



GI-Learner

Competenties list



Based on the review, ten **geospatial thinking competences** are proposed

1 Critically read, interpret cartographic and other visualisations in different media	interpretation
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
2 Be aware of geographic information and its representation through GI and GIS.	learning about
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
3 Visually communicate geographic information	produce
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
4 Describe and use examples of GI applications in daily life and in society	applying
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

<p>5 Use (freely available) GI interfaces</p> <p>A: Perform simple geographical tasks with the help of a GI interface</p> <hr/> <p>B: Use more than one GI interface and its features</p> <hr/> <p>C: Effectively solve problems using a wide variety of GI interfaces</p>	<p>use</p> <p>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</p> <hr/> <p>Example: collect data and compare to set the best route from school to home and back; get a topographical map for a walk</p> <hr/> <p>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, ...</p>
<p>6 Carry out own (primary) data capture</p> <p>A: Collect simple data</p> <hr/> <p>B: Compare different qualitative and quantitative data and select an appropriate data gathering approach, tool etc.</p> <hr/> <p>C: Solve issues concerning data gathering and select the most suitable alternative approaches to data capture</p>	<p>produce / gathering</p> <p>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</p> <hr/> <p>Example: when investigating environmental factors choose what data is needed</p> <hr/> <p>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</p>
<p>7 Be able to identify and evaluate (secondary) data</p> <p>A: Locate and obtain data from source maps (different visualisations)</p> <hr/> <p>B: Acknowledge that there is different quality in data, not everything is useful</p> <hr/> <p>C: Fully assess value / usefulness / quality of data</p>	<p>use / evaluate</p> <p>Example: Find and download data on migration and be able to use it</p> <hr/> <p>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</p> <hr/> <p>Example: Use data on climate change from ESA, IPCC compared to Facebook graphs</p>
<p>8 Examine interrelationships</p> <p>A: Recognise that items may, or may not, be related (connected) in different ways to one another</p> <hr/> <p>B: Demonstrate interrelationships between a variety of factors</p> <hr/> <p>C: Valuate different relationships and judge causes and effects</p>	<p>analyse</p> <p>Example: recognize simple relationships between things, e.g. heat and sunshine, or city size and traffic jams // inverse relationships // some things are not related</p> <hr/> <p>Example: changes in environment, influence, connections and hierarchy of ecosystems</p> <hr/> <p>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</p>



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9 Extract new insight from analysis	<p>A: Read what the analysis says</p> <p>B: Combine elements from the analysis to make sense of the outcomes</p> <p>C: Assess the analysis in depth, create new meaning and make links to the bigger picture</p>	produce	<p>Example: understand there are different types of climate</p> <p>Example: realise that climate is changing</p> <p>Example: responding and suggest solutions on climate change</p>
10 Reflect and act with knowledge	<p>A: Recognise the decisions that had to be made</p> <p>B: Judge implications for individuals and society</p> <p>C: Design future actions to stakeholders - including themselves</p>	action: decision making / applying in real world	<p>Example: Use geodata to assess which new road system should the local authority build</p> <p>Example: conclude there will be winners and losers for each road proposal</p> <p>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</p>

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

Competency	K7		K10		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