Supporting statistical experiments with TI-Nspire™ Navigator™

Teacher – Bert Wikkerink, CSG Liudger, Netherlands

Case Study

Supporting statistical experiments with TI-Nspire™ Navigator™

Teacher	Bert Wikkerink
Location	CSG Liudger, Drachten, Netherlands
Course	5VWO Math D
Technology	TI-Nspire™ Navigator™

Setting: CSG Liudger is a state secondary school in the Netherlands. I have been using TI-Nspire™ handhelds and software with this group of students since September 2007 and TI-Nspire™ Navigator™ since May 2009. In this lesson I used File transfer, Screen Capture and Live Presenter features.

The lesson: I began by displaying a TI-Nspire™ Notes page which included a range of questions concerning the statistical assumptions that might be made about packets of M and M sweets. For example, what is the average mass of an M&M sweet in grammes? and is any one colour heavier than another?

I gave each group of students several packets of M&Ms, which they labelled and, using a set of electronic scales, entered the measured mass of each of the packets onto a Spreadsheet page on their TI-Nspire™ handhelds.
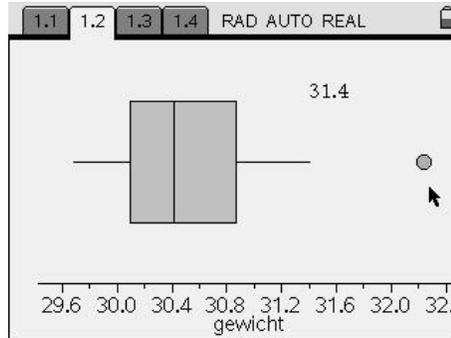
Whilst they were doing this I distributed the TI-Nspire™ Navigator™ cradles and the students logged into the classroom system and I displayed the Screen capture view of the Spreadsheet data. The class engaged in a discussion about the similarities and differences between their tables of values and the ways in which they had entered the data.
I then wrote the values on the board for all of the groups to enter the whole class data into a new Spreadsheet page.

I chose a student to be the Live Presenter and this student showed his peers how to generate the 1-variable statistics for the data that the class had collated. Whilst the student operated his own handheld for the class to see, I talked through the meaning of the various statistical variables, Q1, Med etc. and asked the student to

generate a Box and whisker plot of the data, the results of which we class discussed.

1.1	1.2	1.3	1.4	RAD AUTO REAL

A gewicht	B	C	D	E
♦		=OneVar(		
1 30.16		One−Var...	Title	
2 30.2		30.5306	x̄	
3 31.2		488.49	Σx	
4 30.32		14920.9	Σx²	
5 30.49		0.683944	sx := Sn-...	

A1 30.16

1.1	1.2	1.3	1.4	RAD AUTO REAL

31.4

29.6 30.0 30.4 30.8 31.2 31.6 32.0 32.4
gewicht

The students were then allowed to open the packets and, having agreed the names they would use to describe the colours, each group produced a frequency table for the number of M&Ms for all of their packets and contributed their results to the class table of values.

1.1	1.2	1.3	1.4	RAD AUTO REAL

A	B tot	C s1	D s2	
♦				
1 oranje	122	21.66	23.32	
2 groen	52	10.79	6.46	
3 rood	105	11.76	14.6	
4 geel	69	16.67	11.75	
5 bruin	99	12.08	12.32	

A1 "oranje"

At this point in the lesson I set the class some challenges, for example to produce a summary table of the data or a Pie chart of the totals of the different colours. I used the Live Presenter to enable a student who had discovered how to do use Fill Down to complete the table quickly and another who found out how to accurately represent the data within the Pie chart.

Students' mathematical learning
The students were able to use their existing knowledge of statistical variables such as the mean average and the median to confirm or refute their statistical

hypotheses. They also considered how the use of different statistical graphs might support this process.

Conclusion

Thinking about how the students had been learning in this lesson I observed that, when I was using TI-Nspire™ Navigator™ with this class, the students were much more interested in each others' ideas and that it supported the class to have more productive whole-class discussions.