**Some Interactive Geometry Software**

* Geometer’s Sketchpad – <http://www.dynamicgeometry.com>
* Cabri – <http://www.cabri.com>
* GeoGebra – <http://www.geogebra.org/cms>
* Wingeom – <http://math.exeter.edu/rparris/wingeom.html>

**Activity 1 – Enacting a transformation**

Files: translate.ggb, rotate.ggb, reflect.ggb, glide.ggb

* Translations
  + Can you describe how to enact a translation?
  + What happens when you move or alter the object to be translated?
  + What happens when you move the translation vector?
  + What happens when you alter the translation vector?
  + Can you use coordinates?
* Rotations
  + Can you describe how to enact a rotation?
  + What happens when you alter or move the object to be rotated?
  + What happens when you move the center of rotation?
  + What happens when you move the rotation angle?
  + What happens when you alter the rotation angle?
  + Can you use coordinates?
* Reflections
  + Can you describe how to enact a reflection?
  + What happens when you alter or move the object to be reflected?
  + What happens when you move the reflection line?
  + What happens when you alter the reflection line?
  + Can you use coordinates?
* Glide Reflections
  + Can you describe how to enact a glide reflection?
  + What happens when you alter or move the object to be glide reflected?
  + What happens when you move the reflection line?
  + What happens when you alter the reflection line?
  + What happens when you move the translation vector?
  + What happens when you alter the translation vector?
  + Can you use coordinates?

**Activity 2 – Identifying a transformation from its action on a (static) shape**

Files: transform2a.ggb, transform2b.ggb, transform2c.ggb, transform2d.ggb

* Translations
  + How can you identify a translation?
  + How can you recover the translation vector?
* Rotations
  + How can you identify a rotation?
  + How can you recover the center of rotation?
  + How can you recover the rotation angle?
* Reflections
  + How can you identify a reflection?
  + How can you recover the reflection line?
* Glide Reflections
  + How can you identify a glide reflection?
  + How can you recover the reflection line?
  + How can you recover the translation vector?

**Activity 3 – Identifying a transformation from its action on a single movable point**

Files: transform3a.ggb, transform3b.ggb, transform3c.ggb, transform3d.ggb

* Translations
  + How can you identify a translation?
  + How can you recover the translation vector?
* Rotations
  + How can you identify a rotation?
  + How can you recover the center of rotation?
  + How can you recover the rotation angle?
* Reflections
  + How can you identify a reflection?
  + How can you recover the reflection line?
* Glide Reflections
  + How can you identify a glide reflection?
  + How can you recover the reflection line?
  + How can you recover the translation vector?

**Reflections(!) on teaching and learning**

* What mathematical concepts are developed in each of the activities?
* Which activities are more helpful to develop and understand which concepts?
* Is the chosen sequencing of the activities effective, or would you recommend a different ordering?
* In what ways in these activities can interactive geometry software assist in gaining understanding that would be difficult to do without the software?
* In what ways in these activities is the presence or absence of interactive geometry software not so important in gaining understanding?

**Further Activities**

What activities and interactive geometry sketches would assist in developing the understanding of composing two transformations?

Starting examples:

* Composing two translations
* Composing two reflections
* Composing two rotations