

Higher-Order Thinking and Differentiated Instruction

All Saints College – St. Peter's Campus
March 2016



Presenter: Gerard Alford

Name: _____



My Focus Topic
(Reticular Activating System)

Focus Group/s:
Eg: Year 8 Science

Focus Topic/s:
• Forces



1. What should/could your students enjoy about this topic? e.g. *The topic is interesting and hands-on.*

2. What major content and technical skills will they learn? e.g. *perspective drawings, mapping, scientific method.*

3. What cognitive skills will they learn? (refer p.4) e.g. *Analysing, justifying, creating*

4. What Attitudes and Dispositions and Social skills will be encouraged in this unit? e.g. *empathy, persistence, problem-solving, presentation skills, communication skills, working co-operatively with others.*

Welcome

Teachers are among the most powerful influencers of learning. Through the ways we design and deliver our lessons and interact with our students, we strongly influence which students will learn and how well they will succeed. It is almost impossible to over-estimate the influence of an effective teacher.

The workshop today will focus on how we can be even more effective in our classrooms!

This workshop will focus on:

1. Using Higher-order thinking questions and tasks for Differentiated Instruction (DI)
2. Scaffolding lessons with cognitive and cooperative thinking tools
3. Using these tools in your classroom

However, there are a number of other important areas, such as:

Challenging lessons:

How do we encourage our students to investigate topics in greater depth; from *surface knowledge* to *deep knowledge* and from *foundation thinking* to *higher-order thinking*?

Effective teaching practices:

How do we assist our students to be better critical and creative thinkers? How do we assist our students retain the information and think more deeply about the topic?

Student Feedback:

How do we know our students have 'got it'? How can we give them feedback to improve? How does the student learning influence my lessons?

Supportive Classroom environment:

How do we get students to feel comfortable sharing their thoughts – even if they might be 'wrong'? How can we encourage intellectual risk taking? How do we create a classroom culture where responses which are 'different'; are not only accepted, but honoured?

Why are we going to focus on these areas? Recent research says that these are the areas where teachers have the highest impact on student outcomes (Hattie, 2009).



How do I get the most from this workshop?

Participate:

Involve yourself in the many hands-on exercises. Discuss with your colleagues, share your experiences and major learnings. Time will be regularly set aside for you consider how and where the information from the workshop can be used in your teaching.







Implement and review with a colleague:

There will be lots of practical ideas from the workshop. Try and include them in your teaching as soon as possible. Make a commitment during the workshop to try something new in your teaching and afterwards, discuss it with a colleague.

Review your notes:

Set some time aside in the first two weeks after the workshop to review this workbook. You will have made some great notes and ideas, so revisit it.

Thinking Skills

Task Verb	Related Task Verbs			Thinking Tools	Level	
higher-order thinking skills	CREATE	Compose Improve Predict	Develop Invent Synthesise	Generate Modify	MAS 1:4:P:C:R Image Associated Ideas Word Association Split Y-Chart Y-Chart	 <i>Design</i>
	ARGUE	Debate	Defend	Persuade	PCQ/PCQ Extension Judge Jury	 <i>Judge</i>
	EVALUATE	Appreciate Debate Persuade	Conclude Decide Rank	Criticise Defend Validate	Decision-Making Matrix Elimination Draw Extent Barometer	
	JUSTIFY	Defend	Justify	Prove	Justification Flow Chart Judge Jury	
RECOMMEND	Decide	Determine	Select	Decision-Making Matrix Extent Barometer		
foundation thinking skills	ANALYSE	Break Down	Deconstruct	Differentiate	SWOT Analysis Icon Prompt	 <i>Investigate</i>
	COMPARE	Contrast	Differentiate	Distinguish	Double Bubble Map T-Chart	
	DISCUSS	Investigate	Summarise (complex)		PCQ PCQ extension	
CLASSIFY	Arrange Complete	Categorise Demonstrate	Compile Sort	Fishbone Diagram Flow Chart Silent Card Shuffle	 <i>Apply</i>	
CALCULATE	Find	Prove	Solve	Solution Path		
EXPLAIN	Comprehend	Interpret	Translate	Metaphor Cause-Effect Map POE	 <i>Understand</i>	
DESCRIBE	Identify State	List Summarise (basic)	Outline	Attribute Listing Organiser Concept Map Silent Card Shuffle Y-Chart Split Y-Chart		
REMEMBER	Define List Quote	Find Match Recall	Label Name Recite	Alpha Ladder KWHL Mnemonics and Acronyms Pairs and RAS Alert Rhymes, Music and Flash Cards Silent Card Shuffle Transfer Booklet	 <i>Remember</i>	

4 Steps to Success

Where to start and how to succeed!

1 Identify the Task Verb

On your assessment sheet, look at the task and carefully **scan for a task verb**. It should be something like, 'compare', 'discuss' or 'justify'. If you are unsure what this is, check with your teacher.

As an example, we will focus on the task verb

COMPARE

ASSESSMENT TASK

In this assessment task, you are to compare two mediums of communication, namely radio and television. You are required to write about your ideas in detail ensuring you discuss:

- The advantages and disadvantages for each medium
- Level of popularity and engagement
- Types of information delivered by each
- Their contribution to society

2 Understand the Task Verb

Once you have located the task verb in your assessment sheet, ensure you **know the exact definition** so you know how to tackle your assessment.

COMPARE

means that you look at the way two things are both similar and different.



Investigate

3 Use an appropriate Thinking Tool

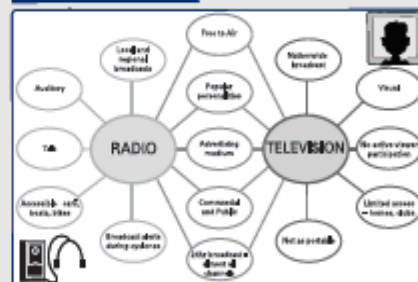
from the Thinking Tools column. This will assist you to organise your research and thoughts and to stay on track.

Topic: Radio and Television

Task: **COMPARE** Radio and Television

Tool: **Double Bubble Map**

DOUBLE BUBBLE MAP



4 Use the appropriate Language

For the verb **COMPARE** use the following:

Sentence Starters

- There are many ways in which...and...are similar
- There are many ways in which...and...are different and these include...
- A very obvious difference between...and...is...
- Whilst there are a few similarities between...and..., there are more differences.

Connectives

- alike, like, just like
- in contrast to
- in spite of this
- differs from
- both
- all cases
- even though
- whilst

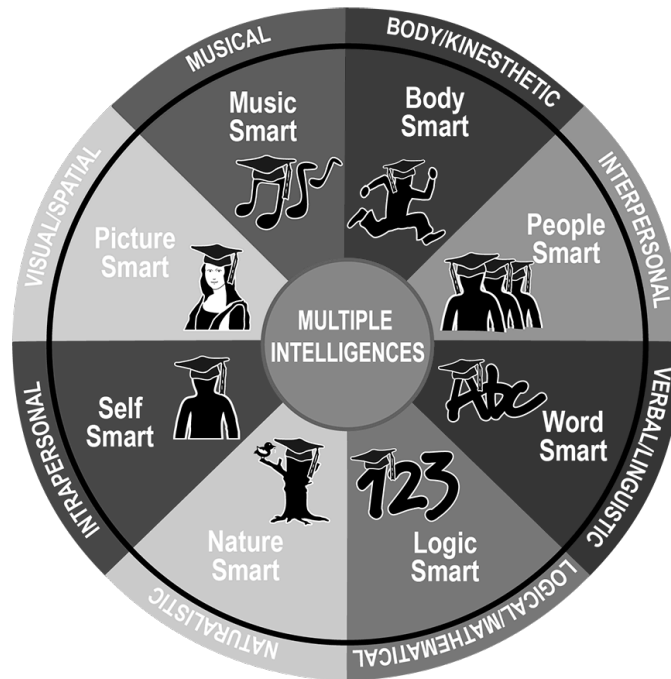
Compare Radio and Television By Sam Jones

There are many ways in which radio and television are similar. Both mediums broadcast to the world at large and therefore have the potential to reach a wide audience. Both require a source of power in order for it to work and in all cases they use radiowaves to broadcast their programs.

A very obvious difference between radio and television is that television presents visual images as well as sound, whilst radio does not have any pictures requiring the listener to formulate their own images.



Catering for the Different Learning Styles of Students

- Gardner's Multiple Intelligences



Gardner's Multiple Intelligence	Double Bubble Map	Silent Card Shuffle	PCQ / Judge Jury		
Visual / Spatial					
Verbal / Linguistic					
Body / Kinesthetic					
Interpersonal					
Intrapersonal					
Naturalistic					
Logical / Mathematical					
Musical					

Find a colleague who...

<p style="text-align: center;">1. Periodic Table</p> <p>knows the 10th element on the periodic table.</p> <p>Name: _____</p> <p>Answer: _____</p>	<p style="text-align: center;">2. Gardner's Multiple Intelligences</p> <p>Can name four (4) of Gardner's Multiple Intelligences</p> <p>Name: _____</p> <p>Answer: _____</p>
<p style="text-align: center;">3. Task Verb: <i>Argue</i></p> <p>knows a good definition for the task verb, <i>Argue</i>, that students would clearly understand.</p> <p>Name: _____</p> <p>Answer: _____</p>	<p style="text-align: center;">4. Card Shark!</p> <p>is a good at shuffling cards.</p> <p>Name: _____</p> 
<p style="text-align: center;">5. All Saints College</p> <p>Can state the All Saints College, St. Peter's Campus motto?</p> <p>Name: _____</p> <p>Answer: _____</p>	<p style="text-align: center;">6. Compare and Contrast</p> <p>knows the difference between the task verbs, <i>compare</i> and <i>contrast</i>.</p> <p>Name: _____</p> 
<p style="text-align: center;">7. Teaching!</p> <p>Can explain why they thought teaching was the career path for them.</p> <p>Name: _____</p>	<p style="text-align: center;">8. College Theme for 2016</p> <p>Can name the College theme for 2016.</p> <p>Hint: Based on Pope Francis' special Jubilee Year of Mercy</p> <p>Name: _____</p> <p>Answer: _____</p> <p>_____</p>

World Record: 3 min: 41 sec

Reflection

(Why is this useful? How does it promote learning, engagement and discussion?
How does it address certain outcomes, skills and competencies?)

Transfer Application



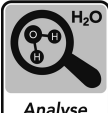
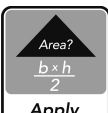


Find a student who knows.....

<p>1. _____</p> <hr/> <hr/> <hr/>	<p>2. _____</p> <hr/> <hr/> <hr/>
<p>3. _____</p> <hr/> <hr/> <hr/>	<p>4. _____</p> <hr/> <hr/> <hr/>
<p>5. _____</p> <hr/> <hr/> <hr/>	<p>6. _____</p> <hr/> <hr/> <hr/>
<p>7. _____</p> <hr/> <hr/> <hr/>	<p>8. _____</p> <hr/> <hr/> <hr/>

World Record: _____

Lesson Design 1: Six Thinking Levels

6 x possible questions. Topic/Lesson:

Level	WHAT – the question/activity/task	HOW - tool
 <p>Design</p> <p><i>acting like an inventor, experiencing 'light bulb' moments to generate new products, ideas....</i></p>		
 <p>Evaluate</p> <p><i>acting like the scales of justice to 'weigh-up' the evidence to make and justify a decision.</i></p>		
 <p>Analyse</p> <p><i>acting like a magnifying glass, examining and breaking up an issue into its component parts</i></p>		
 <p>Apply</p> <p><i>acting to apply new skills, rules and concepts– to related and new situations</i></p>		
 <p>Understand</p> <p><i>acting like an expert, understanding words, concepts, cause-effect and 'reasons for'</i></p>		
 <p>Remember</p> <p><i>acting like an internet database where one finds information, facts, data</i></p>		

SOLO Taxonomy – Structure of the Observed Learning Outcome

4 x possible questions. Topic/Lesson:

Level	WHAT – the question/activity/task	HOW - tool
Uni-structural (One Idea) <ul style="list-style-type: none"> • Recall • Identify • Simple procedure 	<i>e.g. Name the capital city of Australia?</i>	
Multi-structural (Many ideas) <ul style="list-style-type: none"> • Describe • List • Combine • Algorithms 	<i>e.g. Explain the major reasons why Canberra was selected as Australia's capital city.</i>	
Relational (Relate) <ul style="list-style-type: none"> • Compare • Contrast • Analyse • Relate • Apply 	<i>E.g. Compare Canberra with another planned capital city, such as Islamabad or Washington</i>	
Extended Abstract (Extend) <ul style="list-style-type: none"> • Theorise • Generalise • Hypothesise • Reflect 	<i>E.g. Argue whether Canberra should remain the capital of Australia</i>	

1. Task Verb: Compare



Related Verbs:

Contrast, Differentiate, Distinguish

What does this mean?

Compare means that you look at the way two things are both similar and different.
 Contrast means that you examine only the differences.

Compare: relevant language

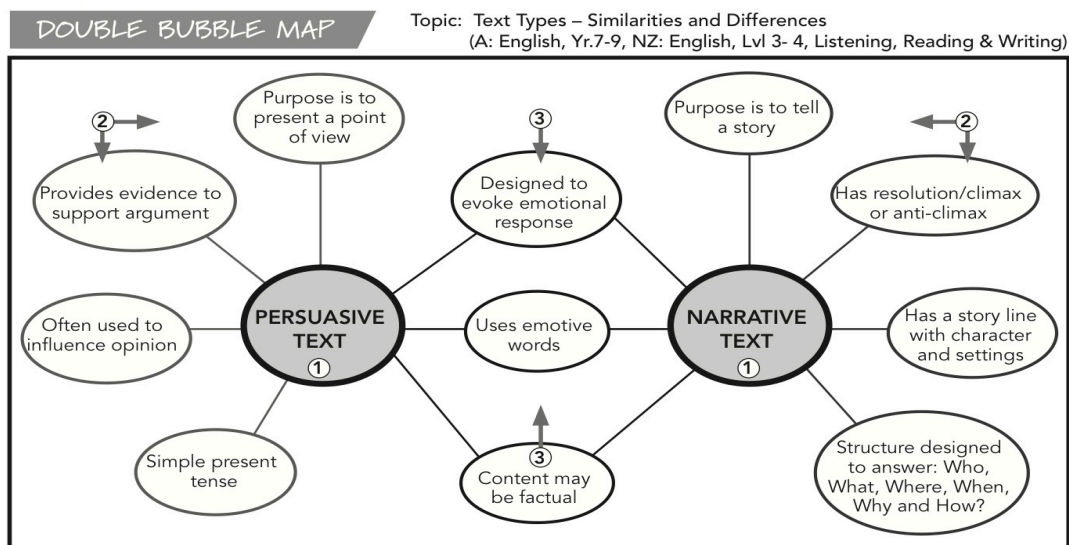
Sentence Starters

- There are many ways in which...and...are similar
- There are many ways in which...and...are different and these include...
- A very obvious difference between...and...is...
- Whilst there are a few similarities between.... and..., there are more differences.
- Whilst...and...appear quite similar, they are, in fact quite different.
- Another feature that the two...have in common is...

Connectives

- alike, like, just like
- in contrast to
- in spite of this
- differs from
- both
- all cases
- even though
- in the same way
- on the contrary

Compare: Thinking Tool – Double Bubble Map



Step 1: Name Objects

Name the two objects or concepts to be compared, one in each bubble.

Step 2: Contrast

In the outer bubbles, enter attributes of each object, subject or proposal under review – those that indicate differences from one another.

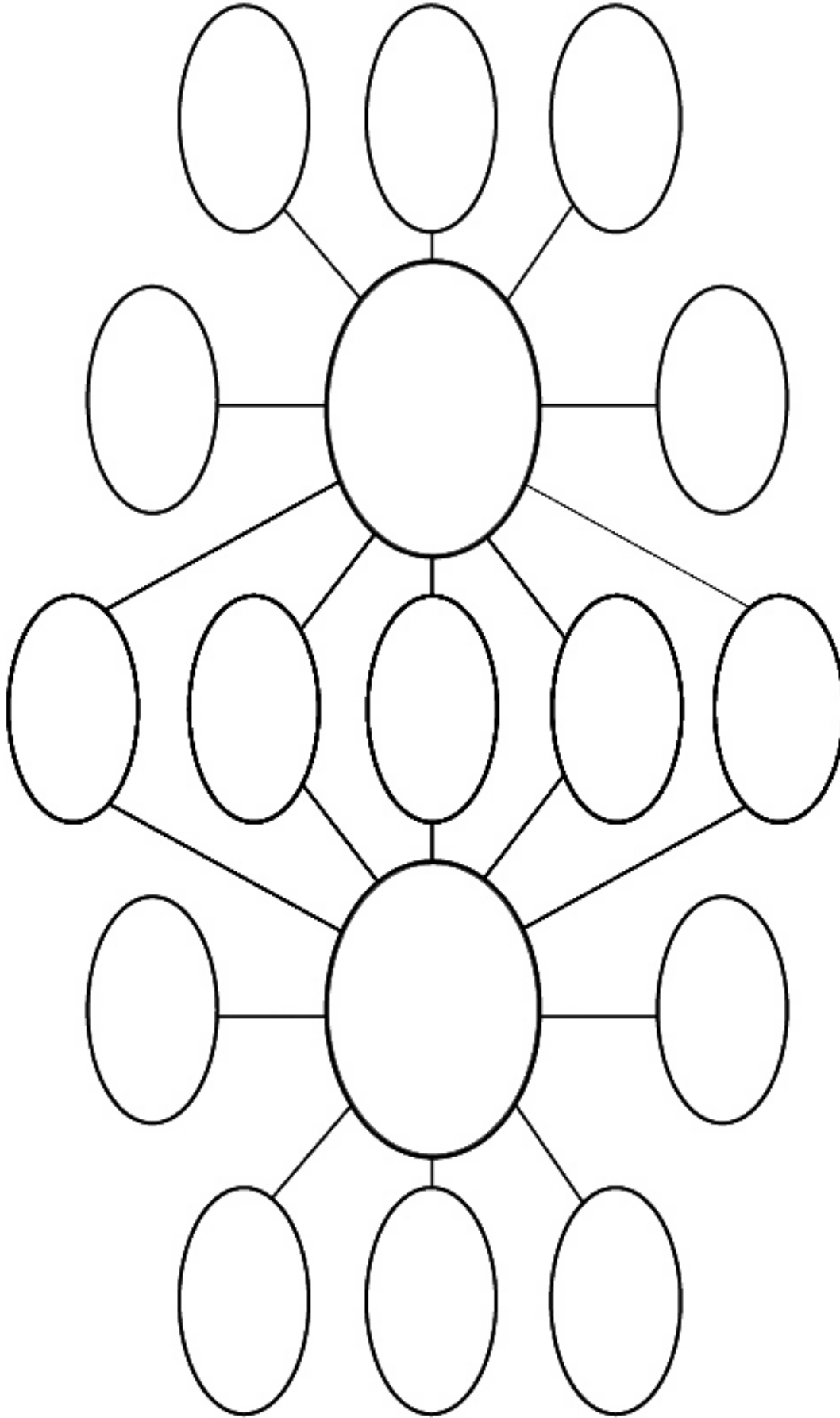
Step 3: Compare

In the inner bubbles, enter similar characteristics for the objects, subjects or proposals under review.

Step 4: Apply Filters

To ensure that there is sufficient depth to the responses, apply filters.

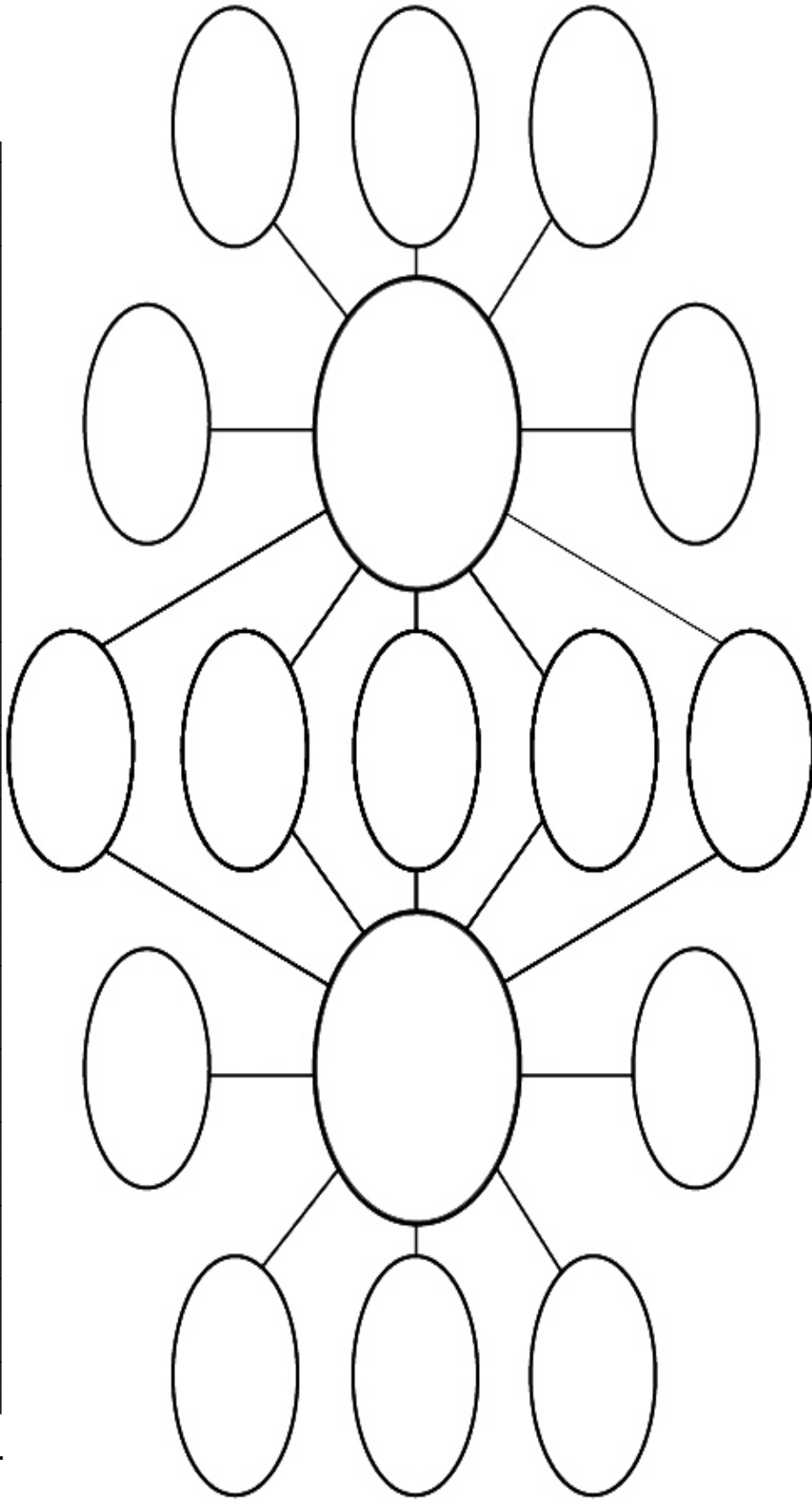
My Topic:



My Filters: • F1 = _____ • F2 = _____ • F3 = _____
Topic/Filters Example: Compare and contrast SOLIALISM and COMMUNISM • F1 = Political/Constitutional • F2 = Economic • F3 = Level of Democracy

Double Bubble Map – Reflection & Transfer

My Topic: _____



My Filters: • F1 = _____ • F2 = _____ • F3 = _____

Topic/Filters Example: Compare and contrast SOLIALISM and COMMUNISM • F1 = Political/Constitutional • F2 = Economic • F3 = Level of Democracy

Reflection _____

Transfer _____

How? **Silent Card Shuffle** ()









(No talking — let your fingers do the talking)

Engaging the learner through different levels of thinking

Process for Silent Card Shuffle	Applications
Step 1 Silent Card Shuffle	1. Sequencing e.g. The historical order of events (timeline), chronological order (a novel) or the order of a procedure (such as in mathematical problem-solving, construction) 2. Classifying 3. Match, e.g. Concepts and Definitions (NB: 3 or 4 more definitions than concepts) 4. Place, Map, Position (map, invoice, template, plan, human body, formula, etc)
Step 2 Justify and Improve	
* Step 3 Circle and Observe/Discuss	
* Step 4 Return and Refine	
Step 5 Teacher debrief – direct instruction	
* = Optional	

Example:

Properties of Quadrilaterals					
Trapezium	Parallelogram	Rectangle	Rhombus	Square	Kite
					
Only 1 pair of parallel sides	Opposite sides are parallel	Opposite sides are parallel	Opposite sides are parallel	Opposite sides are parallel	No sides are usually parallel
Diagonals may not be equal	Opposite sides are equal	Opposite sides are equal	All sides are equal	All sides are equal	Two pairs of adjacent sides are equal
	Opposite angles are equal	All angles equal 90°	Opposite angles are equal	All angles equal 90°	One pair of opposite angles are equal
	Diagonals may not be equal	Diagonals are equal	Diagonals may not be equal	Diagonals are equal	Diagonals cross each other at right angles with one diagonal being bisected
	Diagonals bisect each other	Diagonals bisect each other	Diagonals bisect each other at right angles	Diagonals bisect each other at right angles	Is also a square
		Is also a parallelogram	Opposite sides are parallel	Is also a parallelogram	Is also a rhombus
			Is also a parallelogram	Is also a rectangle	
			Is also a kite	Is also a rhombus	
				Is also a kite	

Additional Notes and Observations

We can become complacent about the way we always do things. The Silent Card Shuffle may sometimes challenge this thinking by looking at other sequences or classifications.

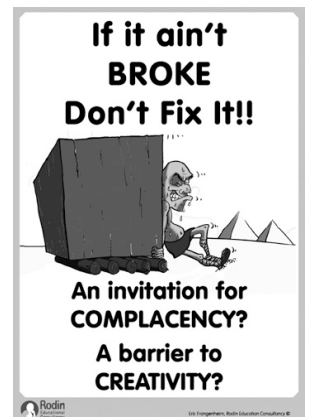
Example:

Sorting Biographies: Who Am I? (English/SOSE/General)

Students work in groups of four to research information about a Young Australian of the Year Award winner. Each group creates a set of 5 cards for their chosen award winner with key biographical information e.g. name, age, gender, where they live, reason for award and so on.

Copy the card sets from each group and combine these to make four to five larger sets incorporating the 20–25 cards with all the information about the young award winners selected for study. Groups then conduct a **Silent Card Shuffle** to sort the cards out by matching the information and characteristics on each card to one of the Young Australians of the Year.

'innovative teachers' companion – 2012' (Secondary, p155)



SILENT CARD SHUFFLE

Reflection (Why is this useful? How does it promote learning, engagement and discussion? How does it assist with Differentiated Instruction?)

Transfer Application (What questions, activities, assessment items can I design using this tool/skill/process?)

e.g. 1. Sequence a maths/science solution or process. 2. Classify parts of speech. 3. Classifying major areas and associated parts of the human body, a computer or car.

Topic:

Type: Classify / Sequence / Matching (e.g. Terms / Positioning

Topic:

Type: Classify / Sequence / Matching (e.g. Terms / Positioning)



2. Task Verb: Argue

Related Verbs:

Persuade, Debate, Defend, Argue For, Argue Against, Break Down, Justify

What does this mean?

To argue means that you present one or more sides of an issue. Generally you then form your own opinion on the issue and use persuasive techniques to convince others that your opinion is the correct one.

Argue: relevant language

Sentence Starters

- There is a great deal of evidence to suggest that...
- Whilst many would argue that ...
- ...might object to this because...
- Despite this though, ...
- It is necessary to consider...
- Another reason for...

Connectives

- especially
- in addition to
- therefore
- because
- admittedly
- nevertheless

Argue: Thinking Tool – PCQ and Extended PCQ

PCQ – General

PCQ – General			Topic: Discuss and Assess This Narrative (English)		
①	😊 Pros	②	☹ Cons	③	🤔 Questions
↓		↓		↓	
•		•		•	
•		•		•	

Step 1: P = Pros

Enter all the pros, advantages, positives, good points here.

Step 2: C = Cons

Enter all the Cons, disadvantages, negatives, weak points, problems, difficulties, etc. here.

Step 3: Q = Questions

Enter all the questions, “What if...?”, “I wonder...?”, “It would be interesting to know whether...”, possibilities, unusual questions, insights here.

Extended PCQ

This takes the analysis further and deeper by using Perspectives, criteria, special points of interest and is done after the general PCQ.

Add a fourth column header: Perspectives or Points of View.

PCQ - Extension Topic: Discuss and Assess This Narrative (English)

Para	④ Perspectives	⑤ 😊 Pros	⑤ ☹️ Cons	⑤ 🤔 Questions	Extent Barometer
1	Audience				⑦
2	Text Structure				
3	Ideas				
4	Character/Setting				
5	Vocabulary				
6	Punctuation/Spelling				
7	Sentence Structure				

100 Very High
 75 Fairly High
 50 Medium
 25 Low
 0 None at all

Overall Extent Barometer

Step 4: Perspectives

The teacher offers several perspectives to be entered below each other. Allow students the opportunity to include some of their own perspectives.

Step 5: Other entries

In each cell, enter 2 more Pros, Cons or Questions, but do not repeat what has been entered in the PCQ Analysis above.

Step 6: Consolidate

Move as many of the ideas as possible from the general PCQ to one of the Perspectives. Any remaining material could be placed in a new Perspective.

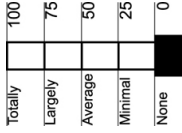
Step 7: Extent Barometer

An extra column can be added for an Extent Barometer (p.212) enabling assessment, judgement or evaluation of each entry or perspective.

PCQ EXTENSION

Reflection (Why is this useful? How does it promote learning, engagement and discussion?
How does it assist with Differentiated Instruction?)

Transfer Application (What questions, activities, assessment items can I design using this tool/skill/process?
e.g. De-sexing of pets (Perspectives could be pet owners, vets, RSPCA, town councils, wildlife, pets)



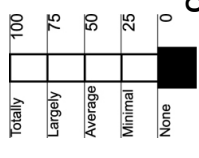
Overall Decision

PCQ Extension

Topic:

	Perspectives	Pros	Cons	Questions	Assess
					<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
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PCQ Extension



Topic: Assessment:

Overall Decision

	Perspectives	Pros	Cons	Improvements	Assess
					<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
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Judge Jury

This is a co-operative learning strategy that involves students arguing a case on a debatable issue in the setting of a court. It requires two students to analyse the issue from opposite perspectives and then prepare and present their opposing cases. A third student listens and evaluates both viewpoints and delivers his/her verdict.

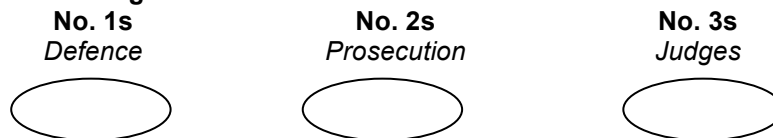


Step 1 **The Topic:** A debatable issue is chosen by the teacher, such as 'Drugs in sport are inevitable, so should be allowed'.

Step 2 **The Roles:** Assign a number to each student, being 1, 2 or 3. If there is a shortage of numbers, the teacher could either fill in the numbers, or assign the remaining students as number 3s.

- The number 1s present a 90 second argument FOR the topic (The Defence)
- The number 2s present a 90 second argument AGAINST the topic (The Prosecution)
- The number 3s decide the outcome of the case and present their verdict. (The Judge & Jury)

Step 3 **Research and Planning**



- a. The students individually research/prepare their case.
- b. The number 1s ('defence counsellors') meet in groups of 3–5 to prepare their case.
- c. The number 2s ('the prosecution') meet separately in groups of 3–5 to prepare their case.
- d. The 'Judges' meet to discuss the main points of the case, to anticipate the points of the defence and the prosecution and to develop criteria for deciding the case.

Step 4 **The Court Hearing**

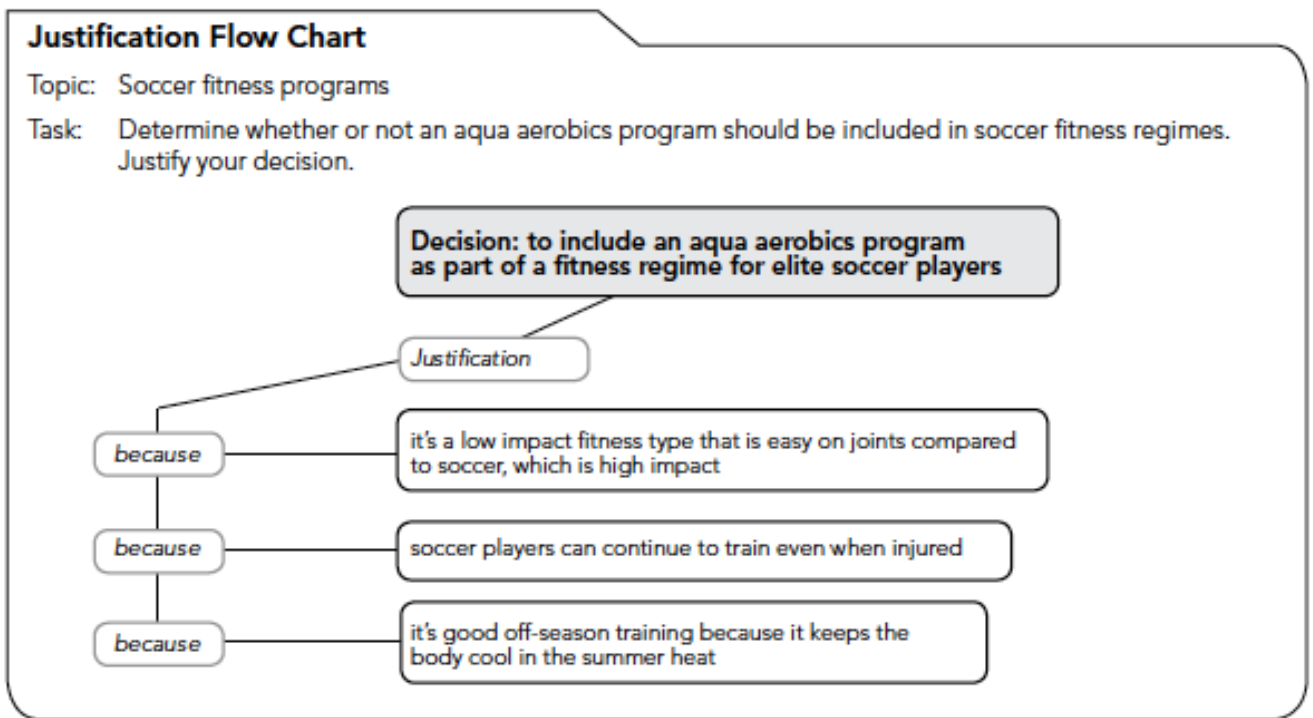
- a. The number 1s are allowed 90 seconds to present the defence's case to the Judge. After allowing time for the judges to make some notes, a 90 second argument is presented by the prosecution. Note: To foster a courtroom atmosphere, ask both parties to refer to the Judge as 'Your Honour'.
- b. Again, after allowing time for the judges to make some notes, the number 1s are allowed a 30 second right of reply.
- c. The Judges are allowed 1 minute to complete their judgement and then present their findings one by one to the class. The judges may begin their address with "After considering the views of the defence and the prosecution, I find in favour of..."
The judges must then justify their decision by evaluating the arguments of the defence and the prosecution.
- d. A master of the arguments for and against may be recorded on the whiteboard during the judgements for students to record in their notebooks.

Students tend to respond well to the courtroom context and being allowed the time to prepare their speech in a group before delivering it individually, which some could otherwise find quite threatening. This strategy tends to generate a lot of energy as there is a lot of movement and activity occurring. Therefore, it is a great afternoon activity.

Reflection (Why is this useful? How does it promote learning, engagement and discussion?
How does it assist with Differentiated Instruction?)

Transfer

Thinking Tool: Justification Flow Chart



Topic: Flipped Classroom or Flipped Learning

Task: Determine whether or not our school should adopt more flipped classroom / learning. Justify your decision.

Decision: _____

Justification:

<i>because</i>	
<i>because</i>	
<i>because</i>	



3. Task Verb: Recommend

Related Verbs: Decide, Defend, Determine, Prove, Verify, Account for

What does this mean?

Recommend means to suggest that others consider a course of action. You will need to provide reasons in favour of the suggestion. Often these reasons will be the results/findings of an investigation.

Recommend: relevant language

Sentence Starters

- It would appear reasonable to conclude that...and therefore recommend...
- It is further recommended that...
- In the light of the problem of..., it is necessary to...
- One of the problems associated with...
- Therefore, it is recommended that...
- The sensible option is to...

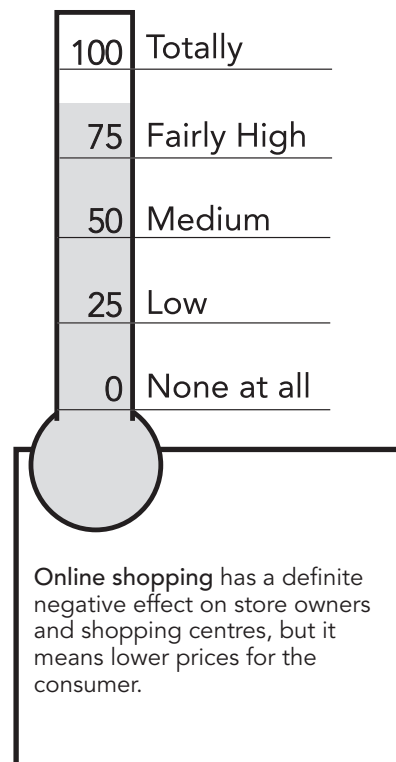
Connectives

- therefore
- and this
- to enable
- all things considered
- especially
- will achieve

Recommend: Thinking Tool – Extent Barometer

Topic: To what extent is online shopping good practice?

Perspectives	Data	Rating
Store Owners	<ul style="list-style-type: none"> • Losing sales to internet orders • Same rent or building costs to be paid, even though sales declining • Loss of livelihood • Staff layoffs • Store owners could modify their own business to have an online presence 	
Shopping Centres	<ul style="list-style-type: none"> • As businesses close down shopping centres lose rent and income • As store owners move their businesses online there are fewer companies wanting to move into the empty rental space • Rent goes up for those businesses that want to keep their retail presence 	
Shoppers	<ul style="list-style-type: none"> • Choose online due to the wider variety of goods • Access to products and services from a variety of countries • Delivered to door and therefore convenient 	
Cost	<ul style="list-style-type: none"> • Products and services almost always cheaper online • Store owners have larger overheads and can't lower prices sufficiently in order to compete 	

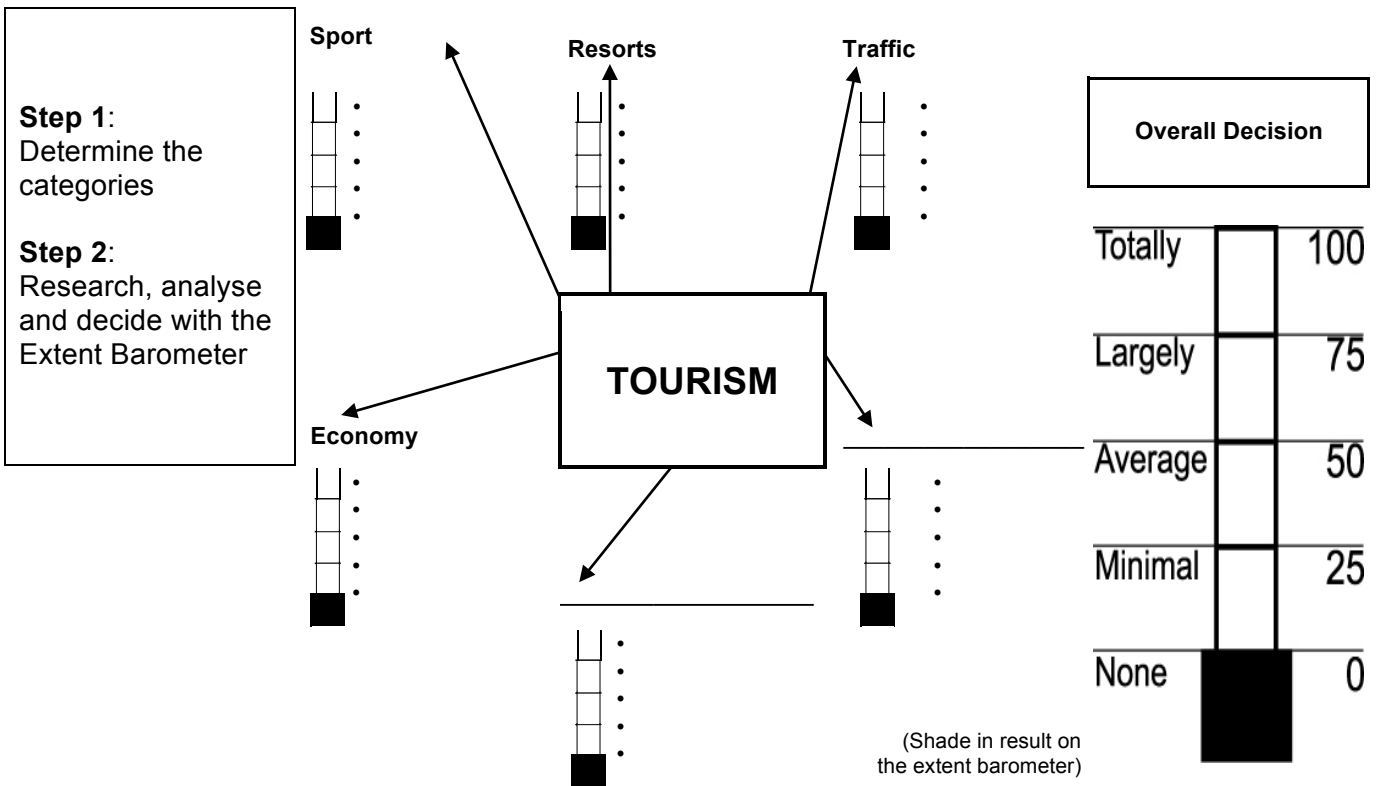
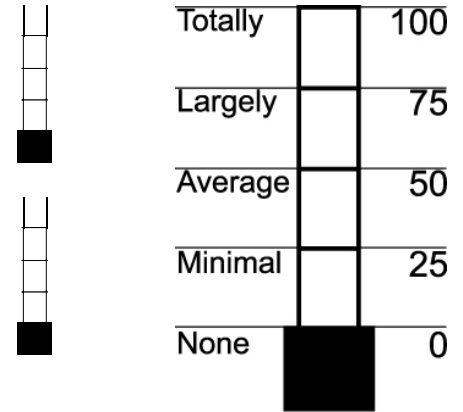


How? Extent Barometer (How Much)

Recommend whether.... _____

e.g.1: Determine the extent that was Friar Lawrence responsible for deaths of Romeo & Juliet?

e.g.3: Determine the extent that we are positively affected by **TOURISM**

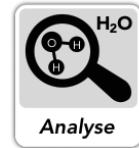


- Value Add by:**
- a) Teacher only to offer a few categories. Students are invited to nominate other categories and conduct the research. Students work independently.
 - b) Students now work in pairs, 3s or 4s and collate their data. Then they refine the final decision.
 - c) Groups report back.

EXTENT BAROMETER

Reflection

4. Task Verb: Analyse



Related Verbs:

Break Down, Deconstruct, Differentiate

What does this mean?

Analyse means closely examining the parts of something in detail and discussing the relationship of the parts to each other and the whole. We usually analyse something in order to understand it more deeply. This often leads to evaluation, where we can then make a decision or judgement about the topic, based on the analysis.

Analyse: relevant language

Sentence Starters

- The issue of ... can be viewed from several different perspectives.
- There is a strong connection between.. and ...
- If ... then ...
- There would be less need for ...
- ... is composed of/combines with...
- There is a relationship / no relationship between ... and ...

Connectives

- although
- on the other hand
- especially
- and this would be
- therefore
- however
- would increase / decrease

Analysis: Thinking Tool – SWOT Analysis

Topic: Swatting Flies – Should We Remove Flies from the Planet Forever?
(Science, Yr.7: ACSSU112)



<p>Strengths</p> <ul style="list-style-type: none"> • We will not have to put up with these little 'beasties' flying around near us. • Reduced consumption of insecticides. • Decreased incidence in the spread of germs. • Spider populations may drop in numbers as a vital part of their diet is affected. • No longer a need for a fly swatter 	<p>Weaknesses</p> <ul style="list-style-type: none"> • 'No flies' may cause a ripple effect up the food chain, e.g. competition for another source of 'insect' food may cause species further up the food chain to suffer. • Other organisms that rely on a diet of flies may not have enough food to survive.
<p>Opportunities (Positive influences)</p> <ul style="list-style-type: none"> • With no flies around the home, most people will feel that the spread of germs and diseases will be reduced. • In some parts of the world, people may not have to wear elaborate headgear to avoid contact with flies. • Tourists who visit Australia's outback would be enthused about not encountering any flies. 	<p>Threats (Negative influences)</p> <ul style="list-style-type: none"> • With flies out of the way, other flying insects may have their populations affected, e.g. mosquitoes that once competed for food, space and habitat may breed into plague proportions. • Insects like lady bugs may reduce in numbers significantly as 'fly predators' seek out alternative diet options.
<p>Action 1: Based on your SWOT Analysis, create a presentation using Prezi (http://prezi.com/).</p> <p>Action 2: Create a website that strongly supports your opinion. Use Yola (www.yola.com) to easily create and publish a professional looking website within minutes!</p>	

Activity 8: SWOT – analysing a proposal, person, entity or idea

My Topic: _____

Strengths	Weaknesses
Opportunities	Threats
Action 1:	
Action 2:	

SWOT Analysis

Reflection (Why is this useful? How does it promote learning, engagement and discussion?
How does it address certain outcomes, skills and competencies?)

Transfer (What questions, activities, assessment items can I design using this tool/skill/process?) e.g. 1. Which one was more effective, the book or the film? 2. Which is the better method for solving this problem, 'A' or 'B'?



5. Task Verb: Evaluate

Related Verbs: Assess, Appreciate, Conclude, Consider, Criticise, Decide, Judge, Rank, Validate

What does this mean?

To evaluate means to consider something or someone and make a judgement of value or worth. Usually this is supported with evidence.

Evaluate: relevant language (Senior)

Sentence Starters

- ...it is necessary to consider the advantages and disadvantages of ...
- The appeal of ... is that the ...
- It is worth considering that ...
- ...has the most impact on ...
- Some claim that ...
- The worst feature of ... is ...

Connectives

- although
- however
- because of this
- In spite of/despite this
- In other respects
- whereas

Evaluate: relevant language (Lower Secondary)

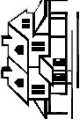

Sentence Starters

- The ... most important qualities/things of ... are ...
- We thought that ... was the least important because ...
- Another good thing about ... was/is ...
- I/we also decided that ...
- ... was/is more important than ...
- ... is better, because ...
- The best/worst thing about ... was/is ...
- To improve ..., I would need to ...
- Overall, ... is the most important quality of/thing about ...

Connectives

- even when/if
- although
- because
- better/worse
- greater/fewer
- more/less
- but

Decide: Thinking Tool – Decision-Making Matrix

<p>Topic: Decide which school / house/car / city / novel / sport / musical instrument...</p> <p>A</p> 	<p>A</p>	<p>Add detail in each space</p>	<p>B</p>	<p>Ranking</p>	<p>Add detail in each space</p>	<p>Ranking</p>	<p>or</p>	<p>B</p> 	<p>Total</p>	

Additional Notes and Observations

Note that it is sensible to give greater weight or value to those criteria which are deemed to be more important. Each criterion can become a plank in the argument or decision and can also serve as a paragraph topic or section of the completed product, such as in a persuasive essay, speech etc.

Note that this is a valuable tool to assist in differentiation of the curriculum as more enthusiastic and capable students will find more criteria to consider.

Example:

Establishing the English Colonies (History, Yr.5: ACHHK093) (Middle Primary)
 Imagine you are trying to find solutions to the poverty, disease and overcrowding in British 18th Century prisons. Conduct a Round Robin (p.114) to generate ideas and use the Decision-Making Matrix to assess which you would recommend. The DMM below has been completed with the attitudes of the day. You may bring more contemporary understanding to your work!

Ideas	Cost to government 3/3	How humane is it? 2/3	Benefits to community 2/3	Benefits to the nation 3/3	Chance of success 3/3	
Educate/retrain prisoners for other jobs	Very high – paying teachers and then the scoundrels.	Assumes that all individuals are important.	Families stay together. People treated with dignity.	Still have high population in cities.	Govt not likely to support, as costly.	35
	$1/5 \times 3/3 = 3$	$5/5 \times 2/3 = 10$	$5/5 \times 2/3 = 10$	$3/5 \times 3/3 = 9$	$1/5 \times 3/3 = 3$	
Programmes of street cleaning and community service	Very high...who else would pay? Possibly businesses?	Assumes that all scoundrels will be able to stick to a job.	Possibly cleaner streets and public projects will get done. Families etc.	May keep scoundrels in the country, not good. Public works completed, good.	Unlikely, as the prisoners have already proved they can't get jobs!	32
	$2/5 \times 3/3 = 6$	$2/5 \times 2/3 = 4$	$5/5 \times 2/3 = 10$	$3/5 \times 3/3 = 9$	$1/5 \times 3/3 = 3$	
Find somewhere else for them to live	Initially expensive funding exploration but then colonies could self-fund.	Excellent – keep people alive, give them a new life and chance to start over.	Excellent – get the scoundrels out of the way, so kids won't see them as role models.	We won't have to pay for them in the long term. Less likely to breed more scoundrels.	As long as there is a wide, brown land in the Southern Hemisphere – excellent.	48
	$4/5 \times 3/3 = 12$	$4/5 \times 2/3 = 8$	$5/5 \times 2/3 = 10$	$2/5 \times 3/3 = 6$	$4/5 \times 3/3 = 12$	
House them in boats in the Thames or out to sea	Ongoing expense to provide ships, food and clothing, and all those chains- quite high.	Not very- the humane society keep reminding us that the scoundrels are getting sick and dying.	Unfortunate that the locals can hear the screaming, Kids may feel sorry for them.	At least we're getting them out of the jails, but in the long term, not a good prospect to have them still here.	Does the job, but in the long term, unsustainable.	26
	$2/5 \times 3/3 = 6$	$2/3 \times 2/3 = 4$	$2/5 \times 2/3 = 4$	$2/5 \times 3/3 = 6$	$2/5 \times 3/3 = 6$	

innovative teachers' companion – 2013 (Primary, p.139)

Title:

Score	Criteria →				Total
	<i>Ranking</i>				
	<i>Ranking</i>				

DECISION MAKING MATRIX

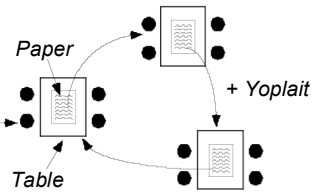
Reflection (Why is this useful? How does it promote learning, engagement and discussion?
 How does it address certain outcomes, skills and competencies?)

Transfer (What questions, activities, assessment items can I design using this tool/skill/process?) e.g. 1. Which one was more effective, the book or the film? 2. Which is the better method for solving this problem, 'A' or 'B'?

Note: Please complete the Decision-Making Matrix above

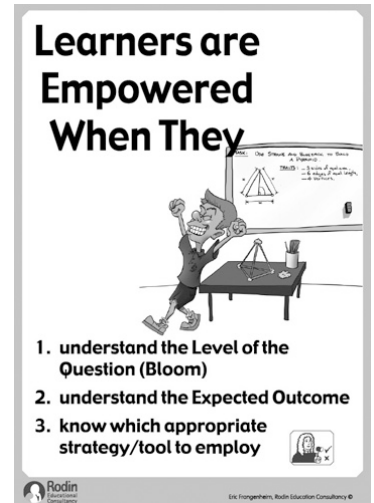
Task: List the T&L principles or actions needed to create Explicit, Engaging and Effective Classrooms

Note: After a few modelled responses, groups brainstorm ideas for 1-2 minutes. Then pass sheet to next table (Yoplait in French) After each change of sheet (Yoplait)



Rule 1: 1 person to read all responses to rest of group

Rule 2: Add more ideas/responses to the new sheet, but DO NOT repeat what you have already added to the previous sheet/s. Repeat process 3-6 times. This is Step 1.



Reflection

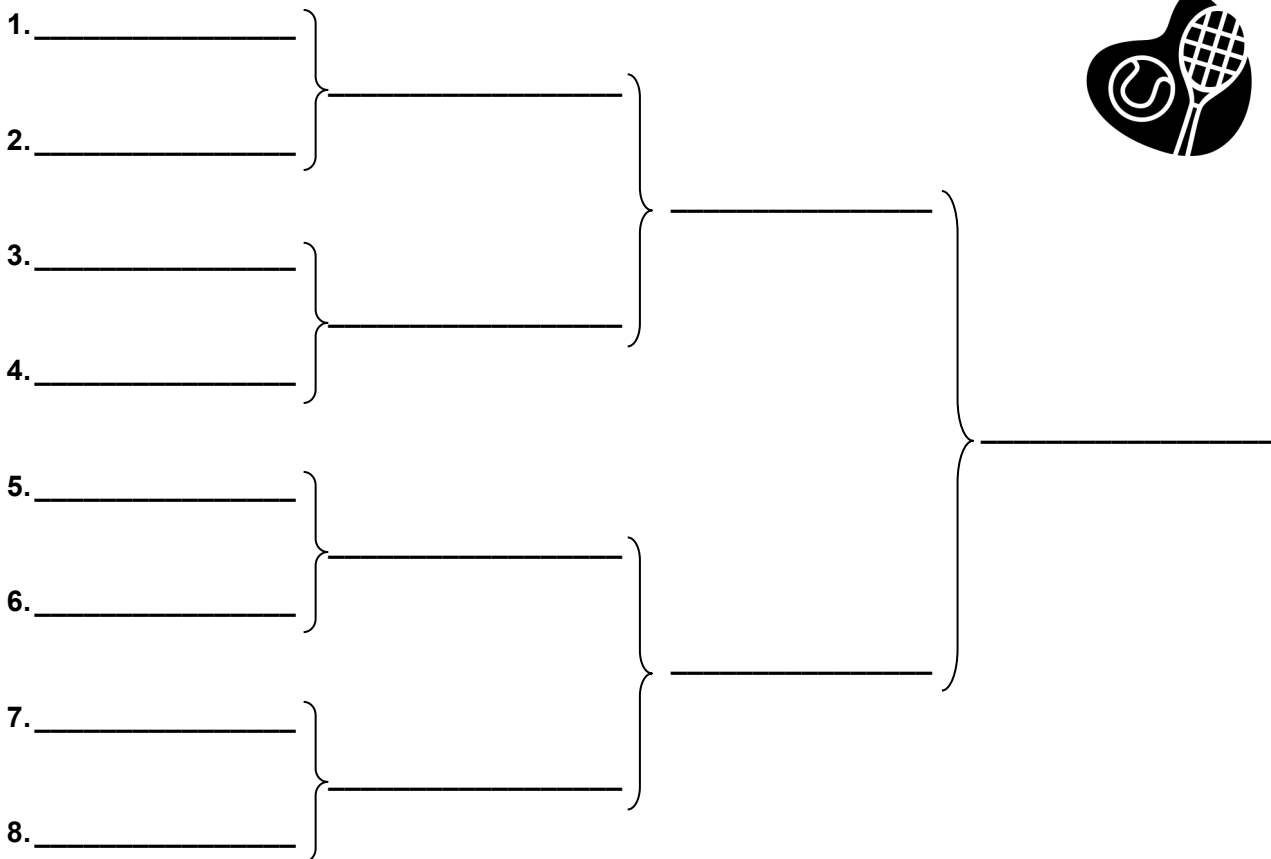
Transfer

Topic: “What is the core principle/action to create the Explicit, Engaging and Effective classroom?”

N.B.: Maybe generate a list via a Round Robin, then transfer list to ladder below.

How?

NB: We need to seed the list as we do in a tennis tournament. Top of list to No.1, second to No.8, third to No.3, fourth to No.6, fifth to No.2, etc. Spread them out, then play. Do this in pairs.



Note: You can have any number in the tournament and byes are permissible for odd numbers.

Value Add by: asking Learners to justify each of the final decisions

e.g.: Choice 'x' is better than choice 'y' because

Choice 'm' is better than choice 'n' because

Learners should justify each choice in an articulate sentence.

(Taken from 'On Purpose School for Leaders', by Dr Edward Gifford, www.on-purposepartners.com)

Sentence Starters

- ...it is necessary to consider the advantages and disadvantages of ...
- The appeal of...is that the...
- It is worth considering that...
- ...has the most impact on...
- Some claim that...
- The worst feature of...is...

Connectives

- although
- however
- because of this
- in spite of/despite this
- in other respects
- whereas

Note that explicit questions should have a *Task Verb*, a *Topic* and a *Thinking Tool*

1. Should all high school students be taught to cook at school?

Improved question:

2. What did you do in your holiday?

Improved question:

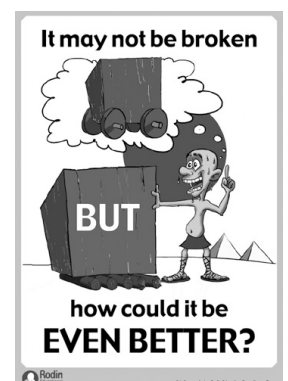
3. Why should we wash our hands before cooking a meal?

Improved question:

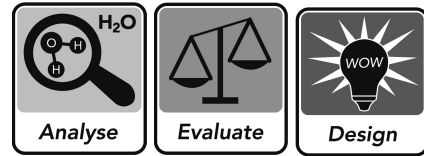
4. What did you think of the film/book

Improved question:

Observation about clear questions



6. Task Verb: Create



Related Verbs:

Compose, Design, Develop, Generate, Improve, Invent, Modify

Create: Thinking Tool – MAS (Modify: Add: Size)

Activity 5: Redesigning & modifying my teaching Tool: MAS

MAS		Topic: <input type="text"/>
M	<p>MODIFY</p> <p>By replacing one part with another or modifying the shape, texture, colour or ergonomics</p>	
A	<p>ADD</p> <p>Add a new feature to the object</p>	
S	<p>SIZE</p> <p>Make one part or several parts of the object bigger and/or smaller</p>	

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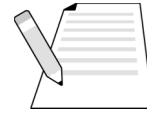
Reflection (Why is this useful? How does it promote learning, engagement and discussion?
How does it address certain outcomes, skills and competencies?)

Transfer Application (What questions, activities, assessment items can I design using this tool/skill/process?)

e.g. What is your definition or design of _____



- Step 1** **1:** Each person writes/designs
- Step 2** **4:** Share ideas in groups of 4
- Step 3** **Publish:** Each group of 4 PUBLISHES a joint product based on best ideas from each and POSTS this above head height
- Step 4** **Circle:** In groups of 4 — circle the room and take notes of best ideas
Option: Leave one team member with poster as the 'Explainer'.
- Step 5** **Refine:** Return to home group with Poster, and Refine this based on observations made during circling of room
- Step 6** Debrief the results. Look for common features.



1:

Enter Step 1 ideas here:

4 and Publish:

Enter Step 3 product/design here:

Refine:

Enter Step 5 changes here:

Additional Notes and Observations

Examples:

Climate Change: Believers or Sceptics?

Research climate change and record the information/evidence for and against its existence on a T-Chart. Once you have sufficient data, use a 1:4:P:C:R to prepare a debate on the topic. Half the class should take the affirmative side and the other half the negative. Prepare the debate for presentation on 'The Great Debate' on television.

Value Add: Use a 1:4:P:C:R to develop questions from the audience about climate change for a televised Q & A Forum

A Legendary Piece of Art!

After reading and becoming familiar with an Aboriginal, Torres Strait Island or Maori traditional story, students are asked to paint or draw a character or animal from the story. Students use a 1:4:P:C:R to develop an original and modern interpretation of the character or animal.

'Innovative Teachers' Companion – 2012' (Secondary, p.129, Primary, p.101)



1:4:P:C:R

Reflection eg. Delayed Gratification

Transfer Application e.g. designing a policy/mission/vision statement.

Activity 13: Co-operative Tool: Pairs and Stimulus RAS Alert - a tool to encourage focus and retention of detail

Step 1 Pair up all learners ( **See Saw or Pairs** – i.e. ‘take turns’)

Step 2 Stimulus RAS Alert —> **Announce your purpose**
e.g.: Name of stimulus (use memorable words).

Create an organiser with sub topics:
a) 3 x..., b) 2 x..., c) 3 x..., d) 4 x ...

Step 3 Watch video/demonstration etc

Step 4 Pairs and Record

Step 5 Feedback to teacher and debrief



<p>a. The main Multiple Intelligences being employed by the students</p>	<p>b. 2 x instances where a thinking tool could have been employed:</p>
<p>c. 2 x instances of where a co-operative tool could have been employed:</p>	<p>d. 1 x suggestion for greater Differentiated Instruction (DI)</p>

Additional Notes and Observations

Asking students to notice what is happening in the presentation (film, demo, address) is no guarantee this will happen. However, offering hooks (e.g. 5 examples of deception) will focus the brain and ALERT the brain and eye/ear/nose, skin as to what to expect. Our memories are fantastic but often need some help as in the RAS Alert. Linking this to working in pairs will more likely motivate the learner to pay attention as there is an expectation of cooperation.

The paradox is that it is easier to notice/remember 16 parts than one.

Note that what you are asking the students to notice is likely to be the important points or materials you are planning to teach in this unit. You have helped them to be aware of these points before the formal teaching takes place.

Examples:

Child's Play Can Be Hard Work (Children's Services)

Watch an episode of Play School and see how the program deliberately caters for differences within their audience.

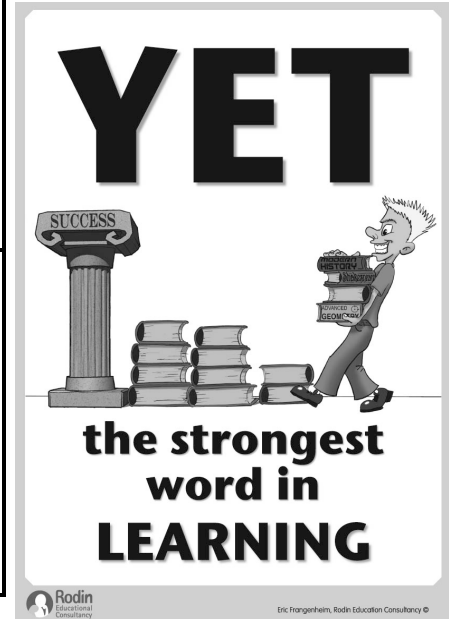
Watch for the inclusion of:	Songs	Clips	Activities	Craft	Props/Toys
Different cultures					
Different abilities					
Boys and girls					

Algebra – We Can't Live Without It

Students research and identify how algebra may be used in everyday situations.

2 examples of how the owner of a store might set the price of his products so as to give him a 60% profit: • •	2 instances of where you might work out the best price for an item of food supplied by different producers, e.g. bread: • •
3 examples of where Algebra is used in Master Chef: • • •	1 explanation of how you can use Algebra to plan a post formal party (work out number of people who will attend): •

innovative teachers' companion – 2012 (Primary, p.187; Secondary, p.253)



PAIRS and RAS ALERT Reflection

Transfer

ITC Supporting Resources

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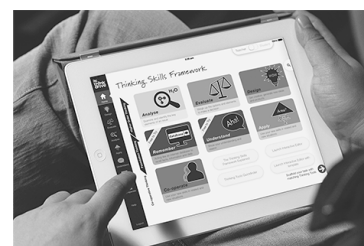


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