

# SABBATICAL REPORT

## 1:1 Laptops in Learning

Kevin Mackay  
Greytown School  
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### **Purpose**

*To investigate the use of 1:1 laptops to increase engagement in learning, enhance learning opportunities, provide learning opportunities for under-achievers and to provide enhanced learning opportunities for gifted and talented children.*

### **Background**

The use of ICT to enhance learning has been high profile in Greytown School for many years. In 2009 this was further extended when all 75 Year 7/8 children in the school were provided with a personal laptop. This laptop was provided on a 1:1 24/7 basis.

To ensure that the considerable expense that was being put towards this programme was money well spent it was important to confirm the learning benefits that were thought to be occurring. Although the change in attitude, engagement and application of the students was immediately obvious it was much harder to quantify improved learning.

To this end it was important to gain information from other schools that were embarking on similar programmes. This would include schools in New Zealand and schools overseas.

It was also important to gauge the attitude of students and teachers and parents to the programme. This could best be done by questioning these people to identify opinions and trends.

### **Method**

Schools with 1:1 programmes operating in New Zealand are not that numerous. Most who are involved in it have digital classrooms operating alongside conventional classrooms. It was decided to survey two local schools and two schools in Tauranga. The survey would mainly focus on attitude to the programme and perceived benefits. The survey would be completed by students, parents and teachers.

To obtain a balanced view of 1:1, as it is practiced in other countries, schools were visited in Canada, USA and England. These were all schools that had a strong ICT focus and that had moved towards introducing 1:1 laptops in the

classroom. Particular emphasis was put on identifying improvements in learning created by the 1:1 programme.

## **The Survey**

### **Results from the 1:1 Laptop Survey of Students**

The sample included replies from 217 students from 4 schools where the children had been involved in a 1:1 laptop programme for more than a year.

98% were interested or excited about the 1:1 programme when it was announced. After 1 year this had dropped to 90% of students feeling positive about the programme.

0% of students were disappointed when they heard that they were to have a 1:1 laptop. This remained unchanged 1 year into the programme.

1% were doubtful at the beginning. After 1 year this figure had lifted to 2%.

2% were unconcerned at the beginning. This had lifted to 15% after 1 year with 1:1 laptops.

97% of students believed that their attitude to learning had improved since the laptop programme started. 50% believed that their attitude had improved a lot.

89 % of students believed that their engagement in learning had improved.

41% believe that engagement levels had improved a lot. 1% of students believed that their engagement level had declined since the 1:1 programme started.

The laptops have provided the most help with writing, reading, maths and inquiry learning.

95% of students believed that developing the skill to use a computer effectively is important with 27 % believing that it is essential.

58% of students believed that they would be disadvantaged if the 1:1 programme was discontinued.

32% of students do not feel that parents should be asked to make a financial contribution while 39% have no opinion and 29% believe that parents should contribute.

92% of students believe that the school should continue to provide 1:1 access to computers.

84% of students believed that their parents would think that the computers had had a positive impact on their learning.

46% of students believed that the computer had changed the way they worked with other students and 44% believed the computer had changed the way they work with teachers.

83% of students believe that the computer is helping them to learn.

When offered the opportunity to comment on computers as learning tools comments such as those below were commonly received from the students.

Having a laptop provides more opportunities to learn.

They are fun

Best invention ever.

Laptops rock!

Learning is exciting

Being able to do extra things when the teacher stays in at lunch time.

"It's not just work, it's fun work"

### **Results from the 1:1 Laptop Survey of Parents**

The sample included replies from 214 parents from 4 schools where the children had been involved in a 1:1 laptop programme for more than a year.

82% were interested or excited about the 1:1 programme when it was announced. After 1 year 84% % of parents were feeling positive about the programme.

2% of parents were disappointed when they heard that their child was to have a 1:1 laptop. This remained unchanged 1 year into the programme. 6% were doubtful at the beginning. After 1 year this figure has dropped to 3%. 10% were unconcerned at the beginning. This was unchanged after 1 year with 1:1 laptops.

65% of parents believe that their children's attitude to learning has improved since the laptop programme started. 25% believe that their children's attitude has improved a lot. 2% of parents believe that their children's attitude has declined since the 1:1 programme started.

71 % of parents believe that their children's engagement in learning level has improved. 31% believe that engagement levels have improved a lot. 4% of parents believe that their children's engagement level has declined since the 1:1 programme started.

The laptops have provided the most help with writing, reading, maths and social studies.

98% of parents believe that developing the skills to use a computer is important with 74 % believing that it is essential.

97% of parents believed that their children would be disadvantaged if the 1:1 programme was discontinued.

33% of parents do not feel they should be asked to make a financial contribution while 28% have no opinion and 38% believe that parents should contribute.

The most common responses to the question “What have you seen as the major advantages for you child having 1:1 access to computers?” were:

- Enjoyment, enthusiasm, and engagement in learning
- Developing computer skills
- Easy access to information
- Research skills

The most common responses to the question “what disadvantages are there in your child have 1:1 computer access?” were:

None

Drop in handwriting use and ability

Too much time is spent on it

Some other positive comments made were:

Wonderful tool if used properly

I love how it helps presentation

Great for less able students

Huge benefit for their future

Despite teething problems the laptops have been a major benefit

Has made my child more positive about school

My son has gained a big advantage

They are a great asset to learning

Great idea

Amazing how up to date the kids are in their technology knowledge

Excellent forward thinking idea.

Disappointed if they did not continue

Some of the negative comments that made were:

Potential to get off task because of access to games, chat etc

Concern about plagiarism

Get back to Basic Teaching. Dump computers for writing, spelling etc.

Computers are making kids lazy.

Some do not respect the privilege of having a computer

### **Maine's Laptop Initiative**

In 2002, a \$41 million initiative put laptop computers in the hands of every middle school student and teacher in the state of Maine in the USA. The laptops have jumpstarted a host of projects that cut across disciplines and allow students to go more deeply into subjects. But the ultimate lesson is that technology is only as good as how it's used -- either as a 21st century pencil or as a new way of teaching kids to be leaders in a 21st century world.

A key learning point has been that there have been radical changes in pedagogy since the laptops were introduced. Learning has become more

individualised and more flexible. Teachers have had to adapt to this. One key factor has however been that this type of learning does not fit well with national testing regimes which are narrow and focused on one type of learning for all.

Angus King was the Governor of the State of Maine at the time of the introduction of the laptops. In March 2010 he shared these reflections after eight years of laptops in classrooms.

*As the 21<sup>st</sup> century evolves it is a more necessary idea now than it was 8 years ago. It created what many people involved in education have been looking for for so long.*

- *it engages students*
- *it involves parents*
- *it creates new opportunities for learning*
- *it creates new opportunities for teachers*

*Engagement is the key. If children are engaged you can teach them anything. If they are not engaged it is almost impossible to teach them anything. The laptops allow a high level of connection and engagement in the real stuff. They allow more individualism in learning and presentation. Execution is more important than the idea.*

*The traditional education programme is designed for certain children. The others outside of this mainstream tend to be forgotten or ignored. The laptops include these children whether they be at the lower end of the learning spectrum or at the gifted and talented end.*

*Execution is as important as vision. The infrastructure has to be reliable. The teachers have to be well trained. Professional Development for teachers is a key to the success of the program.*

*There has been a marked decrease in discipline problems and an increase in student attendance.*

*The national tests do not test what the laptops teach. It is 1980s testing in a 21<sup>st</sup> century world. Solving problems, collaboration and use of information is what the laptops teach but there is a mismatch with what is being tested. This is why it is hard to show the success of the program through national testing scores.*

*A significant indicator of the perceived success of the program was that the new governor renewed all leases after four years.*

It is interesting to note the number of similarities between these comments and the results of the surveyed schools in New Zealand. Factors such as improved engagement, improved discipline, individualised learning and wide spread use of information are constant factors wherever the 1:1 computers have been introduced.

Visiting schools in Maine confirms this as well. The following are some comments from principals and teachers in Maine as well as some additional comments from teachers in Toronto and London.

Harrison Middle School Maine

"The research of David Silvernail (University of Maine) shows tremendous gains in writing when used in all phases of the laptop programme. This is reflected here".

Freeport Middle School Maine

"The best teachers are also the best at using ICT. When hiring teachers there needs to be a considerable knowledge of ICT. It is not the main factor but it is important. The teacher still needs to be sound".

Connors Emerson School – Bar Harbor Maine

"Engagement level has improved dramatically. Programmes such as Inspiration and Comic Life have really helped the less able students".

Oakdale Primary School – London

"ICT has led to a lot of sharing going on. Clusters sharing. Teachers sharing. Schools sharing".

Sir Adam Beck Public School – Toronto.

"Teachers have noticed an improved attitude to school from the boys. Behaviour issues have disappeared".

Joyce Public School – Toronto

"Teacher quality is the most important. To be effective they must have:

- content knowledge
- sound teaching strategies
- to be able to use technology effectively to enhance learning".

"To move teachers through the stages there needs to be a shared vision. Teachers need to be exposed to good practice as often as possible. This creates a culture of ICT use expectation. Teachers using ICT effectively should be spread across the school. Everybody needs to be comfortable with ICT not just the experts. To do this all teachers need their own work station".

And perhaps the quote of the tour in relation to 1:1 laptops from a veteran male teacher at Bar Harbor Maine.

"When the laptops were introduced, 7 years ago, I saw them as a huge waste of money that could have been better spent elsewhere. I could not have been more wrong. The laptops have had the most positive effect on learning of any innovation in my career".

Interviewing teachers in New Zealand produces similar comments. The following comments were made by teachers and principals in schools with 1:1 classrooms in the Bay of Plenty.

Student to Student interaction has improved because the ones that normally stand back can become involved. They can be good at IT rather than sports music etc.

Teacher student interaction is more often on a one to one basis.

Engagement level is high. This is a real plus of the 1:1 programme. Vigilance is still required to be sure that they are doing what they are supposed to be.

The greatest impact has been in Literacy. It also enables children to design their own learning.

Any change in attitude depends on the quality of the teaching in the classroom. The laptops make no difference if the teaching is poor.

The main focus is to continue to provide quality PD in teaching rather than specifically IT

As the children are more engaged there is more opportunity to work with individual children. You tend to have more things on the go at once. This is needed to cope with the different speeds children work at.

Student – student interaction is far more obvious. The children are much more likely to share skills and to ask questions of each other in the ICT world. This flows on to other parts of the daily programme.

The computers have motivated the slower kids. They are far more confident.

The greatest impact is in literacy. They read a lot more even though they do not realise it. Once again it tends to be the boys who do not normally read elsewhere who read more on the computers.

Student to student interaction is high. Students are very supportive of each other.

There are high expectations for performance. If it is rubbish they are told. This is lifting quality. Computers let you see what they can do.

## **Summary**

### **Benefits to Learning**

The following benefits of 1:1 computing were consistent across all schools in all countries.

1. Increased engagement in learning.

This was particularly evident with slower learners and/or boys. This factor alone had led to an increase in learning outcomes for these students.

2. More positive Classrooms

Teachers reported more settled classrooms with children being on task far more than the regular classroom.

3. Improved attendance records.

Truancy declines once 1:1 is introduced. This was very evident in the middle schools in Maine.

4. Improvement in Writing Outcomes.

Writing outcomes appear to improve across the board. It is difficult to quantify this as all students are involved in the 1:1 programmes. There is therefore no control factor. There are other things such as teacher PD that could be creating the improved writing outcomes but it is a consistent across all schools studied.

5. Improved communication between students.

Students appear much more willing to share and comment on their learning. This may come from their involvement in social communication web sites

such as Facebook outside of school time. Electronic sharing is becoming the norm.

#### 6. Improved opportunity for Individual Tuition

Teachers are finding that the improved on task behaviour has created much more time for individual tuition. An opportunity has also developed for digital tuition via e mail, i chat, blogs, wikispaces etc.

#### 7. Increased opportunity for self management of learning.

Children quickly begin to manage their own learning to a greater degree. The computer becomes a very effective tool for schools where inquiry learning is a focus.

#### 8. Access to data

Access to information is instant. Assessment as to the quality of the information quickly develops.

#### 9. Access to the equipment.

There is no need to wait for anybody else. It caters for the “we want it now” generation.

#### 10. Student confidence

Particularly the case for slower learners

#### 11. Opportunities for gifted and talented children.

These children can now take control of their learning. The opportunities are endless.

### Negative Aspects of 1:1 programmes.

1. Concern from parents re lack of handwriting
2. Concern about managing plagiarism
3. Internet safety
4. Concern that students spend too much time on the computers.
5. Cost
6. Security

### Final Comment

What became very clear throughout this study was the fact that the laptops have not negated the need for an effective teacher. The teacher is still the most important factor in student learning. An ineffective teacher can have all the IT in the world but this teacher is still likely to be ineffective. Effective professional development is vital to any 1:1 programme.

### Web Sites relevant to this research

<http://www.usm.maine.edu/cepare/mlti.htm> – University of Southern Maine Learning Technology Initiative

<http://www.urbanschool.org/page.cfm?p=286> - The Urban School of San Francisco. Why Laptops.

<http://darcymoore.net/2009/05/31/10-things-a-school-can-do-in-preparation-for-11-laptops-in-classrooms> Darcy Moores Blog- 10 things 'a school' can do in preparation for 1:1 (laptops) in classrooms

[http://www.educationworld.com/a\\_tech/tech/tech197.shtml](http://www.educationworld.com/a_tech/tech/tech197.shtml) – Education World One-To-One computing: lessons learned, pitfalls to avoid.

[http://www.educationworld.com/a\\_admin/admin/admin122.shtml](http://www.educationworld.com/a_admin/admin/admin122.shtml) – Education World Technology in the Schools: It Does Make a Difference!

[http://www.educationworld.com/a\\_tech/tech/tech194.shtml](http://www.educationworld.com/a_tech/tech/tech194.shtml) – Education World The 411 on One-to-One Computing

<http://thebigsummit.wordpress.com/> - The 2010 BIG 1 to 1 Summit @ the Summit

<http://www.micdl.org/resources/87> – The Maine International Centre for Digital Learning Getting Started in a 1-to-1 Classroom Video Series

<http://www.micdl.org/resources/100> - The Maine International Centre for Digital Learning Getting Started in a 1-to-1 School Video Series