

Connecting lines and points with TI-Nspire™ Navigator™

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Case Study



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Teacher	Petra Ryrstedt
Location	Allvar Gullstrandgymnasiet, Lanskrona, Sweden
Class	15-16 year old students on a technological programme
Technology	TI-Nspire™ Navigator™

Setting

The students, who are all following a technological programme, have been using their own TI-Nspire™ handhelds since September 2008 and I started to use TI-Nspire™ Navigator™ with them in May 2009.

The lesson

I began by using Live Presenter to show the students how to plot a particular coordinate point in the Graphs and Geometry application. I then asked the students to define a linear function that would go through this point and I displayed the Screen Capture view so that we could see all of the different lines that the students had drawn. I chose individual students to be the Live Presenter to discuss particular types of linear functions and how to express a linear function. We focused on what the different symbols represented in the general form of a linear function, $y = kx + m$.

At particular instances in the lesson I generated Quick Poll questions (using the open response format) to pose questions to the class such as:

- Where does your line cross the x-axis? ...and the y-axis?
- What do all parallel lines have in common?
- What would the equation of your straight line be in the form $ax + by + c = 0$?

For the second part of the task, I asked the students to make another line which crossed their first line and displayed the Screen Capture view to let them see the other students' lines. I wanted them to understand that the solution of a system of linear equations is just the intersection point for the lines that make up the system.

Following this I used Quick Poll to let the students write the system of equations that they created. Finally I used Quick Poll to ask the students to write the solution of their pair of equations.

Students' mathematical learning

Initially, there were a number of students who were unsure about how to generate a linear function to go through a given coordinate point and by using the Screen Capture view they were able to see how to get started. It also let me see who needed my support. The Quick Polls encouraged all of the students to give their opinion and, from this I was able to see students change their point of view as they listened to my explanations and the other students' reasoning. The students showed that they were beginning to really understand why a particular coordinate point lay on a particular straight line and how to find the equation of a straight line through a given point.

Conclusion

It was really fantastic how much the students learned by just looking at each others' work using the Screen Capture view. The most important thing was that the students were actively involved and tried something for themselves initially. If they were insecure they could look at the other students' screens to gain some help or to see that there were other students who did not understand either (that is often important too - to see that there are more students like you). By using Live Presenter I found I could easily help more than one student at a time.