Sequential development of understanding elements of maps

The development of understanding of mapping elements is divided into six elements. The elements are listed from one to six in an order which approximately represents how children seem to grasp these ideas. The sixth element is the representation of data on maps, and this is divided into six sub-groups.

In each of these elements, the usual stages of a child's development of understanding are listed in sequential order.

The line drawn at one point in each sequence is roughly the point between primary and secondary school.

1. Plan View
   - Distinguishing horizontal, oblique and vertical views of discrete objects
   - Distinguishing horizontal, oblique and vertical views of discrete objects and larger areas at differing scales
   - Distinguishing objects on maps drawn at differing scales
   - Recognising objects on aerial photographs

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   Analysing location and distribution of objects on aerial photographs
   Analysing location and distribution of objects on satellite images

2. Direction
   - Random estimation of direction
   - Random estimation of N, S, E, W
   - Perception and knowledge of the four cardinal points (four-point compass rose)
   - Using N, S, E, W on maps
   - Perception and knowledge of an eight-point compass rose

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   Using a compass to understand angular measurements of 0 to 360 degrees
   Practice in the application of direction on a range of map forms and the globe

3. Location and reference systems
   - Verbal descriptions of location of objects in the immediate environment
   - Reading and constructing concrete grids on two-dimensional surfaces
   - Reading and constructing 'street directory' type grids from large scale to small scale
   - Reading and constructing area references on maps of varying scales
   - Identifying main lines of latitude and longitude

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   Reading and constructing six-point references
   Using latitude and longitude measurements
4. Proportion and scale
Distinguishing relative sizes of large scale objects
Distinguishing and describing relative sizes of groups of objects
Distinguishing and describing relative sizes of groups of objects at a smaller scale
Introduction to use of scale ruler
Measuring distances on map using scale ruler

Using a simple linear scale and statement of scale
Using complex line scales
Expression of simple ratios to describe scale
Using the representative fraction to describe scale

5. The measurement of distances
Estimating and measuring short distances
Estimating and measuring medium distances (> 30 m)
Measuring on large scale maps (with increasing accuracy)
Measuring on small scale maps (with increasing accuracy)

6. The representation of data on maps
6a. Map colour
Using colour to arbitrarily discriminate between features on a map
Using conventional colours (for example, blue for water, green for vegetation)
Using colour on political maps
Using colour to discriminate between signs on thematic maps, for example, density of colour indicating density of distribution
Using colour to show relief in a variety of ways
Conventional representation of colour on a topographic map

6b. Base data on maps
Drawing thick coastline and rivers
Drawing main rivers
Drawing thick political boundaries
Finer representation of coastline
Variety of features named
Finer representation of river systems
Finer representation of political boundaries
Wide range of features named
River systems defined very accurately
Detailed representation of political boundaries
6c. Map signs
Recognising the relationship between type of sign and reality, for example, line, point, area signs to represent line, point and area features
Classifying and labelling the types of signs
Increasing sophistication of signs from real to abstract

Developing hierarchies of signs within each class
Using signs that measure amounts
Using size and shape of signs to discriminate between features on a map

6d. Lettering and numbers on maps
Recognising that different sizes and styles of type can be used to distinguish between classes of features
Identifying different sizes and styles of type on a map

Classifying different sizes and styles of type in a key
Classifying different sizes and styles of type on a map

6e. Representing relief on maps
Simple verbal description of relief
Hill shading (large scale)
Hill shading (small scale)
Layer colouring

Using contours to read heights of locations
Using contour patterns to recognise landforms from patterns of contours


Making a chart
You may wish to put this information into a chart for easy reference. An example is provided on the next page. You will need an A3 format.
Example A3 chart for sequential development of understanding elements of maps

<table>
<thead>
<tr>
<th>Element of map understanding</th>
<th>1. Plan view</th>
<th>2. Direction</th>
<th>3. Location and reference systems</th>
<th>4. Proportion and scale</th>
<th>5. The measurement of distances</th>
<th>6a Map Colour</th>
<th>6b</th>
<th>6c</th>
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