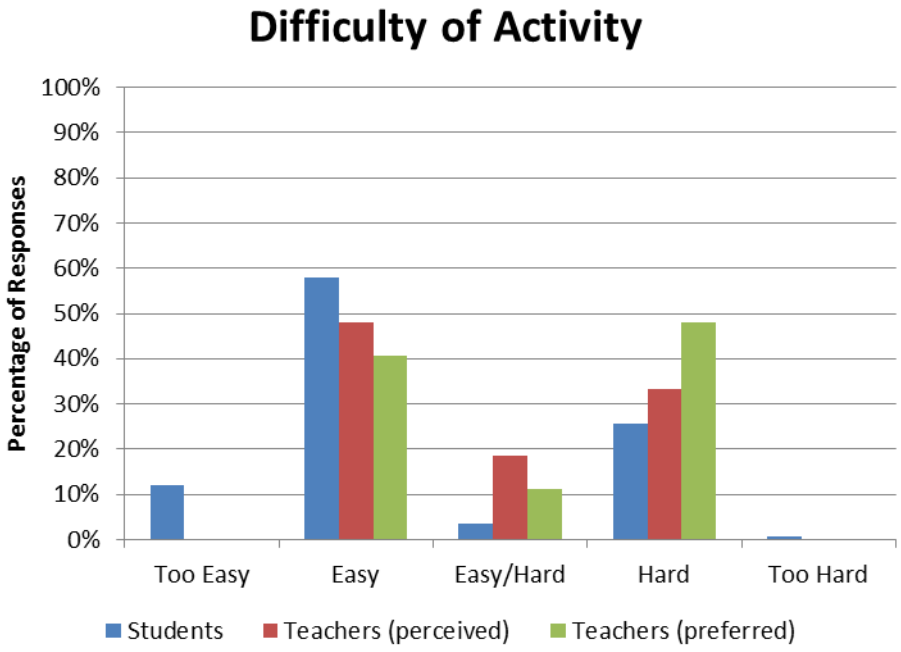

Figure 6. Student and teacher perceptions of difficulty of activity.

As a measure of behavioural engagement, students were asked how much effort they felt they applied to the task, and the majority of students reported putting in 'quite a lot' or 'heaps of effort' to the task (68% total, see Figure 7). A mismatch was noticeable between teachers' and students' perceptions of students' effort. Whilst teachers believed students would have reported limited amounts of effort, students overwhelmingly reported effort levels closer to teachers' optimal levels of effort than teachers perceived that they would.

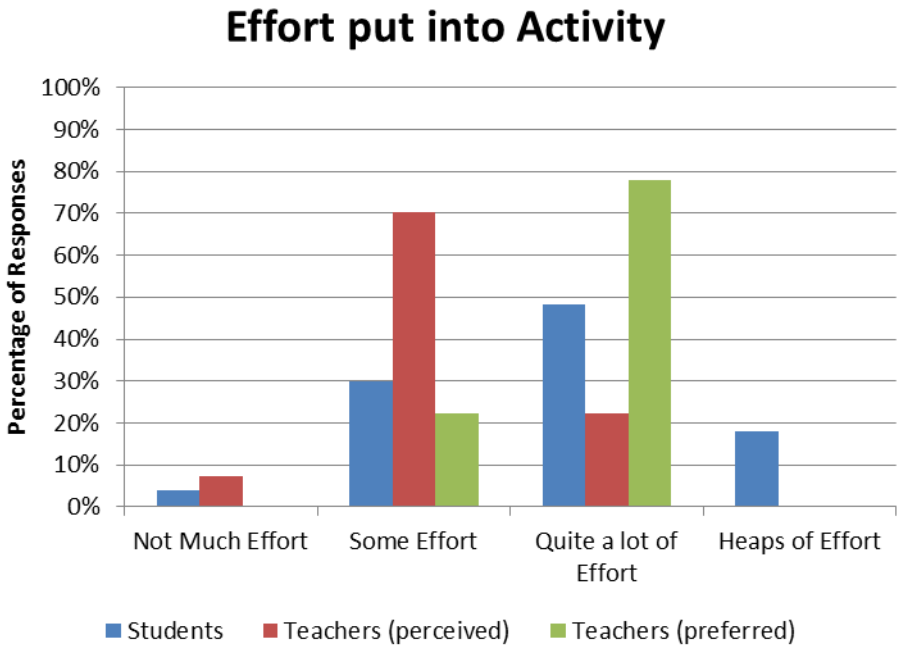

Figure 7. Student and teacher perceptions of effort put in to activity.

As one measure of affective engagement, students were asked how interesting they found the activities they had been doing (see Figure 8). Again, teachers tended to underestimate students' degrees of interest in the activities. Students generally reported that they found the nature of the activities to be engaging, evidenced by almost half indicating they were really interested, but teachers' perceptions were of lower levels than students reported, particularly in their expectations that students would express intense levels of interest.

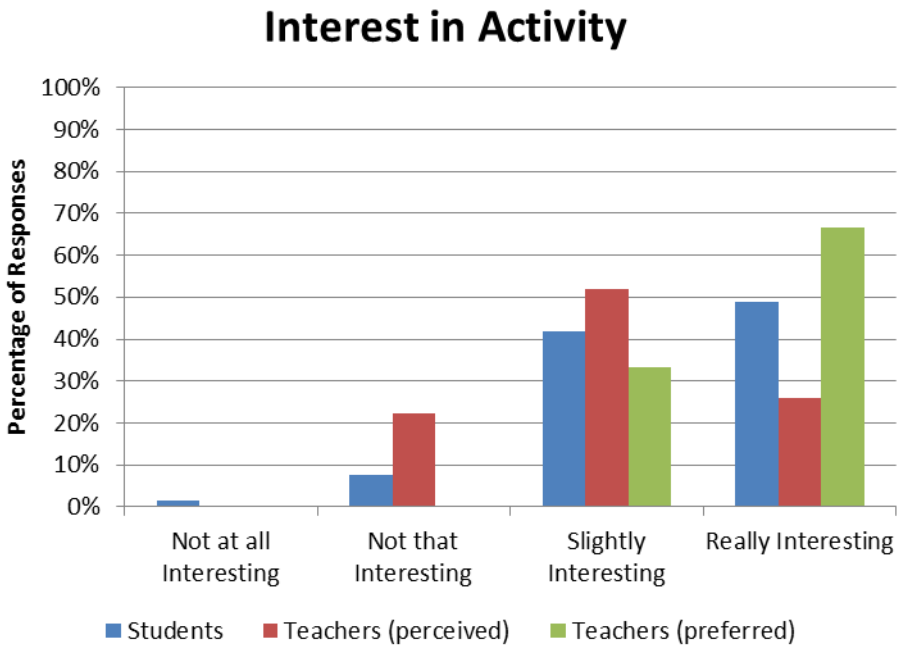

Figure 8. Student and teacher perceptions of student interest in activity.

Student Engagement of Year 10 Students in the Manaiakalani Project.

Annelies Declerck and Pieter Weyne,

with

Stuart McNaughton, Rebecca Jesson and Aaron Wilson.

This last section reports on the specific survey conducted as part of an internship at the Woolf Fisher Research Centre. Three types of engagement (affective, behavioural and cognitive) of Year 10 students (*N*=77) were surveyed in Term 3, 2013. The survey, adapted from published international tools, was designed to examine whether involvement in the Manaiakalani project had affected student engagement, and how features of their home and school contexts might be related to engagement.

The Year 10 students had varying levels of experience in Netbook classes. Twenty-one students had only been involved in netbook classes from Year 10, 32 from the start of secondary school and 24 from primary school. Overall, the longer a student had been in a Netbook class, the more likely it was that the student reported higher cognitive engagement (e.g., "I check my schoolwork for mistakes"; "I learn a lot from my classes"), although this was a weak relationship.

A clear relationship was found between students reporting high parental support (e.g., "My parents talk to me about my experiences school-often "; "My parents check homework after it is completed-often") and affective engagement (e.g., "I enjoy the work I do in class-always"), which in turn was related to the other two types of engagement. Our interpretation is that the more parents are actively involved, the higher the affective engagement which influences their behavioural (e.g., "I follow the rules at school") and cognitive engagement.

The second clear finding was that the higher the reported usage of students' devices for a variety of purposes (e.g., for movies, music, social networking, gaming, homework) the higher the cognitive engagement. The third finding was the more that digital access and netbooks were used for completing mandatory work at home, the lower each type of

engagement, but this effect was reduced the longer students had been in a netbook class, and was weak in students who really enjoy accessing learning digitally at school ("I enjoy going to school more since I got my Manaiakalani Netbook"). We interpret this to mean that it takes time for students to balance various uses upon joining a netbook class and receiving a netbook, but usage focused on completing school tasks at home undermines engagement. Two further findings are of note.

The overall relationship between length of time in 1-1 classes and cognitive engagement varied over time. There seemed to be a period in which students need time to adapt. After this period (e.g., six months) there is a much longer period of high cognitive engagement in which students are much more aware of the importance of education and the strategies to improve their own education. By the third and fourth years students appeared to get used to the new technology and usages, and cognitive engagement dropped a little, but stabilised at a high level.

Despite there being no ethnic (or gender) differences in the patterns, Māori students in general consistently scored lower on engagement.

Conclusions and On-going Recommendations

The accumulated data suggest that in many ways, efforts to achieve acceleration in achievement have been successful, particularly in the area of writing, and somewhat in the area of mathematics. The data also suggest a growing number of schools and classes within schools in which progress is significantly greater than average progress nationally. The on-going challenge is to maintain and sustain this acceleration such that students' average achievement is at levels commensurate with national expectations.

In reading, the average achievement levels sit somewhat closer to the expected levels nationally. Thus a second on-going challenge is maintaining acceleration when students' achievement is similar to nationally expected, and to ensure that students within the cluster are as likely as other students across the country to be in the highest achievement bands, that is, to match the distribution of achievement.

On-going work of Manaiakalani has been to explore and describe the practices that effective teachers are currently using that achieve these two aims. Based on the on-going evidence collected through classroom observations and student and teacher surveys, we suggest that there are four avenues within which Manaiakalani might focus their energy to increase effectiveness.

1. Judging, designing, and setting appropriate levels of cognitive challenge.

One opportunity might include developing and sharing strategies for judging, designing, and setting appropriate levels of complexity and cognitive challenge within and across learning activities. This might include a consideration of the depth of understanding required to engage in an activity, as well as the ways that those activities strengthen or deepen understandings. This would require an appraisal of how open or constrained activities are, the opportunities for processing (and reprocessing) of knowledge and strategies, and the nature of support or scaffolding available as learners engage in those activities. It will be important that learning activities are designed which ask students to challenge their thinking to increase understanding, rather than activities which ask students to demonstrate existing understanding.

2. Increasing the connections between the Learn/Create/Share components.

A related opportunity exists in the relationships between the 'learn', 'create' and 'share' portions of the literacy cycle. Seen together, this common structure can be designed to deepen learning at each stage. Moving from receptive, to productive modes requires greater 'cognitive agency' (control over one's knowledge). Even greater flexibility of expertise is required to teach or explain (share) that understanding to others in ways that connect with that audience. Therefore increasing the connections between the Learn/Create/Share components of the literacy cycle has potential to benefit both reading and writing.

3. Further increase in extended discussion about texts.

One notable affordance of the digital classroom is the level of extended discussion about texts inherent in the 'shape' of observed lessons (Milestone 2, 2013). An on-going opportunity is to capitalise on the depth of conversations available through this mode of teaching. This would include developing teaching approaches which open up extended discussions about texts that activate students' prior knowledge and challenge their thinking. The opportunity to interact with teachers in an extended and challenging way provides students with increased access to knowledgeable others. Moreover, it provides teachers with the opportunity to 'think alongside' their students, thereby being more likely to extend, challenge and develop that thinking. In this format it will also be important that interaction is designed to develop students' thinking rather than display previously learned knowledge.

4. Building parental support and for increased engagement.

Survey data at Year 10 suggested a strong relationship between parental engagement and students' affective, behavioural and cognitive engagement in school. This provides clear direction in terms of the importance of building on existing parental engagement, and extending those practices in ways similar to the approach to building on and extending the promising practices in classes.