

## GI Learner competencies

K7-8 K9 K10 K11 K12

<b>1</b>	<b>Critically read, interpret cartographic and other visualisations in different media</b>	<b>interpretation</b>	A	B	C	C
	A: Be able to read maps and other visualisations	Example: use legend, symbology ...				
	B: Be able to interpret maps and other visualisations	Example: use scale, orientation; understand meaning, spatial pattern and context of a map				
	C: Be critically aware of sources of information and their reliability	Example: critically evaluate maps identifying attributes, representations (e.g. inappropriate use of symbology, or stereotyping) and metadata of the maps				
<b>2</b>	<b>Be aware of geographic information and its representation through GI and GIS.</b>	<b>learning about</b>	A	B	C	C
	A: Recognize geographical (location-based) and non-geographical information	Example: describe GPS, GIS, Internet interfaces; be able to identify geo-referenced information				
	B: Demonstrate that geographical information can be represented in some ways	Example: employ some different representations of information (maps, charts, tables, satellite images...)				
	C: Be critically aware that geographic information can be represented in many different ways	Example: be able to evaluate and apply a variety of GI data representations				
<b>3</b>	<b>Visually communicate geographic information</b>	<b>produce</b>	A		B	C
	A: Transmit basic geographic information	Example: produce a mental map, be aware of your own position				
	B: Communicate with geographic information in suitable forms	Example: basic map production for a target audience - using old and new media, Share results with target group				
	C: Be able to use GI to exchange in dialogue with others	Example: discuss outcomes like survey results/maps online or in class, referring to a problem in own environment				
<b>4</b>	<b>Describe and use examples of GI applications in daily life and in society</b>	<b>applying</b>	A	B	C	C
	A: Be aware of GI applications	Example: know about GPS-related/locational (social networking) applications including Google Earth; produce a listing of known GI applications or find them on the internet/cloud				
	B: Use some examples of (daily life) GI applications	Example: problem-solving oriented with GI application like navigating; use an app to read the weather, environmental quality, travel planner				
	C: Evaluate how and why GI applications are useful for society	Example: assess the functionality and use for society of a GI application (emergency services, police, precision agriculture, environmental planning, civil engineering, transport, research) and present the results				

<b>5 Use (freely available) GI interfaces</b>	<b>use</b>	A	B	C	C
A: Perform simple geographical tasks with the help of a GI interface	Example: Find your house in a digital earth browser; finding a certain location; measuring the distance between two points by different means; use applications for mobile phones (ex. GPS) to locate a place				
B: Use more than one GI interface and its features	Example: collect data and compare to set the best route from school to home and back; get a topographical map for a walk				
C: Effectively solve problems using a wide variety of GI interfaces	Example: Find and use data from various data portals (SDI) to look for the best facilities of a specific region, or for the 'best' place to live using parameters like infrastructure, noise, open spaces, ...				
<b>6 Carry out own (primary) data capture</b>	<b>produce / gathering</b>	A	B		C
A: Collect simple data	Example: gather data during fieldwork (coordinates, pictures, comments...) e.g. sound data to analyse impacts of traffic; map attractive places for children in your city				
B: Compare different qualitative and quantitative data and select an appropriate data gathering approach, tool etc.	Example: when investigating environmental factors choose what data is needed				
C: Solve issues concerning data gathering and select the most suitable alternative approaches to data capture	Example: design a methodology which explains the data collection for land use change, like how to collect data from different sources and classify them appropriately				
<b>7 Be able to identify and evaluate (secondary) data</b>	<b>use / evaluate</b>	A	B		C
A: Locate and obtain data from source maps (different visualisations)	Example: Find and download data on migration and be able to use it				
B: Acknowledge that there is different quality in data, not everything is useful	Example: Identify multiple data sources for example of population or pollution and be able to assess their level (scale), detail, frequency, accuracy and other considerations; analyse different sources and decide which is the most useful				
C: Fully assess value / usefulness / quality of data	Example: Use data on climate change from ESA, IPCC compared to Facebook graphs				
<b>8 Examine interrelationships</b>	<b>analyse</b>		A	B	C
A: Recognise that items may, or may not, be related (connected) in different ways to one another	Example: recognize simple relationships between things, e.g. heat and sunshine, or city size and traffic jams // inverse relationships // some things are not related				
B: Demonstrate interrelationships between a variety of factors	Example: changes in environment, influence, connections and hierarchy of ecosystems				
C: Valuate different relationships and judge causes and effects	Example: Evolution of ecosystems over time is complex and is related to many variables; problem-oriented exploration of interrelationships like: where do my jeans or my mobile phone come from				

<b>9 Extract new insight from analysis</b>	<b>produce</b>	A	B	C
A: Read what the analysis says	Example: understand there are different types of climate			
B: Combine elements from the analysis to make sense of the outcomes	Example: realise that climate is changing			
C: Assess the analysis in depth, create new meaning and make links to the bigger picture	Example: responding and suggest solutions on climate change			
<b>10 Reflect and act with knowledge</b>	<b>action: decision making / applying in real world</b>	A	B	C
A: Recognise the decisions that had to be made	Example: Use geodata to assess which new road system should the local authority build			
B: Judge implications for individuals and society	Example: conclude there will be winners and losers for each road proposal			
C: Design future actions to stakeholders - including themselves	Example: develop a campaign to persuade decision makers concerning traffic planning; make a blog or a website with collected and visualized data; write a documented article in a magazine using GI information			

**Level of learning over the secondary school curriculum (K7-12)**

Competency	K7-8	K9	K10	K11	K12
1	A	B	C		C
2	A	B	C		C
3	A		B		C
4	A	B	C		C
5	A	B	C		C
6	A		B		C
7	A		B		C
8		A	B		C
9			A	B	C
10	A		B		C