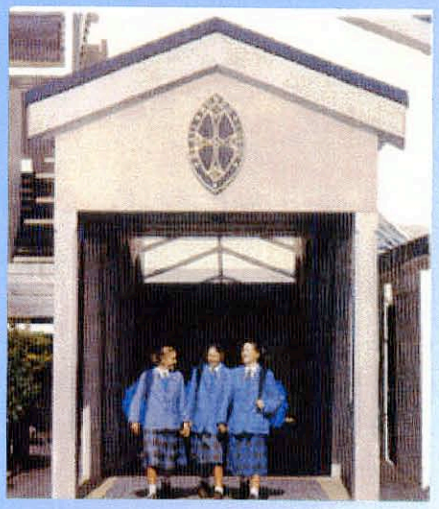
St Hilda's
Collegiate School

Thinking Maps Report 2004



Thinking Maps Report
2004

Christine Gold AP

Contents

1. Rationale

Thinking Maps are a common visual language for learning. They are a set of tools for showing relationships and patterns in information. Students need to think strategically and plan their thinking. Thinking Maps provide a framework in order to better facilitate this. By using Thinking Maps students will be better able to plan answers in assessments, visualise their learning and identify critical areas in information. David Hyerle's Thinking Maps are our first whole school Thinking initiative.

See Appendix 1

2. Professional Development

Chris Gold attended the International Conference on Thinking in January 2002, Auckland.

Gill Hubble (St Cuthberts' College Auckland) delivered two professional development sessions St Hilda's staff on David Hyerle's Thinking Maps.

> Session 1 (6 hours Staff Development Day Septemeber 2003) introduced David Hyerle's Thinking Maps to staff and workshopped their uses and effectiveness in various curriculum areas.
>
> Session 2 (3 hours Staff Development May 2004) reviewed the 8 Thinking Maps, showed staff how they might integrate Thinking Maps into unit planning and introduced some of the research into Thinking and Metacognition.

Chris Gold lead weekly or fortnightly sessions with all teaching staff on Thinking Maps for Tutor Groups at Tuesday noon staff meeting times. Staff shared their experiences with the teaching of and use of Thinking Maps.

See Appendix 2-9

David Hyerle's Toolkit for teaching and using Thinking Maps (multiple copies) was purchased for staff from the Centre for Innovation in Australia.

3. Delivery

Students were introduced to Thinking Maps, in Tutor Groups and Form classes, by their Tutors and Form Teachers.

One map was focussed on at a time.

Every classroom displayed large charts of the 8 Thinking Maps.

Staff taught and used thinking maps in their curriculum areas. Students were encouraged and expected to use Thinking Maps in their classroom learning.

Departmental meetings reviewed which Thinking Maps had been used in individual classrooms and which had been the most useful.

Examples of students' Thinking Maps have been displayed in many classrooms.

4. Evaluations – Student

Students were surveyed in October 2004, n= 336. See appendix 10.
Students were asked four questions:

1. How useful do you think Thinking Maps are?
2. How often have you used Thinking Maps as a student?
3. List the subjects in which you have used Thinking Maps.
4. Which Thinking Maps have you found the most useful?

1. How useful do you think Thinking Maps are?

Student rating	Not very useful	Useful	Very useful
Percentage	39	56	5

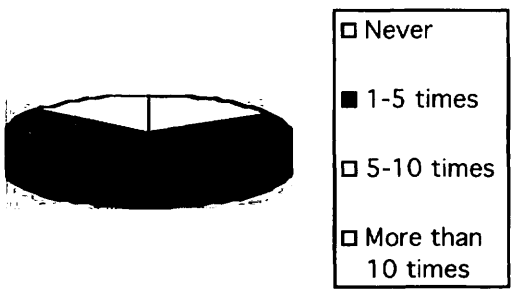
61% of students rated Thinking Maps as useful or very useful

Pie Chart of students' ratings of the usefulness of Thinking Maps

2. How often have you used Thinking Maps as a student?

Student rating	Never	1-5 times	5-10 times	More than 10 times
Percentage	**16**	**67**	**14**	**3**

Pie Chart of how often students used Thinking Maps



3. List the subjects in which you have used Thinking Maps

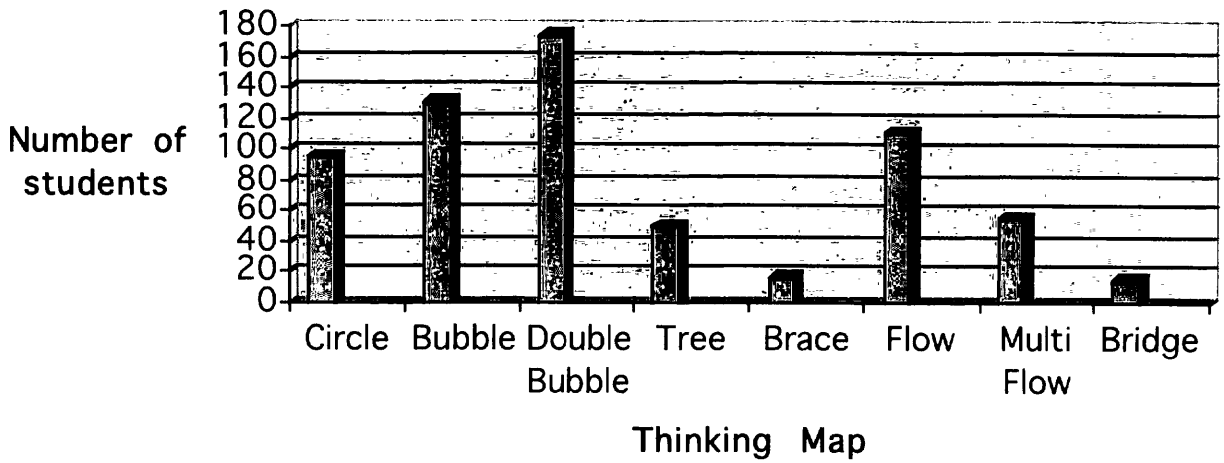
Subjects	Number of students
Accounting	4
Christian Studies	22
Computer Studies	25
Economics	12
English	230
Geography	18
History	6
History of Art	4
Languages	45
Mathematics	70
Media Studies	4
Music	1
Performing Arts	6
Physical Education	9
Sciences	200
Social Studies	93
Skills for Living	11
Technology	21
Visual Art	24

Thinking Maps were most often used by students in English (230 times), the Sciences (200 times), Social Studies (93 times), Mathematics (70 times) and the Languages (45 times).

5. **Which Thinking Maps have you found the most useful?**

Thinking Map	Number most useful
Circle Map	95
Bubble Map	131
Double Bubble Map	174
Tree Map	50
Brace Map	16
Flow Map	111
Multi Flow Map	55
Bridge Map	14

Students' ratings of the Thinking Maps they found the most useful



Students found Double Bubble Maps the most useful, 174 (useful for compare and contrast) problems, then Bubble Maps, 131 (useful for describing qualities) and then Flow Maps, (useful for sequencing).

Evaluations – Staff

Staff were surveyed in November2004, n= 33. See appendix 11.
Staff were asked five questions:

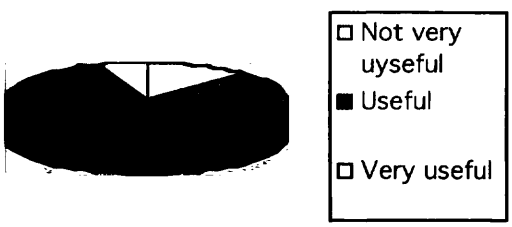
1. How useful do you think Thinking Maps are?
2. How often have you used them as a classroom teacher?
3. Which Thinking Maps have you found the most useful?
4. Which Thinking Maps have you used the most often?
4. Have you used Thinking Maps in assessment?

1. How useful do you think Thinking Maps are?

Staff rating	Not very useful	Useful	Very useful
Percentage	12	79	9

88% of staff rated Thinking Maps as useful or very useful

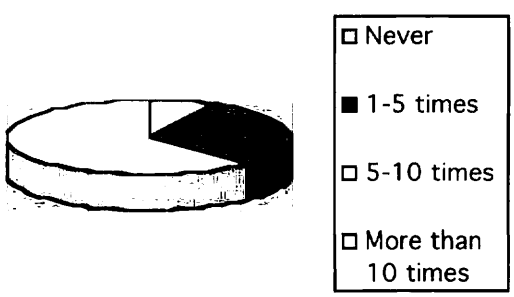
Pie Chart of students' ratings of the usefulness of Thinking Maps



2. How often have you used Thinking Maps as a classroom teacher?

Staff rating	Never	1-5 times	5-10 times	More than 10 times
Percentage	6	24	49	24

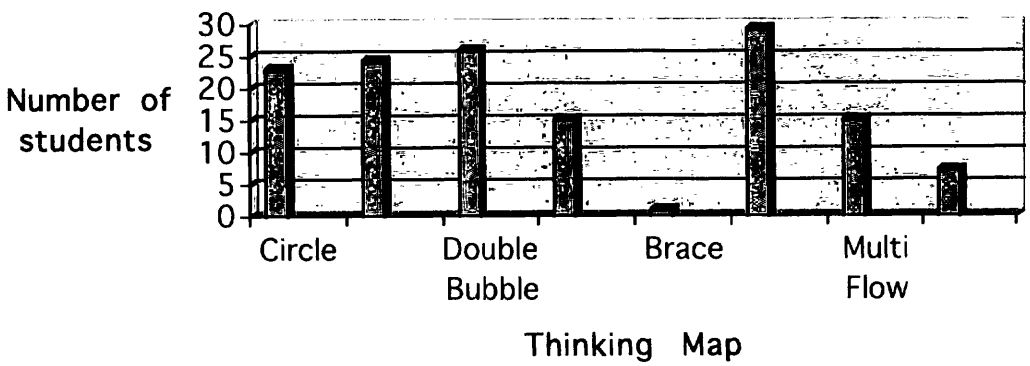
Pie Chart of how often staff used Thinking Maps



3. Which Thinking Maps have you found the most useful?

Thinking Map	Number most useful
Circle Map	23
Bubble Map	24
Double Bubble Map	26
Tree Map	15
Brace Map	1
Flow Map	29
Multi Flow Map	15
Bridge Map	7

Staff ratings of the Thinking Maps they found the most useful

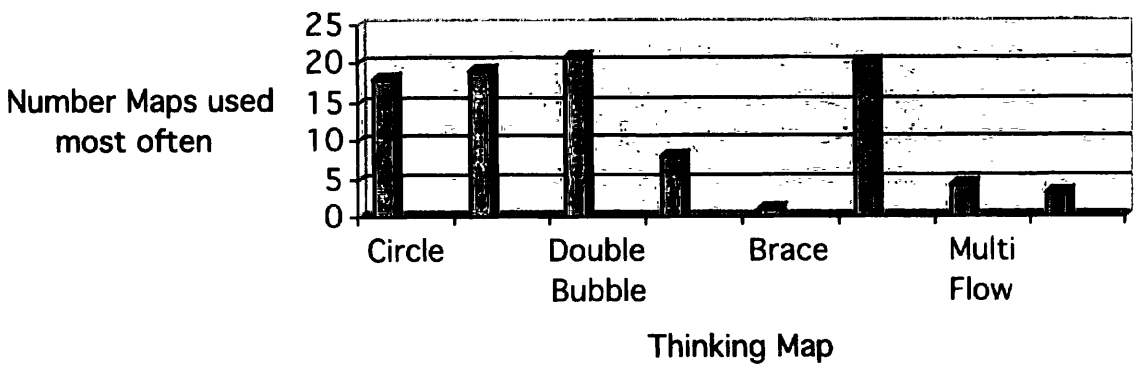


Staff found Flow Maps the most useful, 29 (useful for sequencing) tasks, then Double Bubble Maps, 26 (useful for comparing and contrasting) and then Bubble Maps, 24 (useful for describing qualities).

4. **Which Thinking Maps have you used the most often?**

Thinking Map	Number most useful
Circle Map	18
Bubble Map	19
Double Bubble Map	21
Tree Map	8
Brace Map	1
Flow Map	20
Multi Flow Map	4
Bridge Map	3

Staff ratings of the Thinking Maps they have used the most often



5. **Have you used Thinking Maps in assessment?**

Thinking Maps used in Assessment	% Yes	%No
Staff	42	58

42% of staff surveyed reported that they had used Thinking Maps in assessment. 58% of staff reported they had not used Thinking Maps in assessment. Students need to be using these thinking tools to plan assessment answers.

5 Targets

There were two Thinking Maps Performance Targets for 2004. The outcomes, analysis and evaluations are shown below.

Target 1
That 70% of students surveyed will rate Thinking Maps as useful or very useful
Outcome
A survey was conducted. 61% of students rated Thinking Maps as useful or very useful.
Analysis
All students were surveyed. Some were using Thinking Maps a lot more than others. Given the newness of the Thinking Programme this was considered a good result.
Evaluation
Continue to encourage the use of Thinking Maps. Expectation that staff will use them in learning programmes. English class to teach maps through Year 9 classes.

Target 2
That 70% or more of staff surveyed will rate Thinking Maps as useful or very useful.
Outcome
A survey was conducted of all staff. 88% of staff rated Thinking Maps as useful or very useful.
Analysis
There has been very good staff "buy in" to this initiative. Very good result. Some maps are more suited to some subjects than others. New staff will need to be "upskilled".
Outcome
Staff continue to promote and use Thinking Maps as a useful learning tool in their classrooms.

6. The Future – 2005

In 2005 Thinking Maps will be taught in context in Year 9 English to all the new incoming Year 9 students.

Incoming Year 7 students will be taught the Thinking Maps by Anne Warrington-Blair as part of their core English and Social Studies programme.

All staff are to be encouraged to continue to use Thinking maps with students as part of our Thinking school culture.

A mid year staff meeting to include time to review Thinking Maps with all staff and continue to share best practice.

HOD's to collect data from their department members on use of Thinking Maps in 2005.
Chris Gold has taken an after school session teaching the four new staff the Maps and contexts for their use.

Thinking Maps are alive and well at St Hilda's but need to be constantly used as appropriate.

Appendix 1

Thinking Maps

A common visual language for learning

Thinking maps – A set of tools for showing relationships

Why thinking maps? (ref 1-13)

For teachers:

- For assessing students' prior knowledge
- For teaching content knowledge and facilitating thinking
- For assessing **what** and **how** students have learned

For students:

- For constructing knowledge by forming patterns of information
- For transferring thinking processes to content learning
- For creating final products and promoting metacognition (thinking about thinking)

Key Stages in thinking maps

- Draw your thinking
- Show your thinking
- Map your thinking
- Expand your thinking

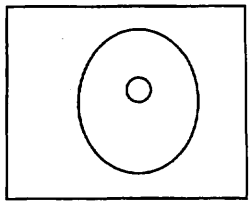
For our initial teaching of Thinking Maps at SHCS we need to:

- Portfolio student work at Tutor/Form times
- Display some student thinking maps on display boards and in classrooms
- Share our map successes and questions with colleagues – best practice sessions
- Assign maps for homework and inform parents about our maps (CG via newsletter, teachers via PT interviews etc as appropriate)
- Follow up map construction with short paragraphs which students write from their maps – double processing
- Look at the resources in section 3 of the manual for transferring thinking maps into the classroom. Suggestions available for reading, writing, social studies, science and mathematics.
- Put up thinking map templates in our classrooms and refer to them often.
- Make thinking visible – 80% of learners in schools are visual learners
- Value and promote thinking maps as strategies that **will** help the students to be more effective learners and strategic thinkers.
- Not teach it as **"something we have to do!"**

Appendix 2

Defining in Context – Circle Map

Key terms: Define, Context, Frame of Reference



How are you defining this thing or idea?
What is the context?
What is your frame of reference?

Put a poster of thinking map on the board

Introduce the thinking skill

Defining in context: Defining something in context by representing it using signs, symbols, or drawings. The centre circle is for the thing you are asked to define and understand. The outside circle is to write or draw any information that puts the thing in context.

Frame of Reference: Looking at what influences, guides or shapes ideas, the personal and cultural experiences, values and belief systems.

Show students an example or model using the map

Students practice using the map

1. Students to draw a circle map or are given one.
2. Students write their name in the centre
3. Within the outside circle, guide students to brainstorm as many ideas that show others who they are: places, books, food, hobbies, television, music, experiences etc.
4. Write names within the frame of reference ie the experiences, people (parents, peers, siblings, teachers), books, movies, and music that influence their lives.

Metacognition: Thinking about Thinking
Share some of your ideas pictures with others- compare circle maps.
Did you notice something new about yourself or others?
Why is it important to look at who is important or influences you?
What would it be like if there were different things in the frame of reference?

Transfer Questions: Where could you use this?
The circle map is designed to be used by students to help with their learning. Where this be useful in our school? Where would it be useful to define and understand an idea? How could you use this?

Appendix 3

Describing Qualities – Bubble Map

Key terms: adjective, describe, qualities, characteristics, attributes

How are you describing this thing?
What adjectives would best describe this thing?

Put a poster of thinking map on the wall

Introduce the thinking skill

Identify: **In the centre circle write the name/thing/topic being described**

Describe: In the outside "bubbles" write in adjectives/ adjective phrases which describe the thing/topic being identified.

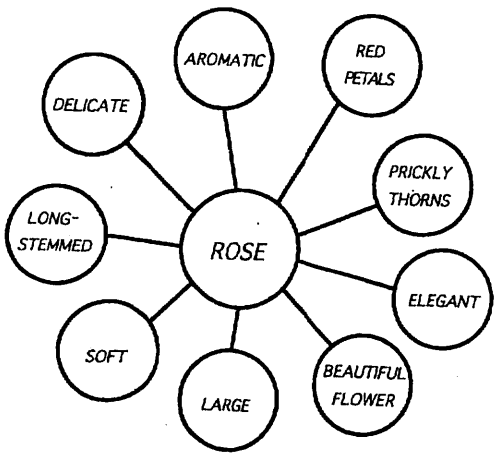
Show students an example or model using the map (examples 1-25, 1-26, 1-27)

Students practice using the map

1. Students draw a bubble map or are given one.
2. Students write "Things I like" in the centre.
3. Bubbles containing adjectives/descriptions of the things students' like are attached like a web to the centre circle.

Metacognition: Thinking about Thinking
Share some of your bubble map descriptions with others- compare bubble maps.
Did you have anything in common with another person?
Did you use your senses, colours, pictures to describe what you like?

Transfer questions. Where could you use this?
See section 3 of your thinking folder.
Enhancing creative writing by focusing on adjectives.
Leading in to compare and contrast questions.



Appendix 4

Comparing and Contrasting – Double Bubble Map

Key terms: Similarities, compare, contrast, differences

What are the two things to be compared/contrasted?
What are the similarities (common qualities) between the two things?
What are the differences (unique qualities) these two things have?

Put up a poster of the thinking map on the board.

Introduce the thinking skill

Comparing and Contrasting: The two larger circles are used to house the two things being compared/ contrasted. They could be things, ideas, people, historical figures, processes, cultures, paintings etc. The bubbles connected to both the larger bubbles contain adjectives, adjective phrases or other terms that are common to the things being compared. The outside bubbles, connected to only one or the other of the 'central bubbles' contain descriptions of unique qualities only found in one or the other of the two things being compared.

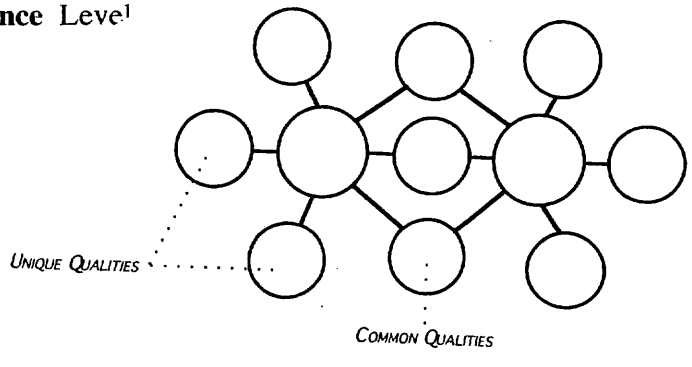
Show students an example or model using the map. Ref p 1-28,1-29, 2-14, 2-15 folder

Students practice using the map

1. Students draw two things to be compared in the 'central' bubbles ie their name and that of a friend or another in the group.
2. Students work together to write down the common qualities they both share in the bubbles that are connected to both.
3. Students write words to describe how they are different. These are connected to only one person.
4. Students draw a frame around the map and write within the frame who and what have influenced the common character traits they have identified.
5. Students then choose a compare/ contrast example from a curriculum area and draw their own double bubble map and share it with the group.

Metacognition: Thinking about Thinking
Sharing double bubble maps with the group.
What sort of things were different? What sort of things were similar?
Write an extended paragraph summarising your comparing and contrasting in your curriculum area. This double processing reinforces learning. Note that this is often asked for as part or **discuss** in excellence questions in NCEA Achievement standards.

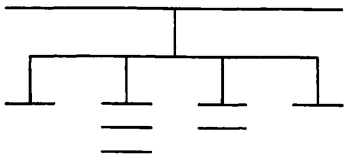
Transfer questions
Practice Achievement Standards at **Excellence** Level



Appendix 5

Classifying – Tree Map

Key terms: Classifying, Sorting, Main idea and supporting details



What sort of thing is this?
What groups/categories does it fit in to?
What other things go into the same group as this thing?
What are the sub-categories or sub groups?
What are the specific members?
Are there things that might go in multiple groups?
What is your point of view (use the frame) for seeing things this way?
Is there any other way to classify this information?

Put up a poster of the thinking map on the board.

Introduce the thinking skill

Classifying: Sorting things into categories or groups and creating new categories, often according to common qualities. Separate the main idea from the supporting ideas or sub categories. What are the members of the sub categories? This could have come from a circle map - brainstorm.

Frame of reference: Why did you classify things in this way? What was your point of view/ stance from which you categorised these ideas? What experiences have influenced your choices?

Show students an example or model of how to use the map
e.g. Mythical characters, 1-32.., 2-18 My favourite things, my wardrobe, animals, foods I eat. Or curriculum examples (later) types of rocks, triangles, characters in a book, natural disasters etc

Students practise using the map

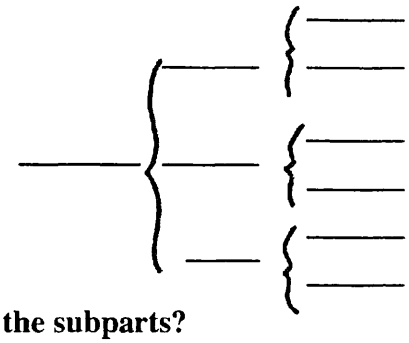
1. Students draw a map or are given one (may start with a brainstorm).
2. Students put the thing/idea/concept they are classifying at the top.
3. Ask the students the questions at the top of the page with reference to what they are classifying.
4. Students draw their tree map.
5. Add a frame of reference.

Metacognition: Thinking about Thinking
Share some of your tree maps within the group.
Could you classify your things in a different way?
Write a draft paragraph about the things that were classified.
Would the map be different with a different frame of reference?

Transfer Questions: Where could you use this?
For organising information; What is the main idea I want to write about? What are the supporting ideas? What are the details for each supporting idea? See 3-14, 3-17, 3-24, 3-30, 3-44, 3-53 etc

Appendix 6

Part-Whole Brace Map



Key terms: Physical Objects, Whole, Parts, Subparts

What is the name of this whole object ?
What are the major physical parts of this object?
What are the subparts or each major part (if any)?
How did you decide what were the major parts and what were the subparts?
What is the object part of?
Is there any other way to see the whole-part relationships of this object?

Put up a poster of this thinking map on the board.

Introduce the thinking skill

Physical objects: Students analyse concrete physical objects in terms of what they are composed of. i.e. the parts and subparts that make up the physical object.

Parts and Subparts: Parts and subparts that make up the whole. Essentially **magnifying** the whole physical object into its component parts and subparts.

Show students an example or model of how to use the map
e.g. Favourite outfit or clothes – what would be the parts? 2-23, parts of the human body 1-37, 3-40, parts of a computer, parts of geometric shapes, continents, a room, a house, an image, their school uniform, etc

Students practise using the map

1. Choose a physical object to "magnify".
2. Put it on a horizontal line at the left of a page or on a template (see over)
3. How many major parts are there in this physical object? Put them on the second horizontal lines.
4. What subparts make up each part? Add them to the map.
5. Draw a frame around the map. Write within the frame what has influenced this whole physical object.

Metacognition: Thinking about Thinking
Share brace maps within the group
Is there a larger part that your object could be a part of?
What would happen if a part or subpart of the whole was not present?
Students practise writing a paragraph using information from their map.

Transfer Questions: Where could you use this?
Parts of an organism, astronomy, electrical circuits, spatial reasoning Mathematics, 3 D objects, scene for a play, components of an image See 3-33, 3-47

Please note: Brace maps and Tree maps are based on fundamentally different thinking processes. The brace map is used for identifying the concrete part-whole physical relationships of an object. The tree map is used for abstract categorization of groups of things.

Appendix 7

Sequencing – Flow Map

Key terms: Sequencing, ordering, steps, stages, substages

What is the name of the entire event or sequence?
What are the stages of each event?
What are the substages of the event?
Is there any way to understand the relationships between the stages and substages?
What larger events might come before or after the event you are investigation?

Put up a poster of this thinking map on the board.

Introduce the thinking skill

Sequencing: The process of identifying relationships between stages and substages of an event. What comes first? What comes last? What comes in the middle? etc

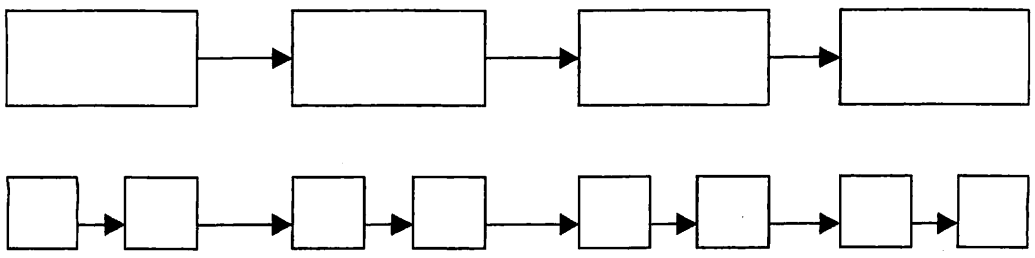
Show students an example or model of how to use the map
e.g.1-41 Writing a newspaper, Organising a school dance, growth of a seed, taking and printing a photograph etc, any kind of **event/process** you choose to use.

Students practise using the map

1. Students choose an event/process to sequence e.g. "My ideal day"
2. Students write this at the top of the long side or a large rectangle.
3. In larger rectangles from left to right students write in the major stages of the event/process.
4. In smaller rectangles below, students write in the substages of each major stage.

Metacognition: Thinking about Thinking
Share flow maps within the group.
Write a draft paragraph about the flow of activities they have drawn.
Draw a flow map of a mathematical computation, put in an error. Can a peer find it?
3-53. Work backwards in your map from the end to the beginning.

Transfer Questions: Where could you use this?
Sequencing the plot of a story 3-7, 3-8, sequence of historical events, order of operations/problem solving in Mathematics, life cycles/processes in science, sequence to produce an image in art (eg printmaking) 1-41, planning an essay (sequencing paragraphs), prioritising events in order of importance 3-4, 3-5, Biochemical processes.



Appendix 8

Cause and Effect – Multi-Flow Map

Key terms: Causes, effects, prediction

Questions
What are the causes and effects of this event?
Which causes relate to which effects?
Which of the causes and effects are the most important?
What are the feedback influences on this system?

Put up a poster of this thinking map on the board.

Introduce the thinking skill
To identify interrelated causes and effects of events/systems.

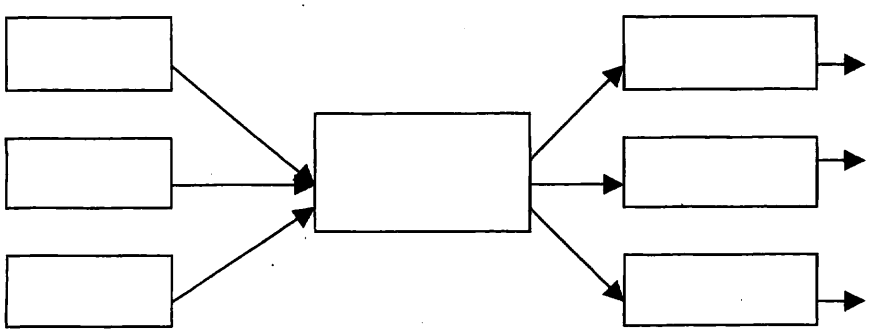
Show students an example or model of how to use the map
e.g. causes and effects of 'fighting' in the school playground 1-45, causes and effects of 'the world has gone black' (PD day), causes and effects of 'not completing homework'. 'Something you want to improve- a goal' 2-31

Students practise using the map

1. Students choose/identify event and write it in the centre box.
2. Build the map by writing the possible causes for the event on the left of the centre box.
3. Add the effects of the event in the boxes to the right of the centre box.

Metacognition: Thinking about Thinking
Share multi-flow maps within the group.
Write a draft paragraph about the flow of events they have drawn.
Add a frame of reference around the map i.e. experiences that have indirectly influenced the map.
If the map is a system are there effects of the system which, in turn, influence initial causes? This circular cause and effect relationship is a feedback loop.

Transfer Questions: Where could you use this?
Analysing historical events 1-45, making predictions (from a flow map) 1-45, causes and effects in literature, predicting outcomes from previous events, organising 'if-then' persuasive writing 3-4, identifying short- and long-term effects for events in History/Geography 3-4, analysing feedback in dynamic systems 3-5, causal relationships in word problems 3-5, causes and effects in problem solving, causes and effects of conflict (historical/actual) 3-24, 'turning point' event for a person, culture, historical event. Analysing biological functions 3-33, Mathematics 3-47



Appendix 9

Seeing Analogies – Bridge Map

Key terms: Analogy, similar relationship, relating factor, simile

Questions
What is the similar relationship (relating factor) between these two relationships?
Is this relationship exactly the same for both pairs of things?
What other pairs of relationships have the same relating factor?
Are the two relationships from within the same content area, or from different fields of study?
From whose frame of reference was this analogy created?
Does this affect the meaning of the analogy?

Put up a poster of this thinking map on the board.

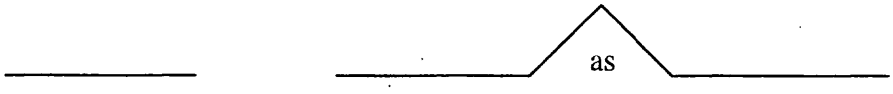
Introduce the thinking skill
Bridge maps are a tool for seeing analogies.

Show students an example or model of how to use the map
Ref 1-49 'Hot is to Fire **as** Cold is to Ice', 'Apple is to Fruit **as** Carrot is to Vegetable', 'Leg is to Body **as** Wheel is to Car', 'Infancy is to Human Adult **as** Larva is to Butterfly'etc

Students practise using the map
On the line on the far left write in the **relating factor** (similar phrase that fits both sides of the analogy).
On the top and bottom of the left side of the bridge, write in the first pair of things that have this relationship.
On the right side of the bridge, write in the second pair of relationships that have the same relating factor.
The line of the bridge represents the relating factor that is "bridged over" from one side of the analogy to the other.

Metacognition: Thinking about Thinking
Can the bridge map be extended using the same relating factor? E.g.1-51
Can a frame of reference be drawn around the map? What could the frame of reference be?
Can a draft paragraph be written from this analogy?

Transfer Questions: Where could you use this?
Typically, analogies are used for testing vocabulary. Use analogies for comparing similar historical relationships, comprehending analogies used by authors, understanding concepts in history by analogy of past to present.3-4, 3-5



Relating factor

Appendix 10

Thinking Maps Evaluation – *Student*

1. **How useful do you think Thinking Maps are:** ***(please tick)***

☐ *Not very useful* ☐ *Useful* ☐ *Very useful*

2. **How often have you used Thinking Maps as a student?** ***(please tick)***

☐ *Never* ☐ *1-5x* ☐ *5-10x* ☐ *More than 10x*

3. **List the subjects in which you have used thinking maps:**

_____

_____

_____

_____

4. **Which thinking maps have you found the most useful?** ***(tick as many as you need)***

Circle map – defining in context ☐

Bubble map – describing qualities ☐

Double Bubble map – comparing and contrasting ☐

Tree map – classifying ☐

Brace map – part/whole ☐

Flow map – sequencing ☐

Multiflow map – cause and effect ☐

Bridge map – seeing analogies ☐

Appendix 11

Thinking Maps Evaluation –

Staff ***- Department***

(Departmental)

1. **How useful do you think Thinking Maps are?** ***(please tick)***

(All staff responses to be recorded)

☐ *Not very useful* ☐ *Useful* ☐ *Very useful*

2. **How often have you used them as a classroom teacher?** ***(please tick)***

(all staff responses to be recorded)

☐ *Never* ☐ *1-5x* ☐ *5-10x* ☐ *More than 10x*

3. **Which Thinking Maps have you found most useful?** ***(tick as many as you need)***

Circle map – defining in context ☐

Bubble map – describing qualities ☐

Double Bubble map – comparing and contrasting ☐

Tree map – classifying ☐

Brace map – part/whole ☐

Flow map – sequencing ☐

Multiflow map – cause and effect ☐

Bridge map – seeing analogies ☐

4. **Which Thinking Maps have you used most often?** ***(tick as many as you need)***

Circle map – defining in context ☐

Bubble map – describing qualities ☐

Double Bubble map – comparing and contrasting ☐

Tree map – classifying ☐

Brace map – part/whole ☐

Flow map – sequencing ☐

Multiflow map – cause and effect ☐

Bridge map – seeing analogies ☐

5. Have you used Thinking Maps in assessment?

☐ *Yes* ☐ *No*