

SPIRAL OF SKILLS 7–10

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Introduction

An all-too-common approach taken by teachers when receiving their allocations for a given year is to focus on developing programs for the topics they are required to teach. However, in Geography there are many tools that need to be embedded when teaching knowledge and skill content descriptors from the syllabus.

In New South Wales, the curriculum separates and identifies map and graph tools that students need to create, interpret and analyse within Stages 4 and 5. Whilst this is helpful, particularly for out-of-field Geography teachers there are two questions to address.

- Which topic is most appropriate to include each type of map or graph in?
- How do those skills that apply to all topics differ in complexity each year?

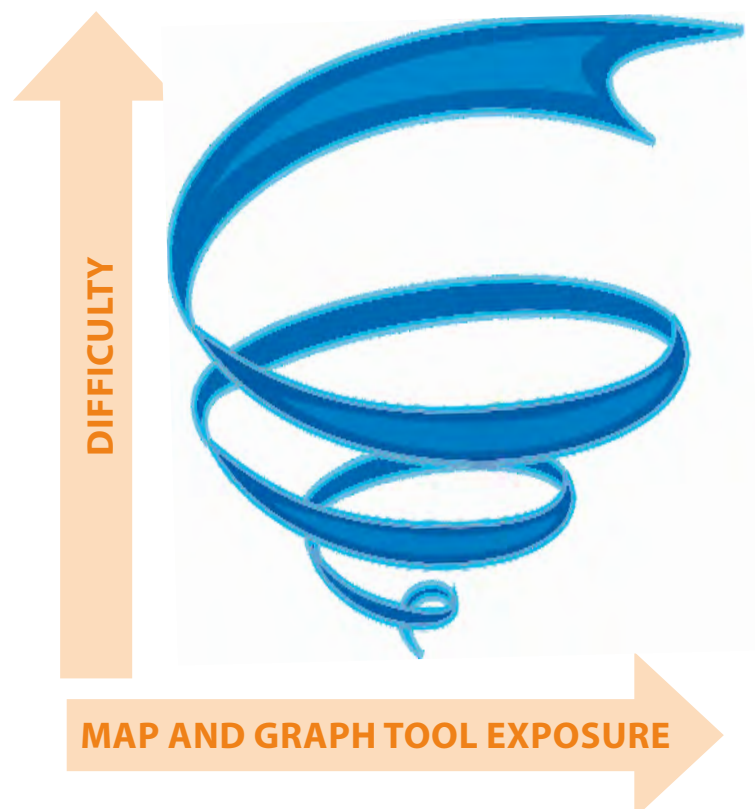
The Foundation

The aim of a 'Spiral of Skills' framework is to ensure that students are taught all the required geographical tools and that skills are appropriately scaffolded throughout the learning journey (see figure 1). Therefore, it is dependent on a department-wide approach to the teaching and learning program. Without this, there is a risk that students will not use all of the different types of maps and graphs within each stage or continue to build upon their existing skills when they have a change in teacher.

Two key principles that underpin this framework are consistency and repetition. By having a department-wide approach on how to teach each skill consistently for each year level, teachers will have an understanding of how their students have been taught previously when taking on a new class. Additionally, this avoids confusion among learners. Careful consideration also needs to go into each learning activity and resource

to ensure that skills are repeated on a continuous basis. This enables students to be able to identify key language associated with each skill and the application of them becomes automatic, ultimately avoiding the need to re-teach the skills as often between year levels.

Figure 1: Aim of a 'Spiral of Skills' framework



1. Matching tools to topics

In order to ensure that all of the required tools are taught, departments need to divide them up to match the topics they best relate to. Consideration also needs to go into the order of topics based upon the complexity of the tools that they focus on. Table 1 below provides an example of how this could look within Stages 4 and 5.

Table 1: An example of how map and graph tools could be matched to Stages 4 and 5 topics.

STAGE 4				STAGE 5			
Place & Liveability	Landforms & Landscapes	Inter-connections	Water in the World	Human Wellbeing	Sustainable Biomes	Changing Places	Environmental Change & Management
Sketch maps Political maps Bar graphs Column graphs	Topographic mapping Pie graphs Line graphs Cultural mapping	Flowline maps Cartograms	Climate graphs Précis map Synoptic charts	Choropleth maps Scatter graphs	Thematic maps Compound column graphs	Population profiles Overlay maps	Relief maps Land-use maps Cross-sections

Although each tool has been linked to a topic, it does not mean that students should only come across them at that point. The emphasis should be on the repeated creation of the specific tool where it has been best aligned. For example, population profiles link to the Human Wellbeing and Changing Places topics. Teaching and learning programs might involve examining case studies where students have to interpret the population structure of different places during the Human Wellbeing topic. However, when they study the Changing Places unit further along in Stage 5, students may use data to create population profiles or vice versa. This approach not only ensures the repetition of tools, but accommodates for elements of the Geographical inquiry skills in the syllabus.

Teaching Advice

It is recommended that Stages 4 and 5 begin with an overview of Geographical skills. This could be done through the completion of a short booklet, which can be used as a base guide as students' progress through each topic. When they come across a tool or skill within the teaching and learning program, instructions could direct them back to this booklet to refresh their understanding.

For Stage 4, this overview could include:

- **Map types:** Sketch, relief, political, topographic, flowline, choropleth, isoline, précis, cartograms and synoptic charts.
- **Map features:** BOLTSS (including different types of scale – line, written and ratio).
- **Types of graphs:** Column, pie, bar, line, climate, compound column and population profiles.
- **Graph features:** SALTS
- **Spatial levels:** Local, regional, national, international and global.
- **Absolute location:** Latitude and longitude.

- **Map analysis:** PQE
- **Map interpretation:** Direction (8-point compass rose), relative location, area references, grid references, altitude, contour lines and intervals, gradient and local relief.

This could be built upon for Stage 5 by adding:

- **Map types:** Thematic maps, land use maps and special-purpose maps.
- **Graph types:** Scatter graphs.
- **Absolute location:** Degrees and minutes of latitude and longitude.
- **Map analysis:** Comparative PQE.
- **Map interpretation:** Direction (16-point compass rose), bearings, aspect and density.

2. Developing a consistent approach (7–10)

Once Geographical tools have been matched to topics, departments should develop a consistent approach of how generalised skills apply to all topics and how they should be taught at each year level. This enables all students within a cohort to be exposed to the same approach, allowing for a smoother learning journey and the building of the skills. Without this, different teachers may expect students to demonstrate a skill in different ways or continuously expect the same level of competency from year seven through to ten, creating confusion and preventing maximum growth.

An example of how to frame questions and activities relating to the application of the PQE method at each year level is shown below. It is recommended that an example is also modelled to students when they complete the first PQE activity for the year. Depending on student ability, this modelling may be needed more frequently.

GEO SKILLS & TOOLS: SPIRAL OF SKILLS 7–10

YEAR 7

Using PQE method, Source 1 and the table below, describe the _____.

P attern An overview sentence explaining the pattern you see.	Guiding Question <i>The pattern of this (name type of map) is that...</i>
Q uantify Specific information to explain the pattern you found (e.g numbers, statistics or sizes).	Guiding Question <i>The evidence to quantify this pattern is...</i>
E xception Something that does not fit the pattern you found.	Guiding Question <i>The exception to this pattern is...</i>

YEAR 8

Using the **PQE** method (**P**attern, **Q**uantify and **E**xception) and Source 1, **describe** the _____.

Don't forget to use the following sentence starters.

- *The **pattern** of this (name type of map) is that...*
- *The evidence to **quantify** this pattern is...*
- *The **exception** to this pattern is...*

YEAR 9

Using the **PQE** method (**P**attern, **Q**uantify and **E**xception) and Source 1, **describe** the distribution of _____.

However, students should be taught and apply more specific vocabulary when identifying the pattern, such as:

- Clustered
- Dispersed
- Linear
- Radial
- Random

YEAR 10

Using Source 1, **describe** the distribution of _____.

Using Sources 1 and 2, **compare** the distribution of _____.

Note: These questions model those asked in Stage 6 where the automatic application of PQE is required when students are asked to describe the distribution of a variable on a map or compare data.

3. Repeating the basics

Repetition is one of the keys to the success of the 'Spiral of Skills' framework. This is because the more students are exposed to various tools and skills, the more likely they are to consolidate their understanding. Some ways that resources and activities could be adapted to achieve repetition include:

Map work

Have students:

- Identify the type of map shown/created.
- Identify the type of scale is used.
- Identify and justify the spatial level of the map.
- Use the scale and compass rose to identify the relative location between two points.
- Apply the relevant features to the map (BOLTSS).
- Analyse the distribution of the data using the PQE method.

Graph work

Have students:

- Identify the graph of map shown/created.
- Apply the relevant features to the graph (SALTS).

Case studies

Have students:

- Use Google Maps to identify the absolute location of the place.
- Use the measurement tool of Google Maps to identify the relative location between the place and the nearest capital city.
- Use the SHEEPT method to analyse the impact of a geographical issue on a place.

Note: This article applies a 'Spiral of Skills' framework to map and graph tools. It can also be applied to other geographical skills, such as fieldwork and use of spatial technologies.

Conclusion

Rather than focusing on the task at hand, look at the bigger picture. Creating and implementing a 'Spiral of Skills' within a school requires staff to work collaboratively as a department, as opposed to individual teaching and learning teams. Whilst this can often present with challenges, such as time constraints, additional workload issues and frequent changes of staff, the benefits far outweigh them. Students are introduced to all Geographical tools, provided with a scaffold to develop their skills and are set up with a strong foundation to achieve success in the senior years of their studies and beyond. Additionally, it can make creating classroom resources and activities easier for teachers, by providing them with clear guidance and consistency as staffing and allotments change each year.

GTA NSW & ACT Support for Teachers and Students



Professional Learning events in Semester 2

- **Online learning courses** – Anytime PL
- **Webinar** – People, Patterns & Processes
- **HSC Exam Prep** – Resource package for members
- **Google Tools in the Geography classroom** – Members only

Online Social Media Support

- **Facebook page**
- **HSC Teachers Group**
- **Primary Teachers Group**
- **Twitter @gtanswact**

Resources

- **Geography Bulletin**
- **Geography Bulletin Guide** (Find any article)
- **Classroom Posters**
- **Scoop.it** media curation site. Topics K–12

Keep up to date with upcoming events.

Visit the GTA website **HERE**