Exploring line symmetry with TI-Nspire™ Navigator™

Jay Timotheus – Blue Coat CE School, Walsall, England

Case Study

Exploring line symmetry with TI-Nspire™ Navigator™

Teacher	Jay Timotheus
Location	Blue Coat Church of England School, Walsall, England
Class	12-13 year old students following the English National Curriculum (key stage 3)
Technology	TI-Nspire™ Navigator™

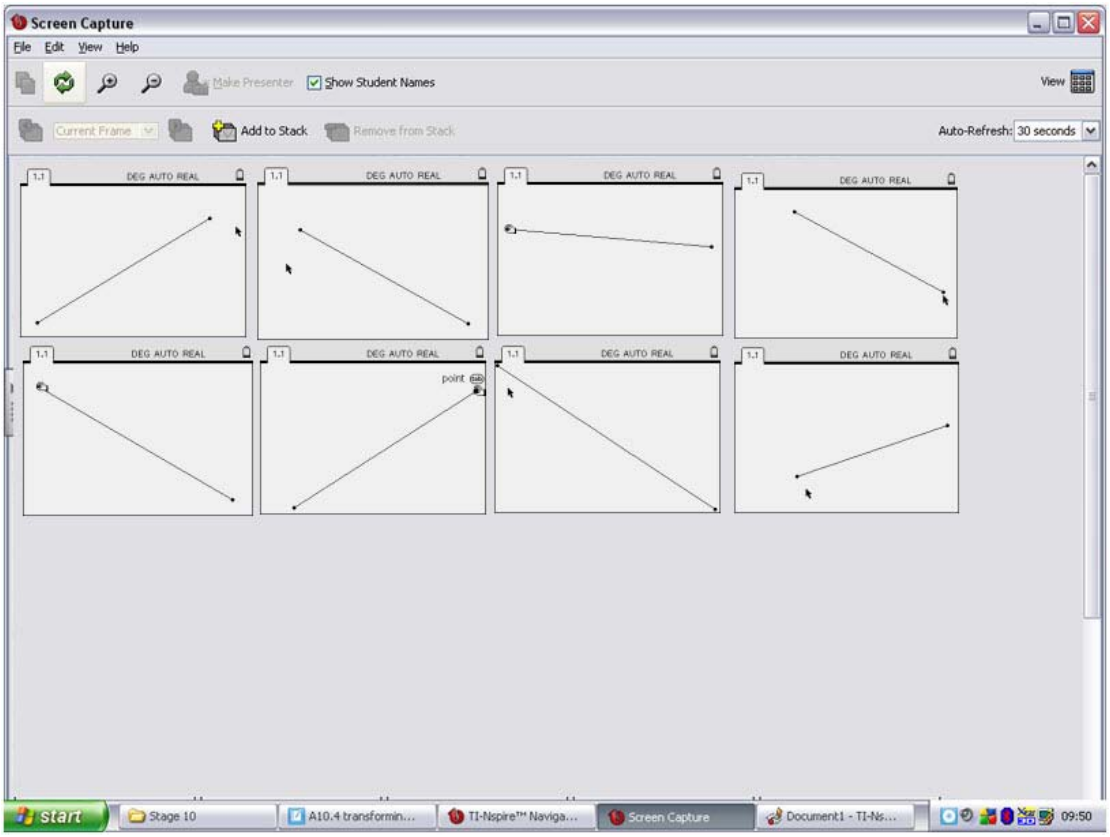
Setting

Blue Coat School is a state secondary school for students aged 11-18 years in Walsall, UK. I have been using TI-Nspire™ Navigator™ since May 2009 and this was the first time this class had used the TI-Nspire™ handhelds or TI-Nspire™ Navigator™. In this lesson I used Screen Capture and Live Presenter. This class of eight students were working at a level below their age-related expectation.

The lesson

The mathematical focus for this lesson was to assess the students understanding of line symmetry and, as this was the first time that this class had used either TI-Nspire™ handhelds or TI-Nspire™ Navigator™, I needed to introduce them to some of the basic functionality. I made myself the Live presenter to support the students to log into the TI-Nspire™ Navigator™ system, open a new Graph and Geometry page and hide the axes. I also showed them how to draw a line segment and change its position by dragging. I asked them to draw a line segment diagonally on their handheld screen and I displayed the Screen capture view. As there were 8 students in the class I decided to ask them to try to replicate a symmetrical zig-zag pattern on their handhelds which comprised their individual handheld screens.

After some time the following Screen capture view was visible.



We discussed whether the pattern was perfectly symmetrical, and what we could do to improve it. Students suggested that, by making sure that their line segment touched the corners of their screen (as one student had done), we could arrive at a perfect class pattern.

I then chose a student to be the Live Presenter and instructed him how to construct a circle somewhere on his own screen. The rest of the class was then challenged to complete the class pattern whilst retaining its overall symmetry.

Students' mathematical learning

The students were very engaged throughout the lesson and, despite being some of the weakest students in their year group, they were very motivated by their individual contribution to the class task and were also keen to support each other with ideas and approaches. The students grew in their confidence to use the correct mathematical vocabulary to describe their patterns and the position of the geometric objects within it.

Conclusion

Although this was a very simple lesson idea, it was highly effective in introducing the students to constructing geometric objects and dragging within the Graphs and Geometry application. The use of Live Presenter supported all of the students to pick up the necessary skills very quickly. One of the students commented at the end of the lesson that the use of TI-Nspire™ Navigator™ had 'allowed me to look at other peoples work and see what I had to do to correct in my work. I enjoyed using the TI-Nspire as it was fun and easy to do'.