

Changes in technology usage

Annotation

Mavish poses questions about a wider population (year 9 students across New Zealand) and takes a sample of this group (rather than collecting all the data from a smaller group such as her class or school). Her sample data is multivariate time-series data (the variables are each of the various items of technology, and the data is collected over time, in this case from 2003 to 2011). Mavish uses a line graph to analyse the data, looking for patterns within (noticing increases and plateaux), between (comparing different technologies) and beyond (making predictions for the future). Her conclusions generalise her findings within the context.

Problem: Changes in technology usage

The students in this class have completed the 2011 CensusAtSchool New Zealand survey. The teacher gives them the following task:

Explore the data from current and past years of CensusAtSchool New Zealand and pose investigative questions that can be answered with the data.

Student Response

Mavish's work sample is as follows:

Question

How has technology usage for year 9 students in New Zealand changed over time?

Plan

Take random samples of 100 year 9 students in New Zealand in each of the 2003, 2005, 2007, 2009 and 2011 data sets and use the random sampler from CensusAtSchool New Zealand at www.censusatschool.org.nz

Results

Cell phone ownership:

2003 – 55%	2005 – 80%	2007 – 84%	2009 – 91%	2011 – 92%
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MP3 player:

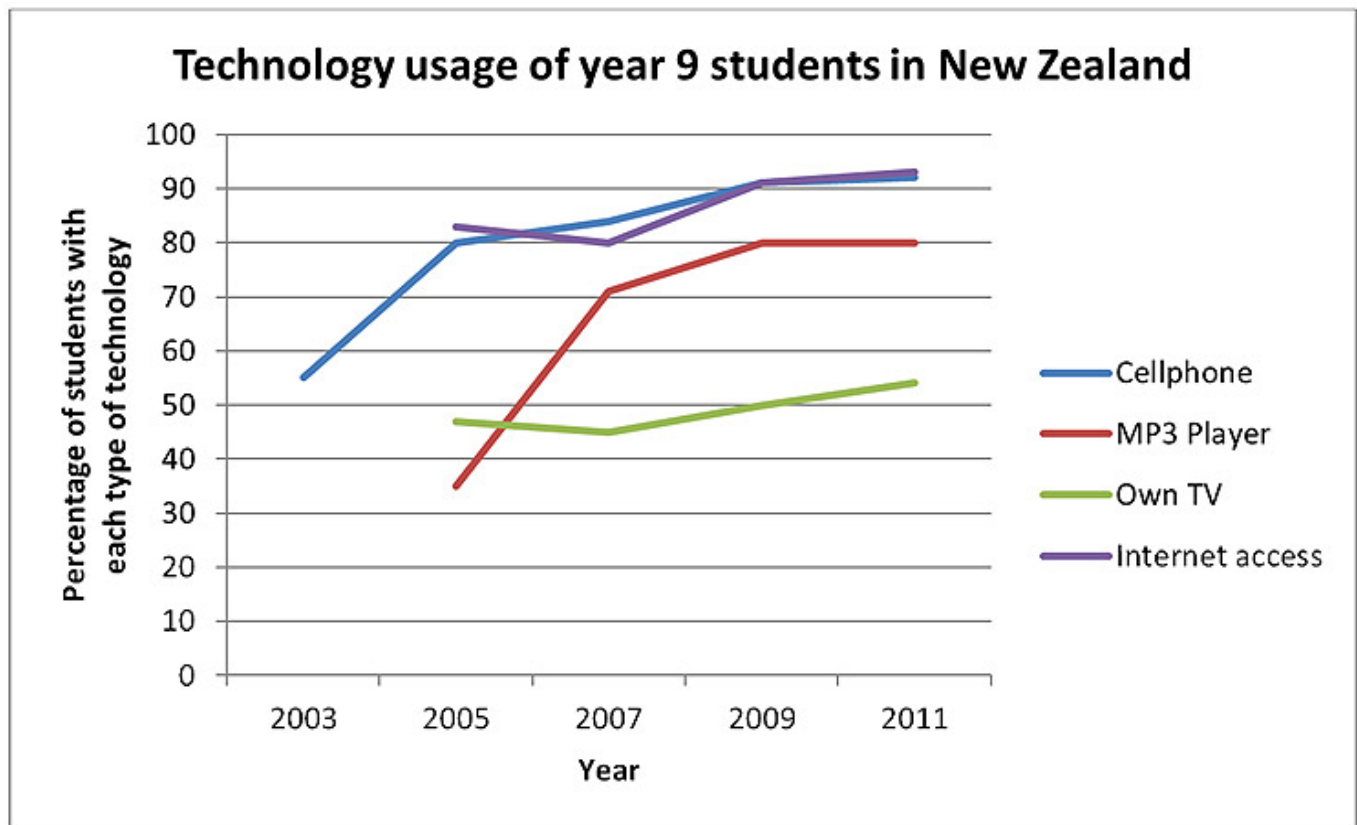
2003 – no Q	2005 – 35%	2007 – 71%	2009 – 80%	2011 – 80%
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Own TV:

2003 – no Q	2005 – 47%	2007 – 45%	2009 – 50%	2011 – 54%
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Internet access at home:

2003 – no Q	2005 – 83%	2007 – 80%	2009 – 91%	2011 – 93%
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Analysis and Conclusions

Technology usage for year 9 New Zealand students has increased since CensusAtSchool New Zealand began in 2003. The percentage of students with cell phones and MP3 players has risen most dramatically, whereas internet access and the proportion of students with their own TV has not increased much over the years. There has not been much change in technology usage between 2009 and 2011, while there seem to have been bigger shifts in previous years. In 2013, there will probably be even more technology questions, but I don't think these four types of technology will increase much more than where they are now.

Teacher: Can you tell me what you did?

I had to spend a lot of time sorting the data. First I got random samples of 100 year 9 students from each of the years that CensusAtSchool New Zealand has run. I noticed that, each year, the questions changed a bit. Each year, there were more technology questions, and it was hard to find questions that were the same all the way through. There were only two technology questions in 2003, and in 2011, there were 19. In 2009 and 2011, there wasn't a question "Do you have your own cell phone?" like other years, but there was a question about how long you have had your current cell phone for. The people who didn't reply to this, I assumed didn't have a cell phone.

Teacher: Why did you do that?

Everyone who could answer how many months they had had their cell phone must have one, so I could find a percentage who had a phone. I had to find data that could be compared across the years, and mostly I had to get data from 2005 onwards.

Teacher: What else did you do?

I counted up all the "Yes" answers and worked out the percentage of people who had each type of technology in each year. It was easy because my sample size was 100. Then I made the line graph using Excel.

Teacher: What did you find out?

Just from the change in the questions, you could see that there has been an increase in the amount of technology that year 9 students personally own. Almost every year 9 New Zealander now has internet access and a cell phone.