

SUBMISSION TO THE 'EXPLORING GEOGRAPHY IN SCHOOLS' STUDY FROM THE
SPATIAL EDUCATION ADVISORY COMMITTEE SEAC OF THE SPATIAL SCIENCE
INSTITUTE

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with SEAC

1. Response to the question of **'factors which affect the current quality of teaching and learning of geography'**.

The SEAC considers that the introduction of spatial technologies such as Geographic Information Systems (GIS) into the teaching of geography in schools is imperative if schools are to deliver relevant, current and meaningful geographical education. There is general agreement amongst educators that the use of spatial technologies in geography teaching is underutilised in schools and does not reflect the pervasive and extensive use of the technology in the community. Spatial technologies enable students to view the world from a variety of angles and perspectives and enable high-level thinking, problem solving and analytical interpretation. Traditional methods of teaching with 'text, talk, chalk and watch' have their place but the armoury of digital spatial technology such as GIS, GPS, the Internet and remote sensing provides a multiplicity of approaches and multiple intelligence aspects to a child's education. Spatial technologies are also the tools for the field and can and should be used to get students out and about exploring the world. As well as socially and vocationally relevant, ICT's such as GIS provide teachers with teaching tools and processes, which have been shown to motivate and engage students in their learning while also empowering them as independent learners. The use of spatial technologies in the teaching of geography is very disparate across Australia and is very much dependent on teacher interest and ICT skills. We have areas of Australia where spatial technology is employed to its maximum potential and the schools using it are providing 'state of the art' geographical education commensurate with best practice overseas. 'Lighthouse' schools such as these are convinced of the benefits of the technology and the associated approaches for geographical learning and subsequent spatial literacy for their students and have been involved in regional efforts to spread the pedagogical word. However across the country we still have many schools (the majority), which are ignorant of the technology or unable to master the learning curve in terms of time, money and resources. Considering the importance of spatial literacy as embodied in the study of geography it is surprising that the issue of the use of spatial technology in the teaching of geography has not been picked up at the system level in the states to ensure that all students are exposed to this important societal tool. This is further a surprise when one considers the skills shortage in the Spatial Industry of the very skills and technology, which can be used and developed in the classroom by the use of spatial technology. The recent SSI report shows that:

"69% of the Spatial Education Industry surveyed indicated that they had vacancies in spatial science related occupations and that these were 'difficult' to fill"

".....the broader spatial information workforce numbers approximately 250,000"

"It is the recognition of the strategic importance of the industry that is driving governments around the world to invest in the skilling of the workforce."

From the SEAC report on The Spatial Information Industry in Australia, May 2007 (available from www.spatialsciences.rog.au)

Considering the vocational and societal reasons for the use of spatial technology in geography teaching it is disconcerting that it has not been embraced more than it has by the educational sector. Regardless of all the industry and social reasons there are strong pedagogical reasons for a system initiative to integrate ICTs such as spatial technologies into geography teaching to improve the learning of students in the area of geographical education and spatial literacy.

2. Response to the question of ‘**fundamentals that every Australian students should know in the subject before they complete Year 10**’.

Of equal importance to what students should know are the questions what students should be able to do and use.

To know:

- *The nature and dynamics of the landscape of the world and the forming factors.*
- *Areas of the world including countries, oceans and cities.*
- *Climatic variations and the reasons why.*
- *The nature and response to extreme events: flood, bushfires, earthquakes etc.*
- *Issues impacting on the environmental, social and economic sustainability of the earth.*
- *The diversity of life on earth in lifestyle, economic and environmental terms.*
- *The nature and dynamics of local and world population.*
- *The nature of biomes and the impact of humans.*
- *How and why cultural and physical features change over time.*
- *The nature of the urban environment and associated issues.*
- *The nature of remote sensing.*
- *The complexities and nature of data acquisition.*
- *How to read and analyse graphs and tables.*
- *How to identify trends, patterns and correlations from visual representations or observations of an area.*

To do

- *Read a topographic map and understand distance units, scale, directions, bearings, and using a legend.*
- *Draw a cartographically relevant map with appropriate scale, legend and directions, sketching, and recording.*
- *Undertake tasks such as surveying and interviewing.*
- *Draw graphs and create tables.*
- *To visualize an area in 3D via the use of contour interpretation and cross sections.*
- *Use field skills such as observation and sampling to collect data.*
- *Perceive and measure distance and space.*
- *Develop a digital representation of an area of the earth via the use of GIS.*
- *Use a GIS representation involving buffering and correlation techniques.*
- *Plot features on a GIS map using GPS.*
- *Capture and interpret photographs of an area.*
- *Interpret and analyse aerial photography, satellite imagery and 3D visualizations.*
- *Develop multiple possible solutions in relation to a geographical issue or problem.*
- *Research, document and analyse primary and secondary data.*

To use

- *A Geographic Information Systems programme to develop a map.*
- *The Internet and books to gather data.*
- *GIS interfaces on the Internet.*
- *A GPS unit.*
- *An atlas.*
- *Virtual earth sites on the Internet.*
- *Aerial photography and satellite imagery.*
- *Topographic maps in hard copy or digital form.*
- *On-line atlas sites and interactive interfaces.*
- *Books, newspapers and journals.*

As the lists above show, spatial technologies are only part of the geography teachers' tools and processes available for classroom delivery. However the total absence of them in many schools teaching geography is something that needs to be addressed if we are to provide quality, up to date geographical education. If the employed geographer/spatial industry worker and community in general use spatial technology in everyday activities, then such technologies should be an important adjunct to the teaching of quality geography in schools. Presently the use of spatial technology in schools is at the whim of the dedicated professional and not an expected component of the delivery of the discipline. It can be strongly argued that the societal exposure and skilling of the population in the area of spatial technology needs to be addressed via the integration of the technology into the nations classrooms.

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