

What does Ofsted say about GIS?

(Source: *Geography: Learning to make a world of difference*, Ofsted, February 2011, paragraph 56)

For a small number of students, geographical information systems (GIS) were revolutionising and extending their experiences. Visual images from around the world provided via internet links gave immediacy to their learning, and satellite technology brought landscapes to life. Higher-attaining pupils were challenged by being able to overlay data and explore interactive maps to interpret patterns and solve problems. This sixth form lesson illustrates good practice.

The students collected laptops on entry and logged in. In the opening activity the students were shown a photograph of an Indian slum. Google Earth was then used to zoom in and study slums in Mumbai, encouraging the students to discuss whether or not it would be appropriate to make the slums legal. Reference was made to two contrasting less economically developed countries and linked to previous learning. The teacher's questions were challenging, with a strong emphasis on sharpening geographical vocabulary and the skills of interpreting photographs and maps needed for work at AS level. The very effective use of satellite technology for data interpretation engaged all the students. In the final part of the lesson, the teacher referred to the learning objectives and linked them to the next lesson when students would be expected to consider contemporary urbanisation in Britain.

The students' responses showed their detailed understanding and good prior knowledge as a result of a well-planned curriculum. The teacher had very good subject knowledge, taught confidently and challenged and supported individual students. The students' learning at home was used well. As a result, they gained a good understanding of where and how to access different types of satellite images and different types of maps for a range of purposes.

Geographic information systems

(Source: *Ofsted Research review series: geography*, published 17 June 2021)

In a digital age, many of the traditional cartographic skills are now incorporated into digital mapping. It is this mapping that underpins geographic information systems (GIS). A GIS is a framework for capturing, managing and analysing geo-located data that is spatially organised. This technology is now commonplace in our lives. For example, clicking on a digital map brings up information about that place and choropleth maps show the prevalence of a particular issue based on individual data points. However, appreciating the more technical aspects of spatial modelling, geographical query and spatial analysis is knowledge that secondary-aged pupils need to be taught.

GIS is also a useful resource in developing pupils' spatial 'literacy', in helping them navigate locally and globally, and in combining datasets to identify relationships between them.

The curriculum should incorporate opportunities to teach and make use of GIS throughout topics. This contextualises pupils' learning. Although the national curriculum explicitly states that pupils should be taught about GIS in key stage 3, there are systems available that are accessible to primary-aged pupils.

... The move to web-based GIS has removed some of the challenges that teachers used to face with computing hardware in schools. As with locally hosted solutions, the providers are frequently upgrading the interfaces and functionality. This has a knock-on consequence for teachers as, ultimately, the use of GIS in schools and its effectiveness depends on teachers' experience and expertise.

Geographic information systems (GIS) in 2023

(Source: *Ofsted (2023) 'Research and analysis: Getting our bearings: geography subject report'.*)

Main findings

.... Geographic information systems (GIS) were not on most secondary schools' curriculums, despite being part of the national curriculum at this phase.

... Teachers of all phases received very little subject-specific continuing professional development (CPD). The areas where there was the greatest need for this were planning effective fieldwork, using GIS and teaching procedural knowledge.

Recommendations

... Plan procedural knowledge into their curriculum in the same way as they do substantive knowledge, so that pupils make progress in their ability to use different geographical skills. In secondary schools, this should include the use of GIS.

Selecting what to teach

95. GIS continued to be an area of the national curriculum that was rarely being taught in schools. When asked why GIS was not being used more widely, leaders tended to point to time constraints, a lack of access to computers and/or a lack of training. Another reason was the perceived complexity of GIS software. Where GIS software was used well, leaders focused on simple methods for pupils to plot data on a map and use different layers of data to reach conclusions about the spatial distribution of different phenomena.

Resources

146. ... At times, it was difficult to access appropriate IT facilities for GIS, but this was not the main barrier to using it (see 'Professional development').

Professional development

155. The 2 areas where teachers reported needing more CPD were in planning fieldwork and using GIS. Lack of professional knowledge of these areas was a major barrier to improvement.

(Updated March 2024)