Primary Educators' Supplement

Rationale™

Draw the Right Conclusion!™

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Rationale

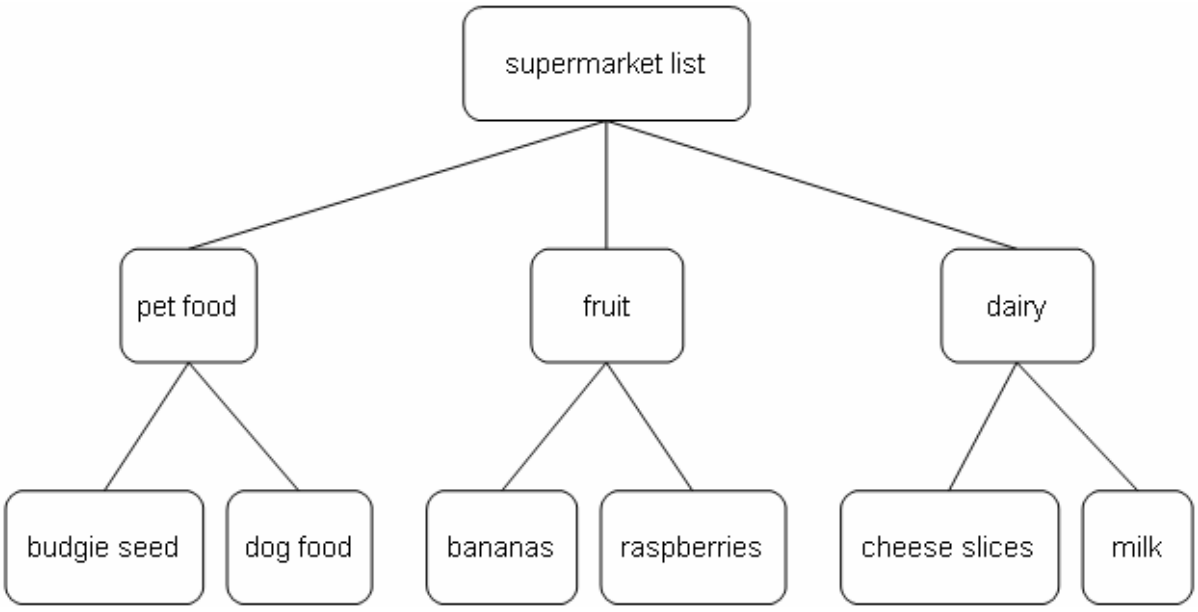
What You'll Find In This Supplement...

1. Rationale Activities

1.1 Thought Pyramids

Thought pyramids are a fun task to introduce and scaffold grouping principles. The task focuses upon grouping items into categories with a similar theme. These items could be objects, thoughts or claims.

A structure is developed which introduces layers or levels of abstraction, akin to a pyramid.



Educational Goals

1. Identify similarities and differences in a list of items
2. Determine a concept which links similar items
3. Create a structure which illustrates levels of abstract thought
4. Understand the relationship between physical objects and broader mental concepts that categorise these objects
5. Provide the structure and conceptual understanding of levels of thought, as required for argument mapping

Before the Class

1. Organise ICT facilities. The task can be undertaken as a group with the teacher using one computer projected for class viewing and then developed for students to create their own lists and pyramid maps.
2. This activity can be directed to a particular topic though this is not a necessity. For instance, you could use an appropriate video (which corresponds with your curriculum) to be played for approximately 5 minutes.

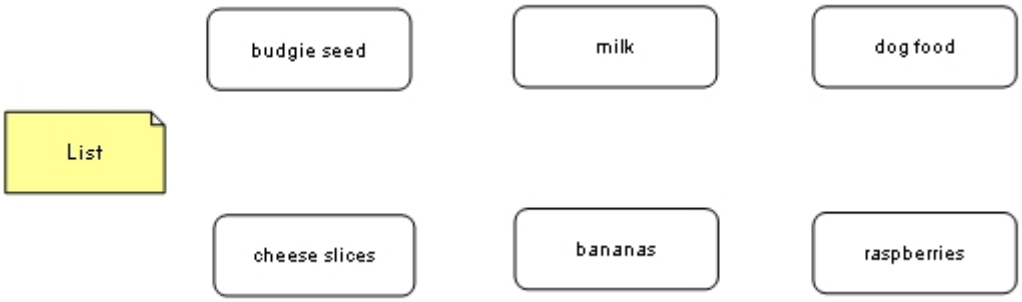
In the Classroom

There are a number of activities that can utilize thought pyramids;

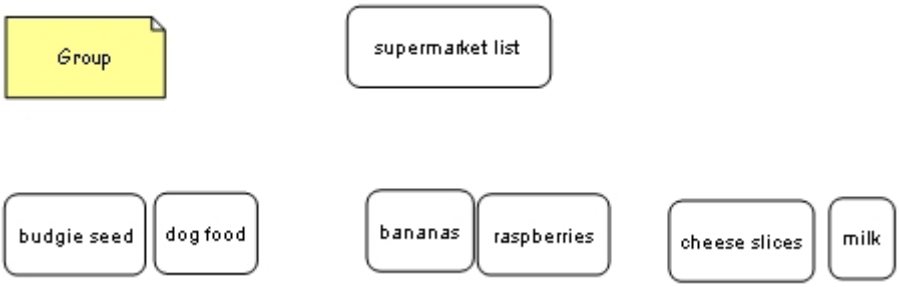
a. shopping list activity
b. extended list activity
c. video activity
d. claims activity

Part A: Shopping List Activity

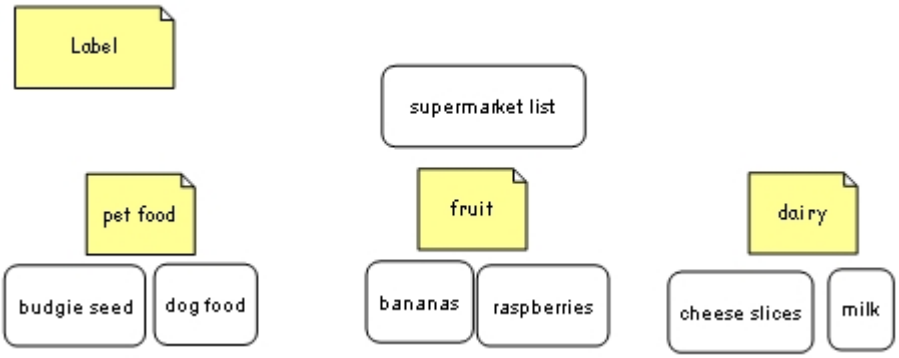
1. Ask the students to create a shopping list of *x* number of items.



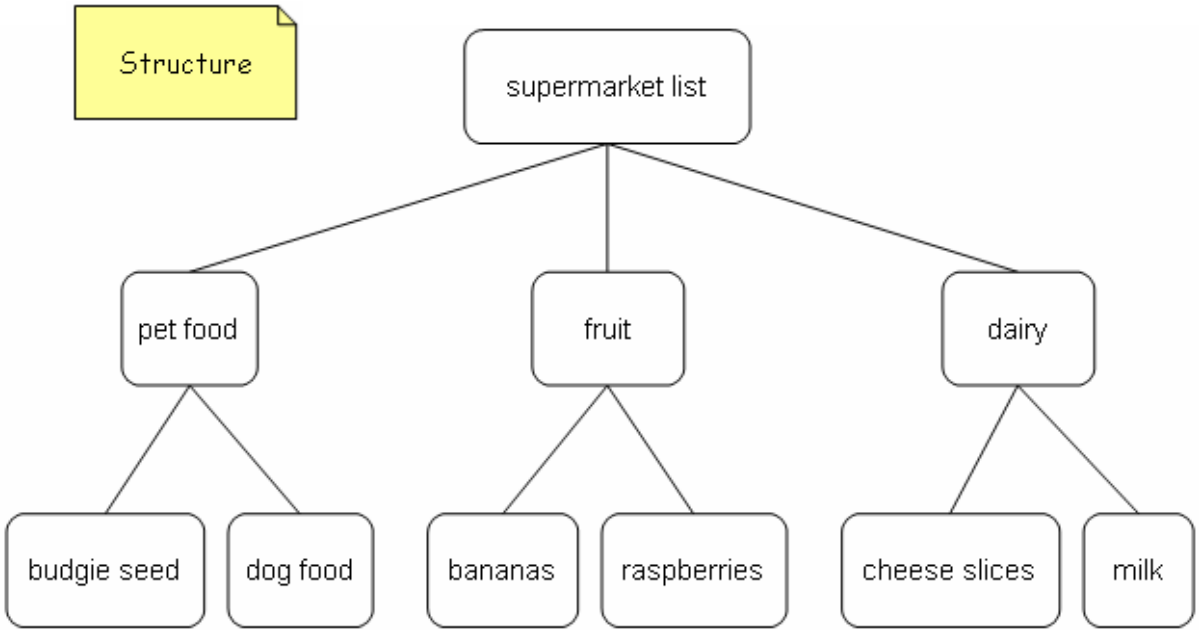
2. Modeling the process for the students, gather *x* number of responses on the board. Asking questions of the students, group these items.



3. Ask the students how, or by what criteria they formulated these groups. Create labels to show this process.



4. Model the process of structuring the items and concepts into a hierarchy.



Part B: Extended List Activity

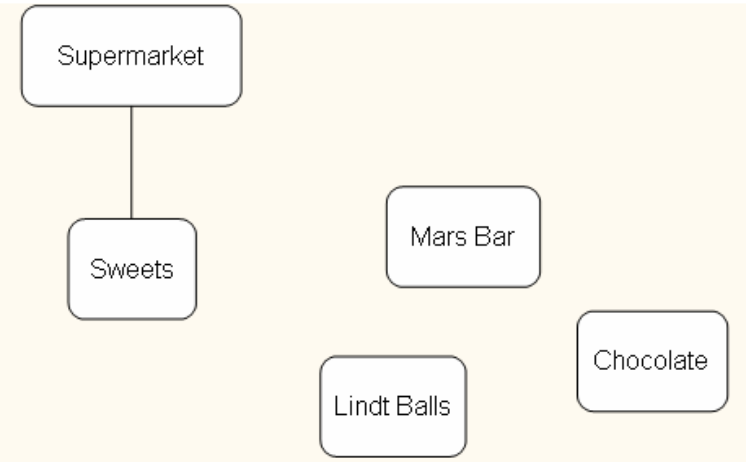
1. Instruct the students that they are going to group a series of pictures. As a group, ask them what they think you mean by "grouping," for instance forming categories or linking all the things that are similar together. Ask them how they would show things are grouped, these may include placement of objects, borders, lines, colours and labels. Provide a sheet of large (A3) paper and a set of pictures.

2. When completed have students look at each others' work and ask each other questions about how they grouped the items.

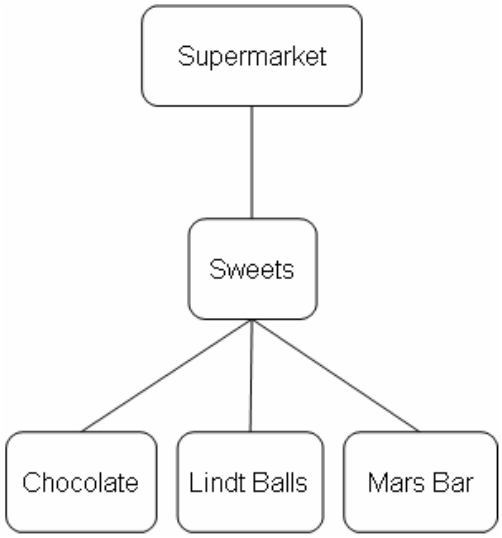
3. Form a class group and ask the students what they noticed about the pictures people created. These may include labeling, the pyramid structure or different types of groups people created. This is a good diagnosis exercise to see what they understand and what requires further development.

4. Ask the students to imagine they were going into a supermarket in order to get, say a chocolate bar. Ask them where they would go first, that is, which aisle? When they are in the sweets or confectionary aisle, ask them how they would find the chocolate bar, for instance, they would look for the brand. While discussing this process, model the labeling and structuring process. This can be achieved by providing labels to the objects and showing the students where this fits in the pyramid structure. It is also useful to ask students why something belongs in one position but NOT in another. For instance, why doesn't a banana belong next to ice cream?

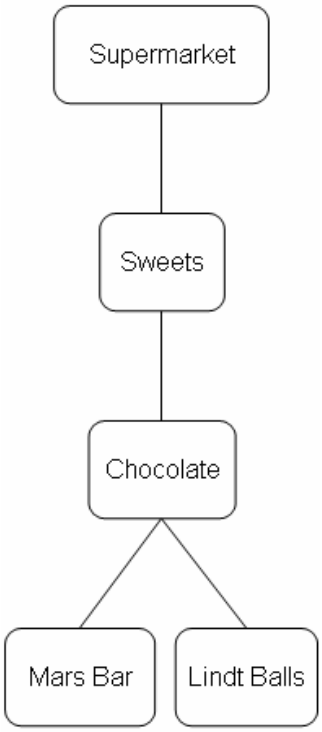
a)
How do I show this in the diagram?
In the sweets aisle, where do I go next?



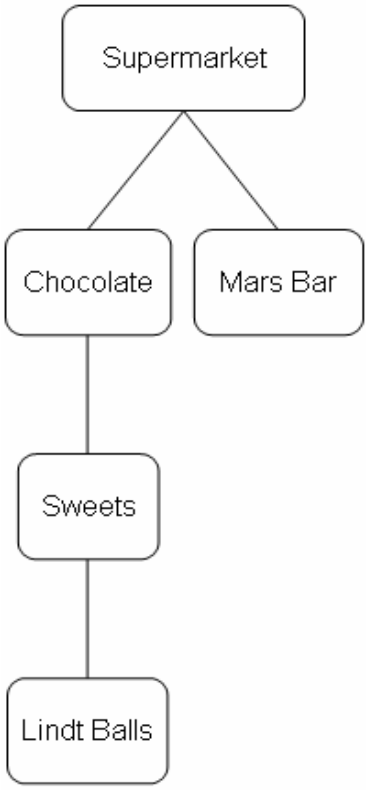
b)
Model one line of the pyramid structure



c)
Ask why chocolate is in the wrong place



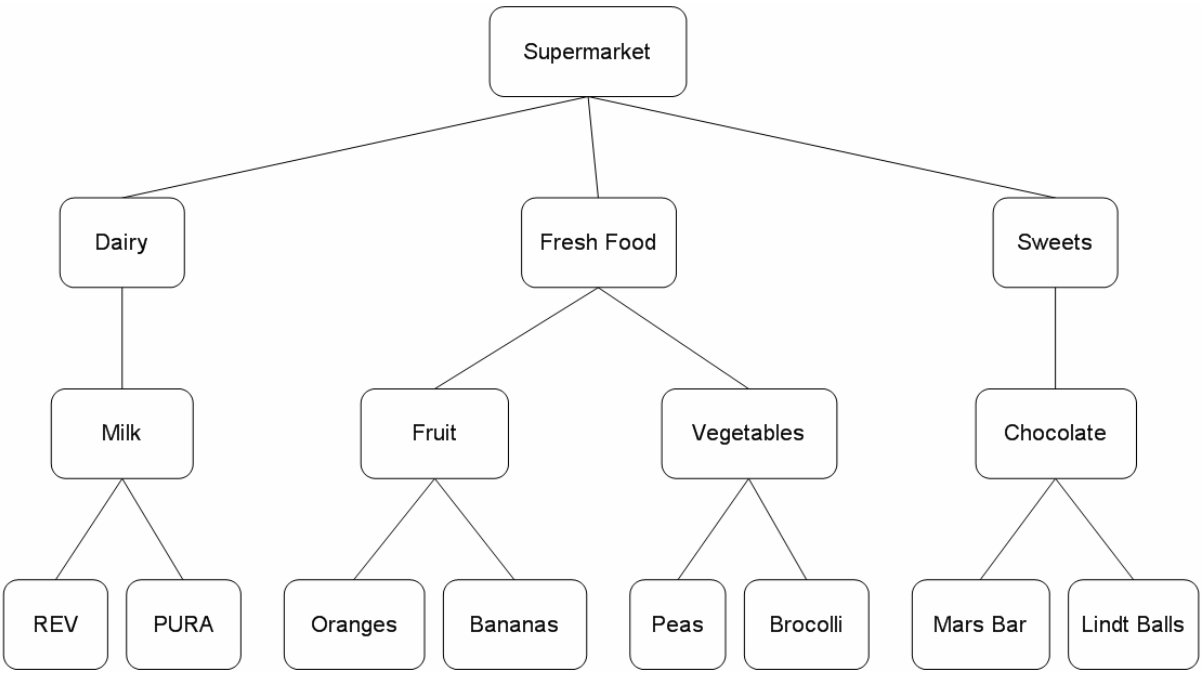
d)
Ask why chocolate is in the wrong place



5. Having modeled one line or branch of the diagram, ask the students to return to their diagrams and create another pyramid structure to group the items. (*Note* that the first task was not requesting that students necessarily create a pyramid structure. It was an exercise to diagnose what they do naturally and/or whether they remember previous pyramid exercises. If the students glue their first set of pictures, they will require another set to create the pyramid).

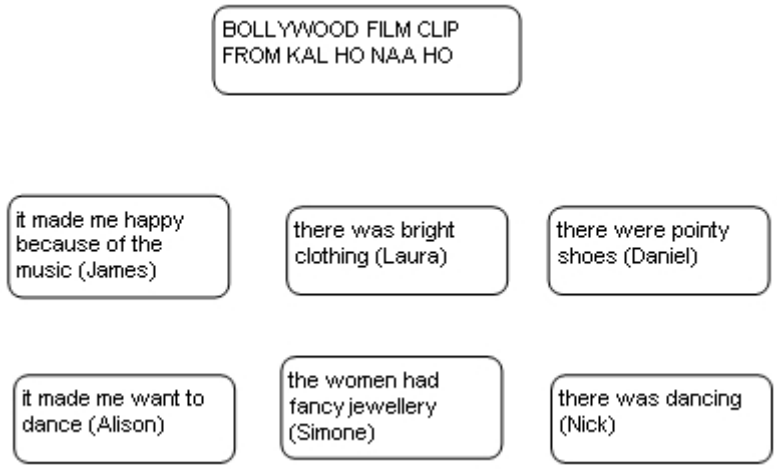
6. Ask the students to look at other students' work and ask questions if they see something different from what they have created.

7. Regroup the class and model the final diagram. Discuss how the pyramid structure helps us and what has been learnt.

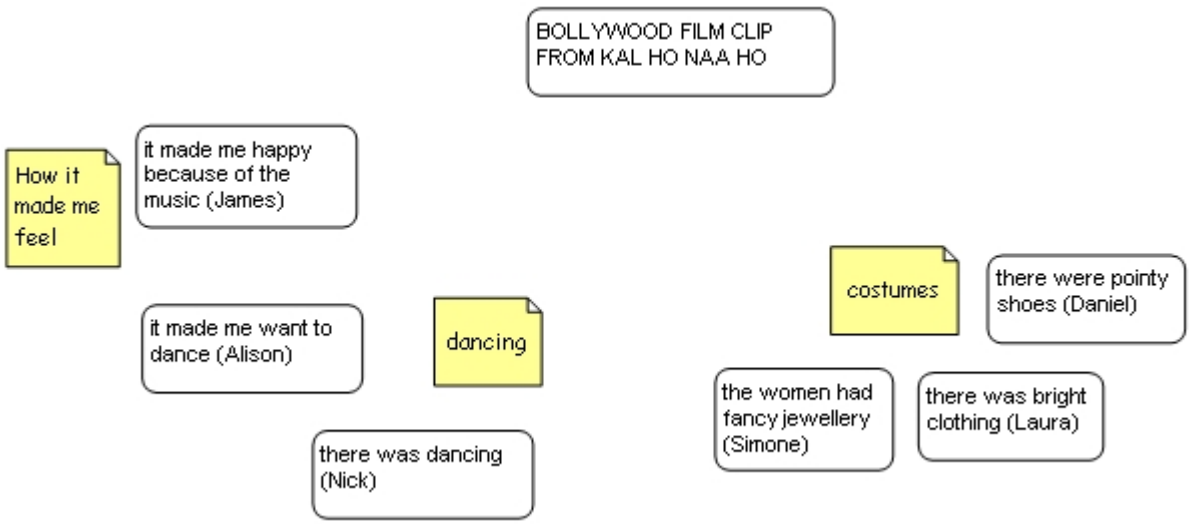


Part C: Video Activity

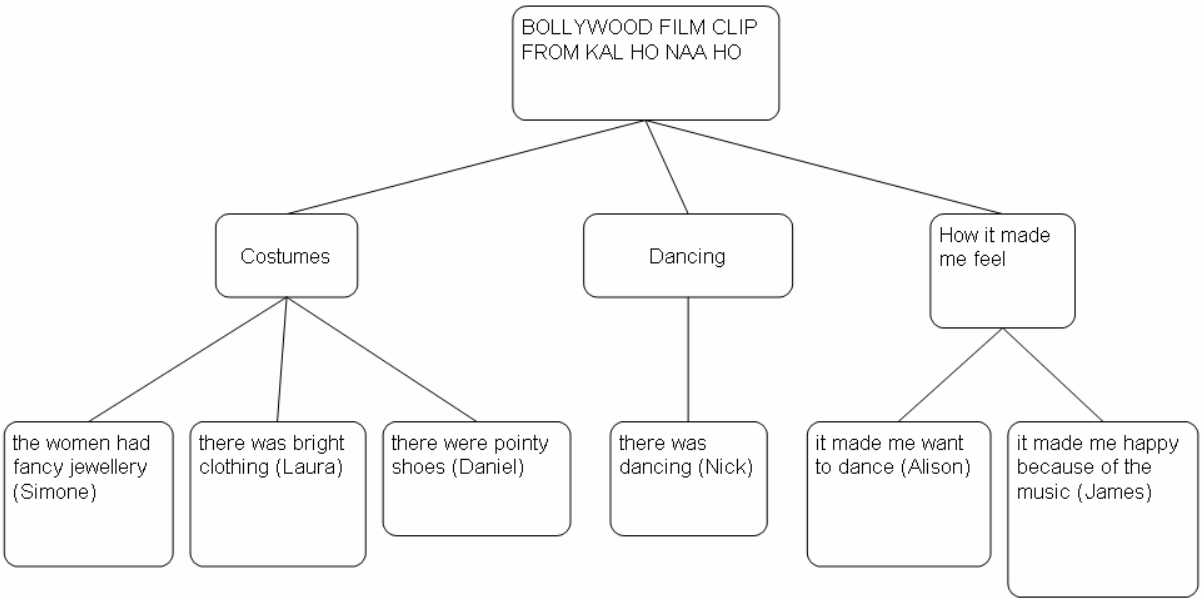
1. Watch a video for approximately five minutes, instructing the students to identify *x* number of things they notice (This is unlimited in scope - it may be an object, an emotion, an action or an attitude which they noticed).
2. Instruct the students to list their items. Go around the class and ask individuals to provide one item they noticed. Make a list of all the items. This can be done using a **Grouping Map** in Rationale™ or, if there is no projector for a central board a handwritten list on the board will suffice.



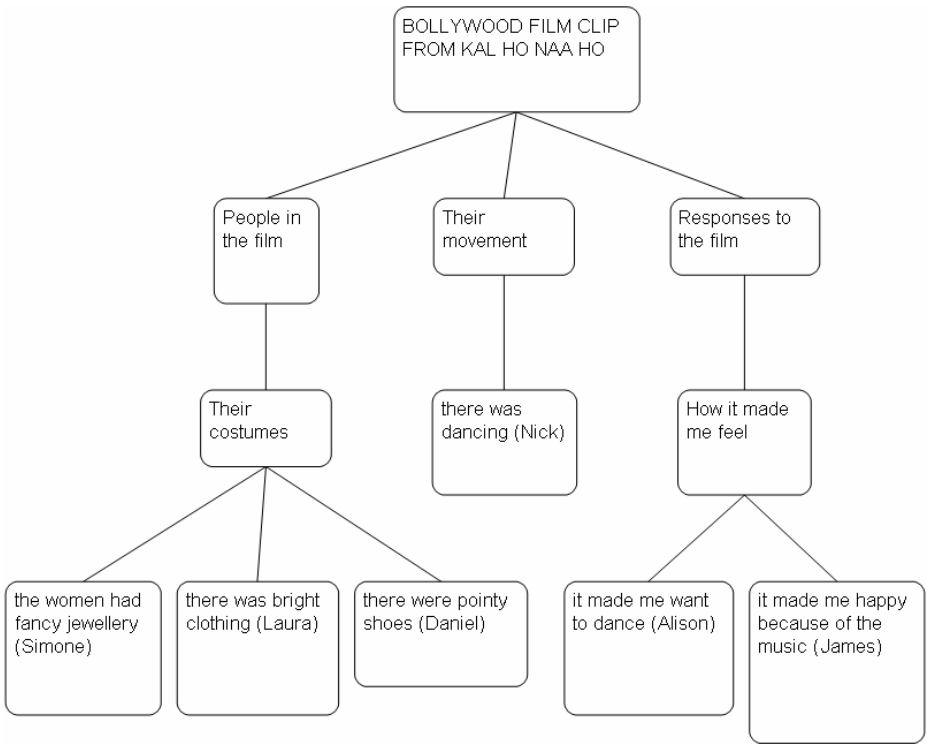
3. Ask the students how we may group these individual items. If using Rationale™ group the claims together and create a sticky note with the category label.



4. Create a grouping map using the groups formed on the board.



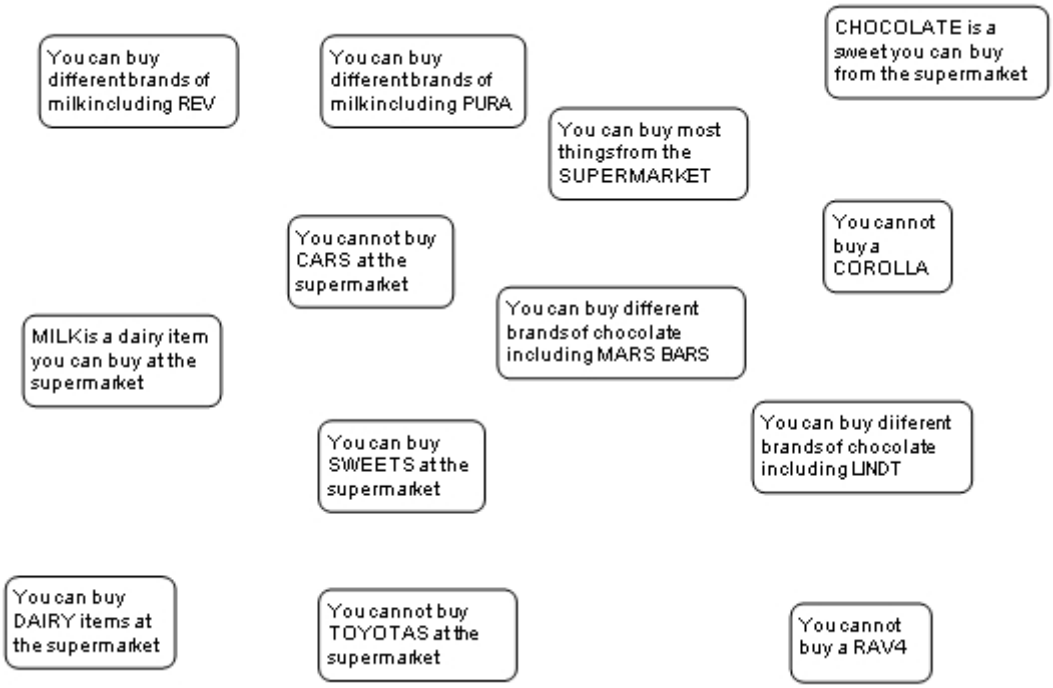
5. Ask the students whether we can create a further level of abstraction, that is, another level of ideas. This may require some clarification of the observations. (**Software Tip**: when you want to insert a layer sandwiched between other item boxes, you can use the "push" key on the home page).



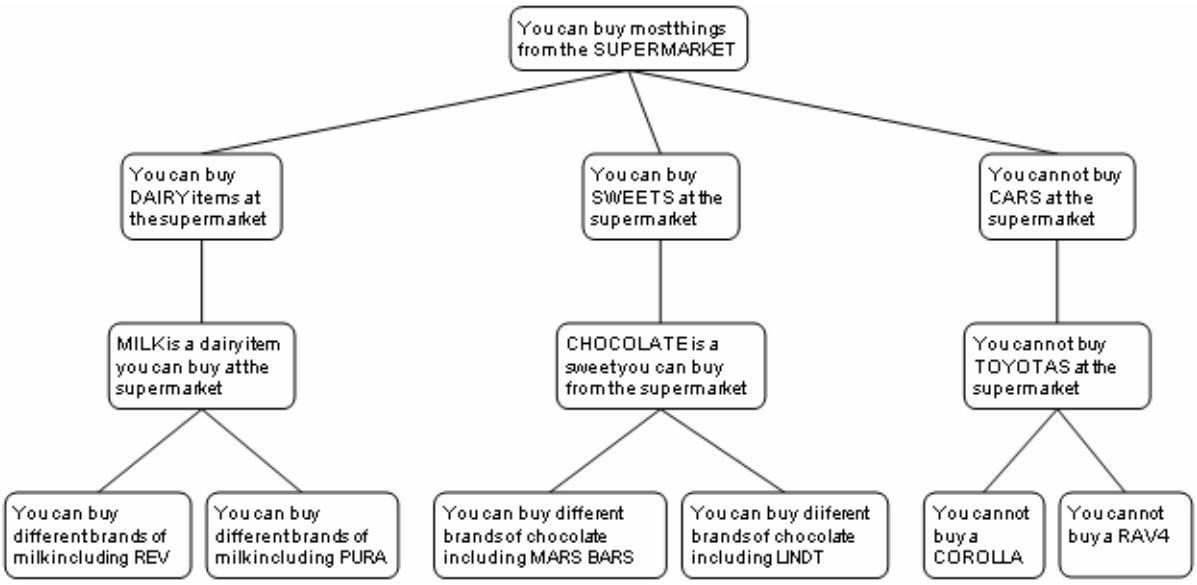
6. Discuss how the items that are on the lower level are examples of what is on the level above. Thus, the lower levels are smaller categories or objects, whereas there are broader categories as we move towards the top. This is akin to looking through binoculars or through a microscope – you can zoom in and see things in more detail – so the lower levels are more detailed examples of what is on the top.
7. Instruct the students to create a map of their list of ten items and see if they can formulate three to four levels to show abstraction.
8. Instruct students to look at other students' work and ask questions of each other.
9. Resume as a class and discuss what has been observed. For instance, the similarities and differences of the maps and how a map assists us to understand connections or relationships between single items and general concepts.

Part D: Claims Activity

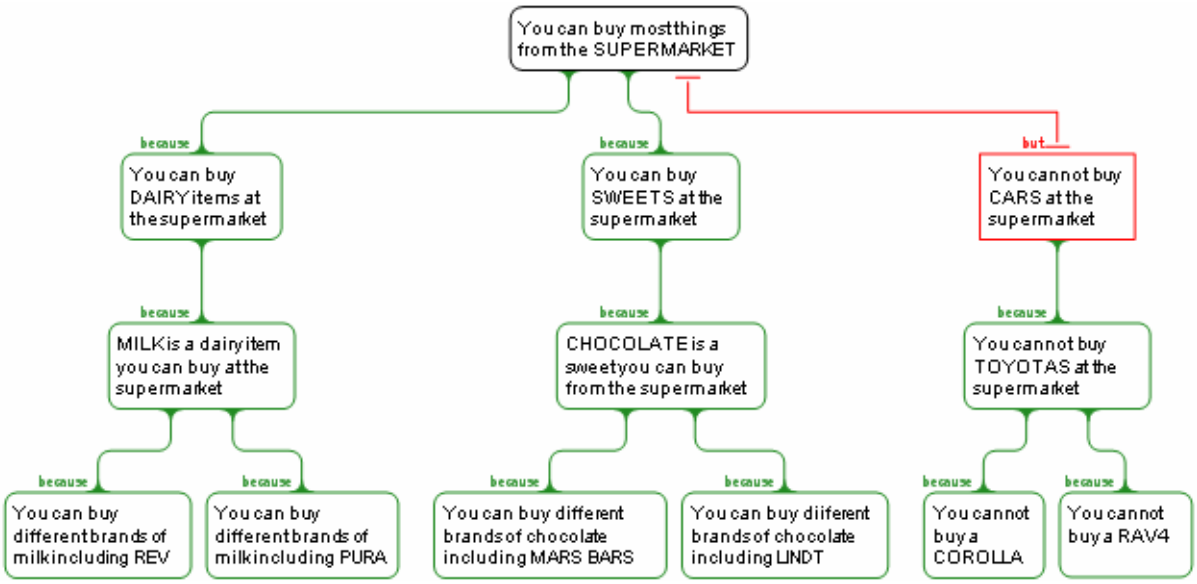
1. Having undertaken some of the previous activities, scaffold your students' understanding of reasoning maps by having them group claims or sentences expressing ideas, rather than simple objects. Provide a series of claim boxes and instruct your students to group them. (See Templates for ideas)



2. There are similarities between the above claims and the objects in the extended shopping list (Part B). This is quite deliberate in order that students' recognise some groups but are provided a challenge by the inclusion of the claims that deal with cars. As the students are working, suggest that they group what looks familiar first and then look at the remaining categories of cars. Then consider working from the broadest category toward the more detailed examples.



3. Instruct your students to look at others' work and ask questions.
4. Resume as a class and discuss what has been observed. For instance, how the students determined what to do with the claims about cars. Model the map on the central board and illustrate how the concepts move from cars to a brand of a car to particular examples of that brand. Also consider what else the students notice about the map they have created. Do they recognise that it is an argument? That there are reasons for the central position and an objection – the one dealing with cars. Ask them how they could represent these different claims, such as with the use of colour. This provides a bridge to reasoning maps.



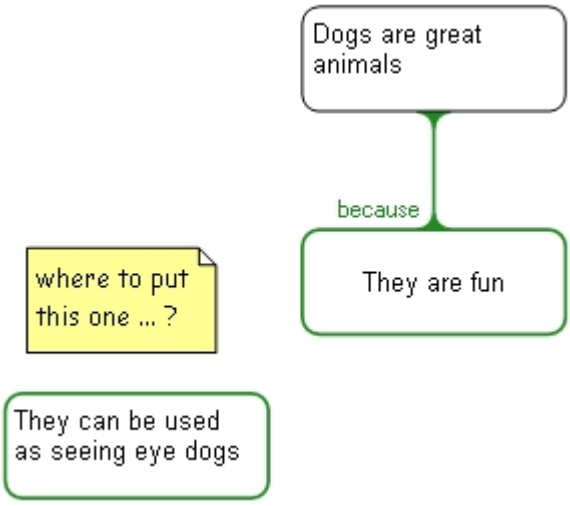
5. Instruct the students to convert their grouping map to a reasoning map. They will need to discover that there is an objection and that the claims below it support the objection, that is, are reasons to believe the objection is true.
6. Discuss with the students what this map tells us – that there are two main reasons and one main objection and that they each have further support or reasons. Also point out that the lessons learnt about grouping apply in reasoning maps, such as the more detailed examples (as determined by the contents of the boxes) are found below the broader concepts or categories above. It is also important to notice that the person or parties raising the objection are also suggesting/contending/ advocating the supporting reasons. This is important because sometimes we think that all the claims in green belong to the same (affirmative) group and those in read are the opposing side.

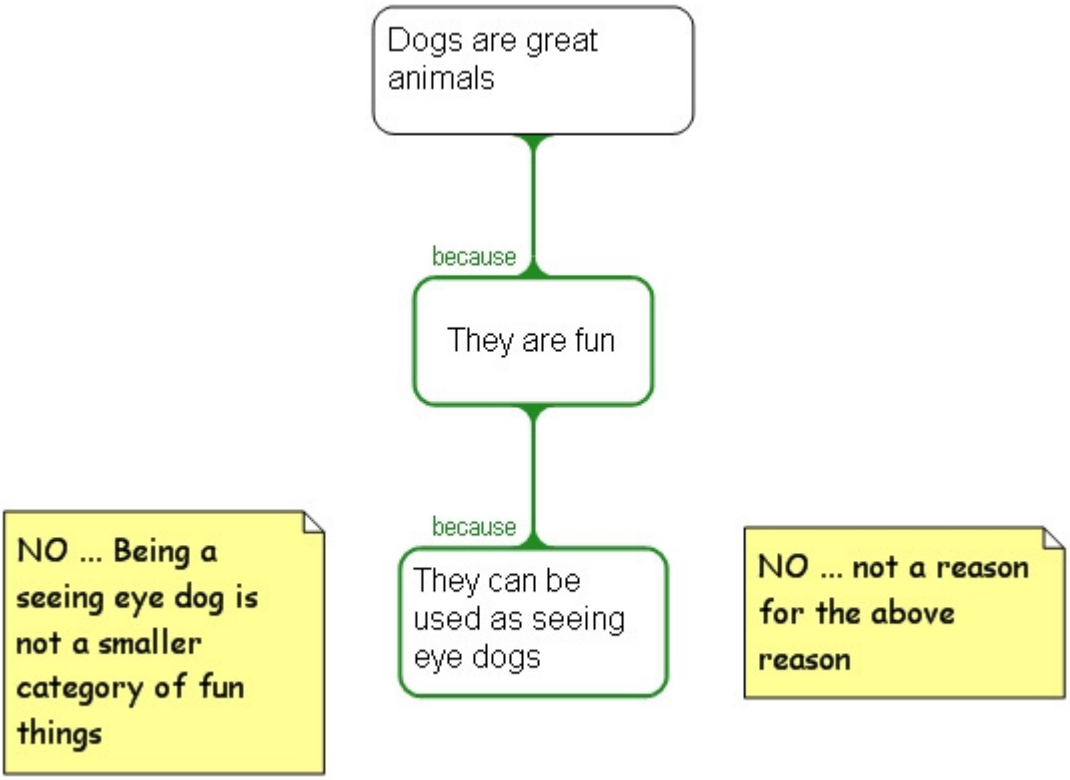
Fiona's Experience

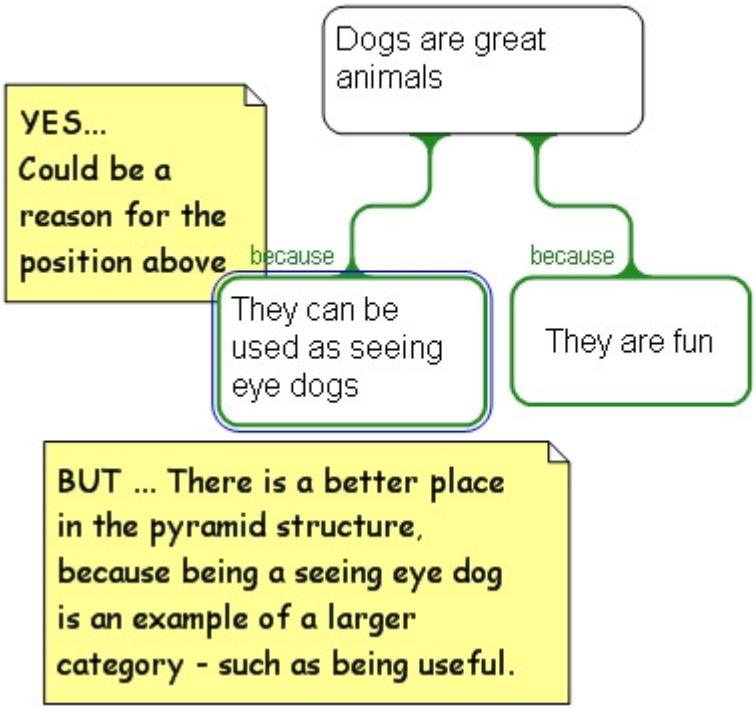
Thought pyramids are a great way to scaffold understanding of categories, relationships and concepts. When we asked what a group of grade 3 students thought about using the pyramid structure to group their extended shopping lists, one stated said that it helps you group things – properly! I think this is central to category principles – we can often create general groups but finding the layers or levels of abstraction within the broader group is important for understanding relationships and connections between ideas, objects or thoughts. Students learn that they can do this by forming a pyramid structure where each category can be refined or given more detailed "fleshing out" as they build down. They also develop the ability to recognise that different kinds of things need separate groups (such as objects and feelings) and that groups need to be mutually exclusive and collectively exhaustive (which is to say, distinct and cover all the aspects of a given item).

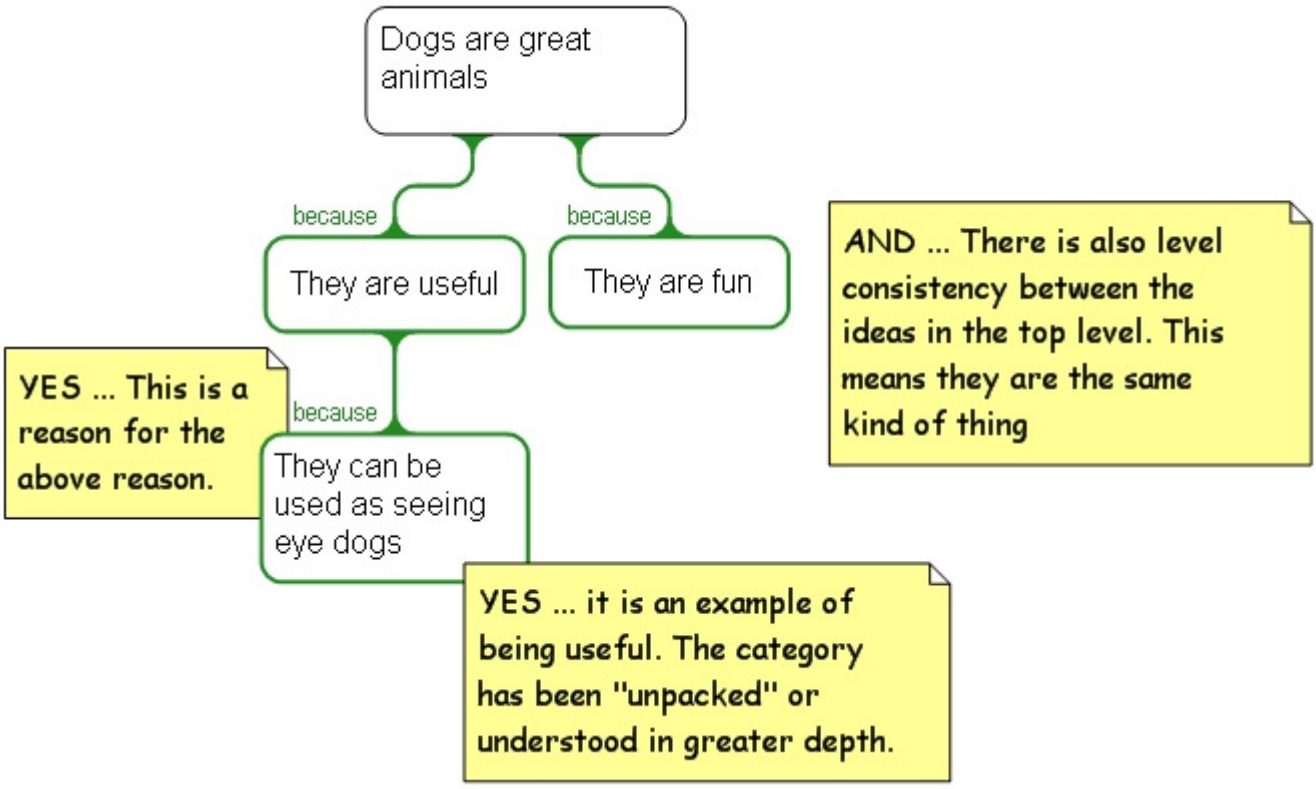
The shopping list activity has also been used for secondary students as a precursor to the video activity. The shopping list is a great way to visualize thinking – because it relates directly to our experience of a supermarket – we know that we find our brand of milk in the milk fridge which we find in the dairy aisle. Understanding and unpacking this relationship between different objects is an important tool to understand the role of language for category and concept formation. The video activity is terrific because people see different things and it is interesting and a great learning experience to gather different objects of perception and then ascertain how to group them – properly! We can then use this hierarchical structure to fill in other things that belong in these groups. This is a very useful exercise to consider other perspectives and to locate what might be missing in a given group or to "flesh out" detail required for examination of an issue.

Thought pyramids can be as simple or as complex to meet the needs of your students. In either case students are developing their ability to create hierarchies of objects and/or concepts while also learning some fundamental rules for reasoning, such as where a reason belongs – to the position box or to another primary reason.




Dogs are great animals
because
They are fun
because
They can be used as seeing eye dogs
NO ... Being a seeing eye dog is not a smaller category of fun things
NO ... not a reason for the above reason

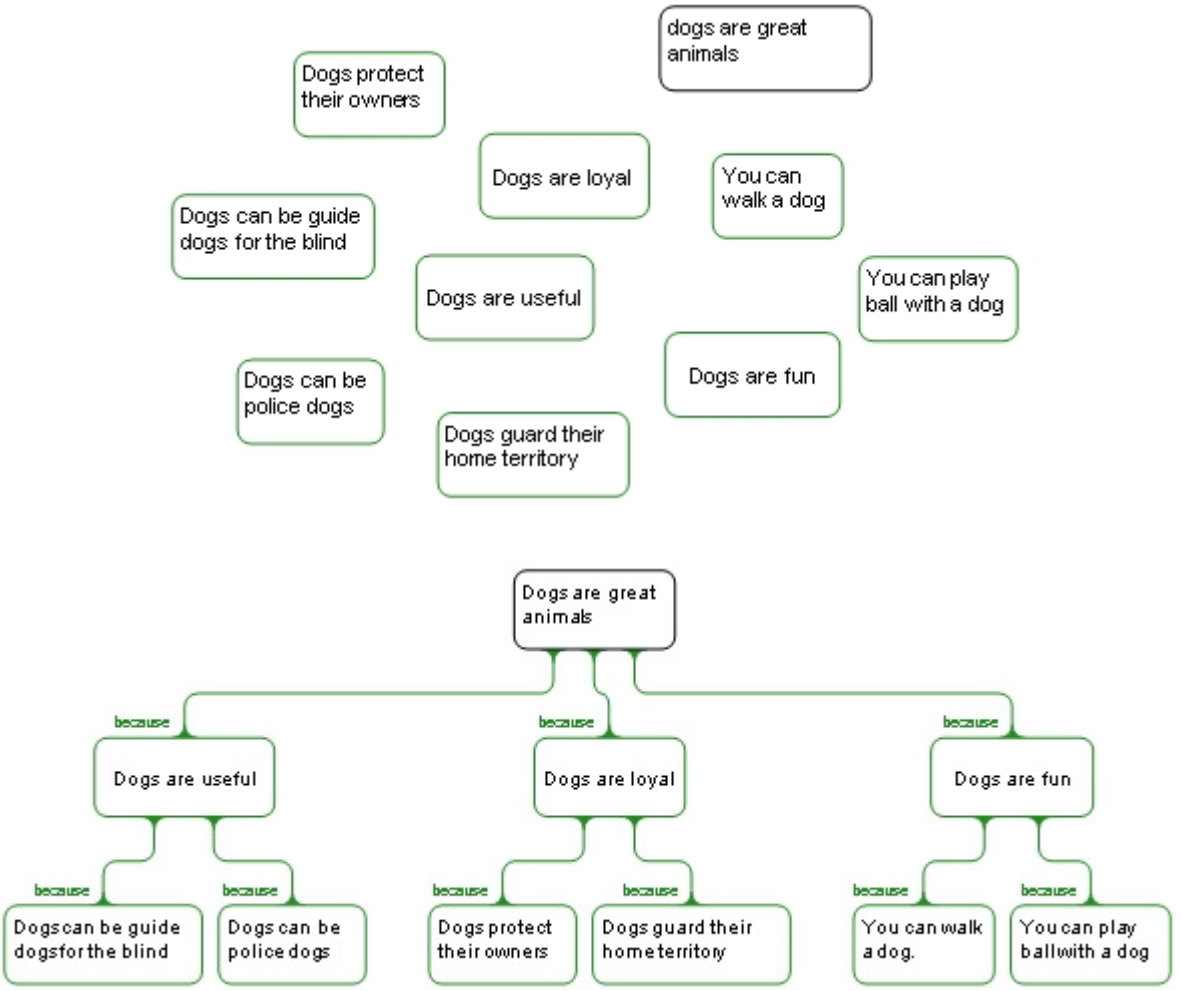

Dogs are great animals
YES... Could be a reason for the position above
because
They can be used as seeing eye dogs
because
They are fun
BUT ... There is a better place in the pyramid structure, because being a seeing eye dog is an example of a larger category - such as being useful.



As this example shows, an error could be made in the reasoning if sound category and structuring principles are not understood. Moreover, this process is a means for students to understand how to unpack or show a developed argument – by systematically examining issues that start from a broad concept to more fine grained concepts or examples.

1.2 Jigsaw

Students like a challenge and a jigsaw is just that! The jigsaw activity requires students to treat map boxes like jigsaw pieces. A **grouping** *or* **argument map** is broken into separate claim boxes and the student must attempt to restructure the argument.

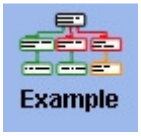


Educational Goals

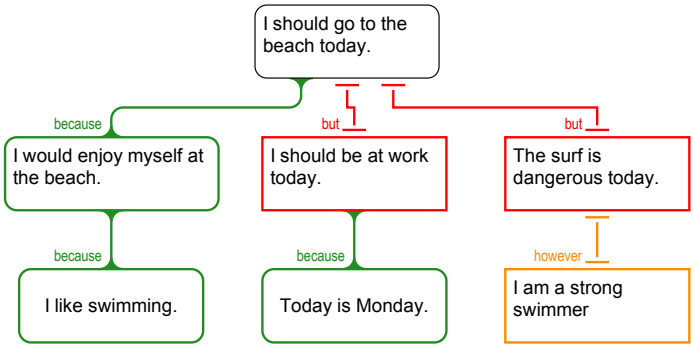
1. Introduce the components and structure of an argument map (conclusion, reasons, objections, supporting reasons, rebuttals) or practice grouping map structure.
2. Model a good argument map (structure, refined claims and hierarchy principles).
3. Apply principles of argument mapping (structure formation, grouping, hierarchy and pyramid principles).
4. Review or acquire new knowledge content.
5. Group communication and problem solving.

Before the Class

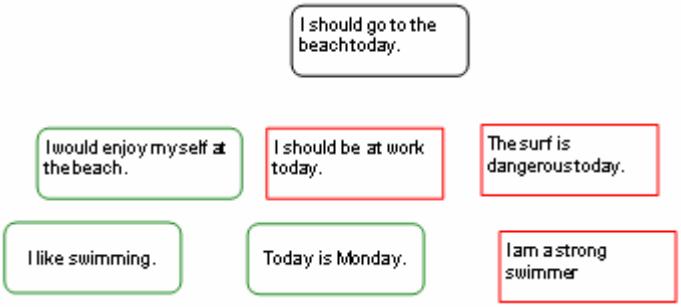
1. Open or create a jigsaw file in Rationale™. The Austhink website provides some ready made files which you can download. Alternatively you can easily create your own by creating a grouping or reasoning map and moving the pieces around the workspace. Save the file in a network drive that your students can access.



1. create or open an example



2. drag the boxes so that the connecting lines disappear



3. move the pieces around the workspace

2. If you cannot use computers for this lesson, you can also provide a paper copy of the jigsaw map. Students can spend a couple of minutes cutting out the pieces and jigsaw them on their desks.
3. To make your jigsaw more challenging you can increase the number of boxes or provide a couple of blank boxes which must be filled in. This will really test your students' ability to think about categories and reasons.

In the Classroom

1. Provide instructions for the jigsaw challenge – to open the ***Rationale*** file or else collect a sheet of paper which will require the boxes be cut out. This may be completed individually, in pairs or in small groups.
2. Instruct the students to commence (perhaps with a time limit). Monitor and guide them as required.
3. When complete, instruct the students to look at other jigsaws and see if there are differences.
4. Form a class group and discuss the process. Modeling of the correct jigsaw format may be required.
5. As an extended activity, you could instruct your students to create a grouping or reasoning map and then create their own jigsaw pieces which another group can piece together.

Fiona's Experience

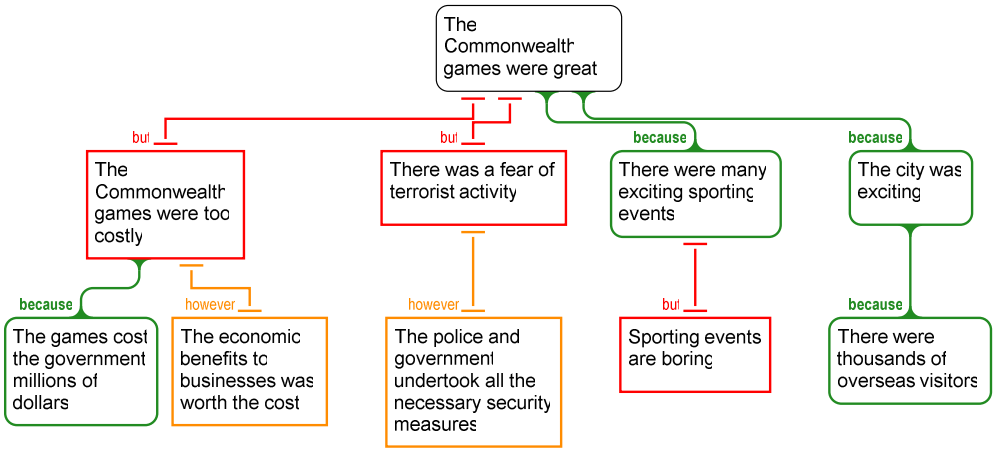
Students are immediately engaged in this activity because it is a readily identifiable and fun format. It can also be achieved in paper or ***Rationale*** format to suit your classroom resources.

For reasoning maps, locating the conclusion is easy once they understand that conclusions are white. Grouping the claims is intuitively undertaken once students have received adequate scaffolding as to grouping principles. The difficult element of this activity is for students to establish the main, top level reasons and objections. They have identified the groups but they are not sure of the internal structure of the group. This is a typical problem in reasoning and is often evident to teachers in inadequately structured essays. The ways to scaffold this process at this early stage are;

1. Remind them of the pyramid principle – the more abstract, broader concept is at the top, the more particular/ detailed example is at the bottom of the tree.
2. Ask the student if one claim supports another, that is, would one claim be a reason for believing the other claim is true (or if an objection, to believe that the claim would be false)?
3. Give a few hints as to the structure, e.g. the number of objections or the number of levels of reasoning.

1.3 Rationale Argument Chess

Argument Chess is a strategy game where an argument map is created by two different teams. Teams of one or more students spend some time devising the affirmative or negative case for a given statement or proposition. They create a central argument by adding one reason or objection at a time. The aim is to create a strong, well supported argument by selecting the best reasons or objections while providing objections or rebuttals to the opposing side's argument so as to diminish the strength of their case.



Educational Goals

1. Understanding of supporting and opposing cases and the role of each with respect to the position or conclusion.
2. Consideration of good reasons or objections with supporting reasons.
3. Strategic selection of the best reasons or objections to strengthen a case while effectively refuting the opposing side's case.
4. Interpersonal decision making and team building
5. Evaluation modeling.

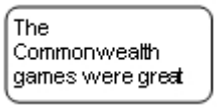
Before the Class

1. Determine how many "chessboards" or argument maps you will need. The game works well with a small class (up to 12) using one board (projected onto the wall or whiteboard). If you have a full size class, you may be best to use 2 - 4 computer terminals.
2. Organise a projector or ICT classroom for the Rationale "chess board."
3. Select an appropriate conclusion or choice of conclusions that will provide appropriate consideration of a topic. For example;

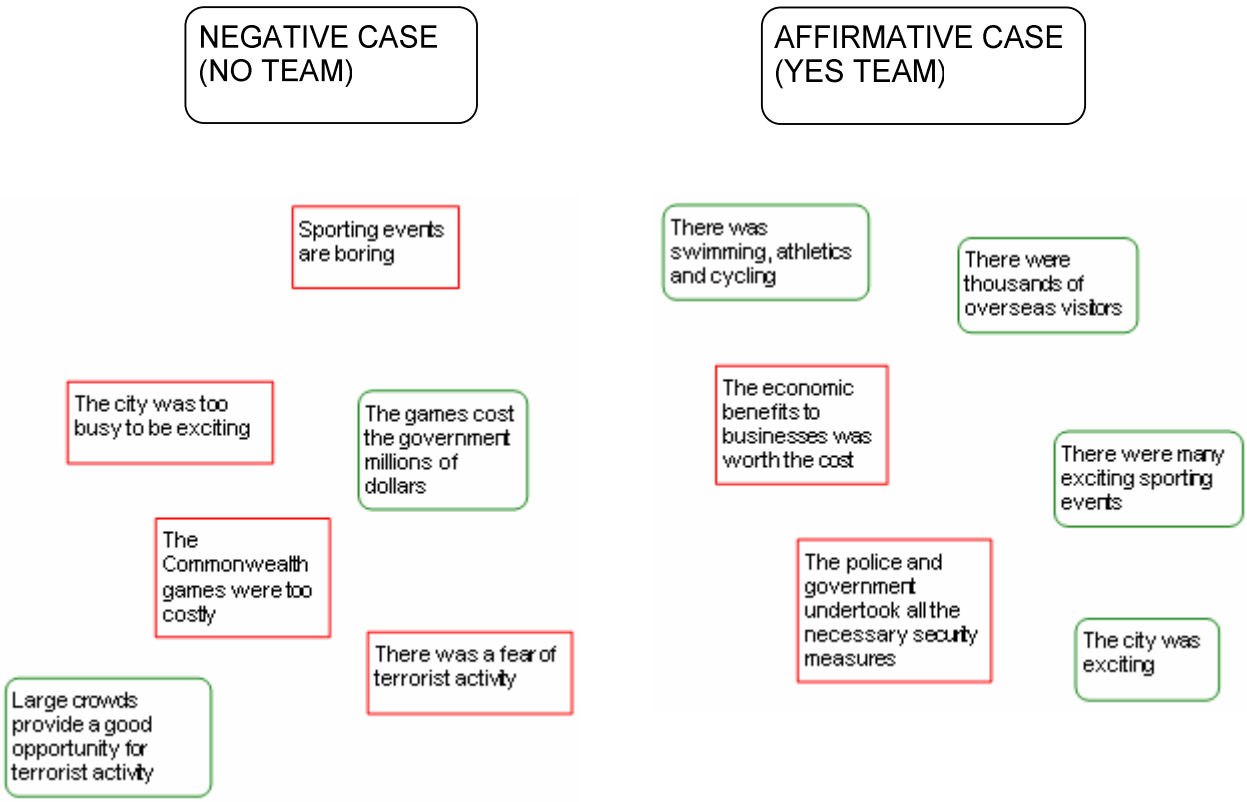
- School uniforms should be worn
- The canteen should not sell junk food
- Students should all be given laptops
- Today is a great day

In the Classroom

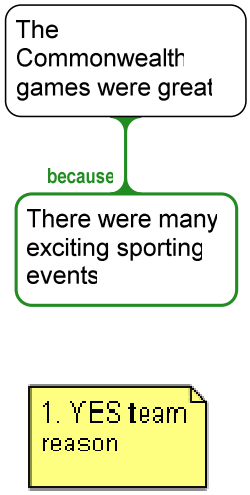
1. Teams: Form two teams (given one game will be played)
2. Cases: Ascertain which team will support the conclusion (i.e. provide the supporting case) and which will oppose it (i.e. provide the opposing case).

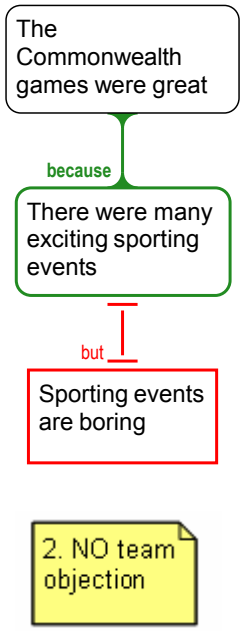


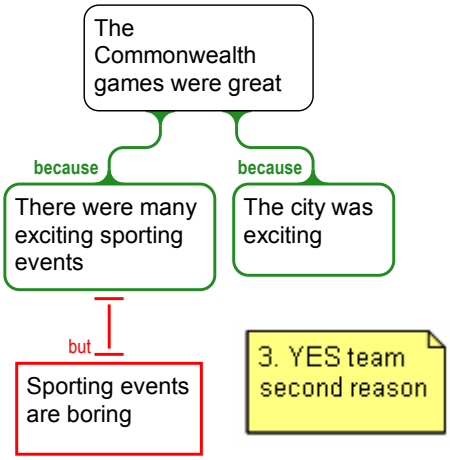
3. Prepare: Teams are given ten minutes to prepare their cases by mapping their ideas on an argument map and locating information to enhance their evidence. Students should also consider how they will respond to the other teams' reasons and/or objections. The images below provide an example of the preparation, however the reasons provided once the game has begun is not limited to these. They are merely a guide and establishing key reasons.

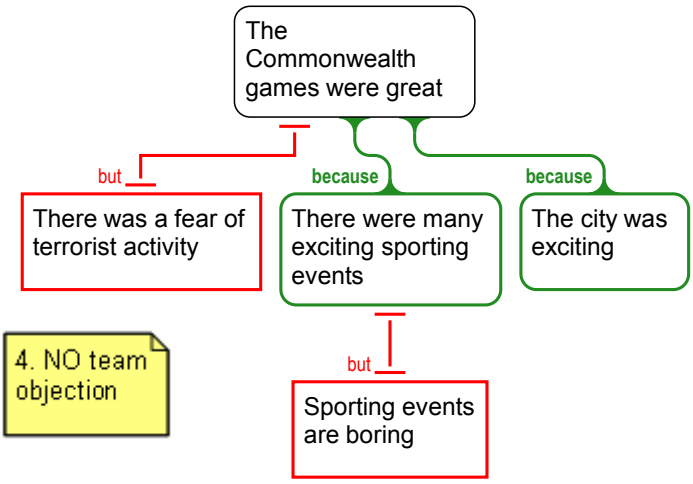


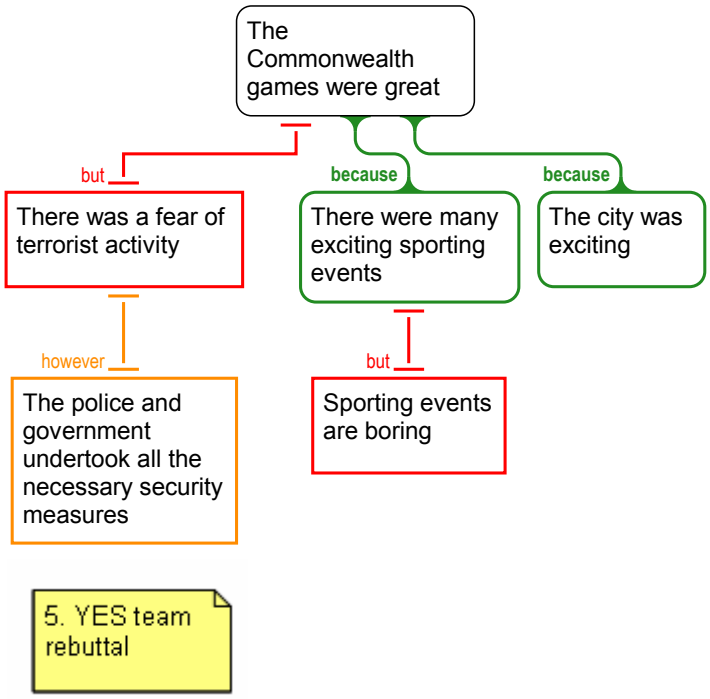
4. Play! A player from each team makes one move at a time, that is, adds one reason or objection to the conclusion. Remind students to select their best reasons to support or refute the conclusion while also endeavoring to diminish the effectiveness of the other team's reasons by providing objections and rebuttals.



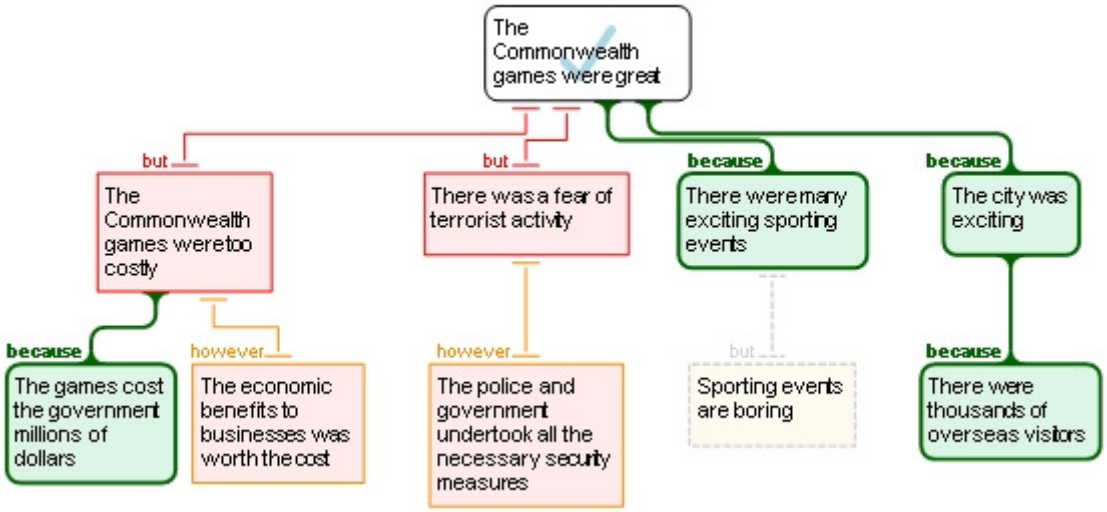








5. Evaluate: Ten minutes before the end of class, advise that you will now evaluate the claims to ascertain who provided the best case. Select evaluation and determine how good the reasons and objections are as a class. This provides guided instruction and modeling of the process of judging the truth of claims and the support they provide to another reason and/or the conclusion. (Where you have more than one chess board operating you can go around the class and evaluate each group one at a time).



6. Declare: Judge the best case/s and applaud the class for their reasoning skill.

Fiona's experience

Rationale Argument Chess is a popular and fun peer learning activity. If an engaging topic is chosen, or one that has some amusement value (such as "Dogs are better than cats") then students become highly motivated and enjoy the challenge of the activity. From a teacher's perspective, the development of skills and review of content knowledge is the success of argument chess. The students must compile reasons for a given case while structuring them in a coherent and logical manner. Moreover, they must consider what the main reasons their opponents will use, and think about how they may object or rebut these reasons/objections.

Due to the limited time and therefore moves that are available to be made, the students must also learn to be selective and how to determine when they need to provide further support or when they have sufficiently objected to the other case's claim. This skill of careful selection is vital - we do no not want any reason and number of reasons - we want the best reasons, which is to say, the ones that do the job we want them to do as efficiently and effectively as possible. This

teaches students to be selective in the reasons they are choosing and consider why they are choosing them (*viz*., what the role of that claim is), a skill which is transferred to effective essay writing.

The activity is effective in both introducing the reasoning process and in the development of skills. What is required of the teacher in both cases is the guidance as to when a reason is not supporting a further claim and at the conclusion of the game, detailing a reason or objection, which, had it been included, may have impacted upon a particular line of reasoning and/or the conclusion.

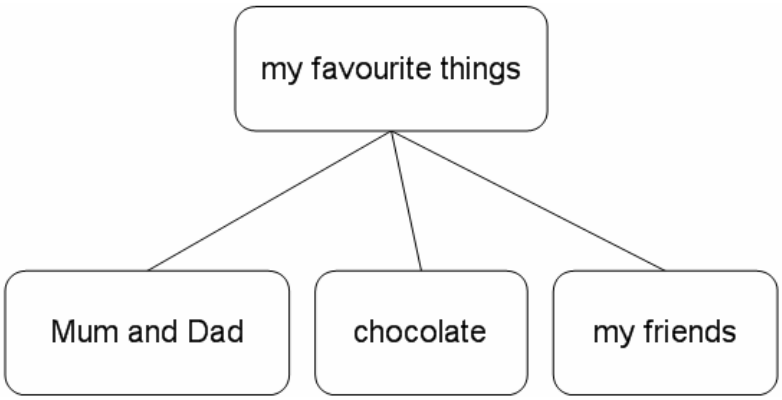
The primary caution for this activity is that each individual has the opportunity to "have their say" and not left out of the team's decision making process. It is therefore useful to insist that each team member must make a move on the joint chess board, while instructing the students to map all their ideas from everybody when preparing their cases and then select the best ones when determining what reasons or objections should be played.

2. Rationale Examples

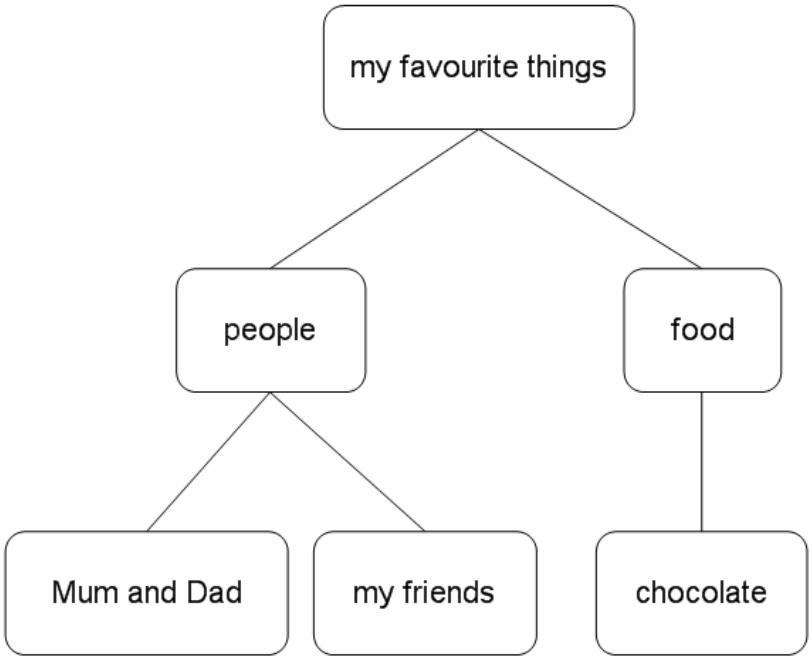
2.1 Early Learners (K- Grade 3)

A. Grouping Maps

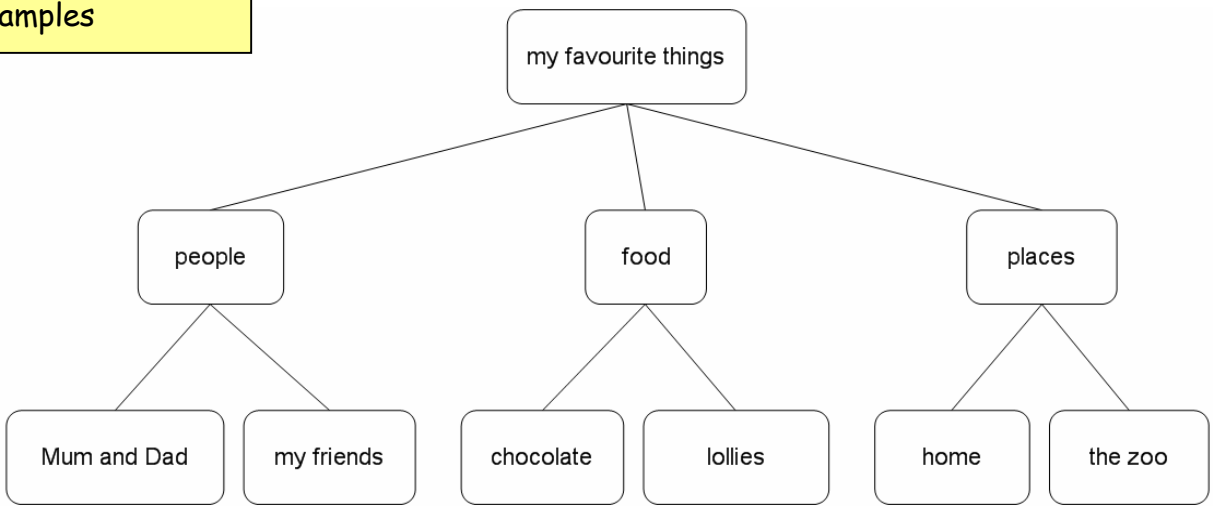
1. Basic ideas



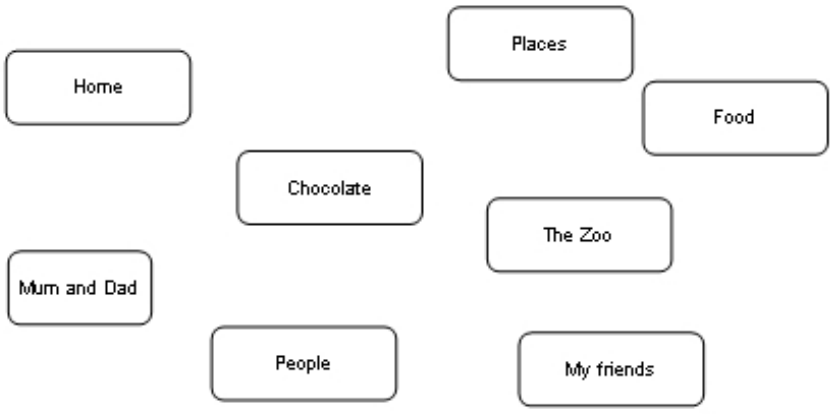
2. Introduce categories of people and food



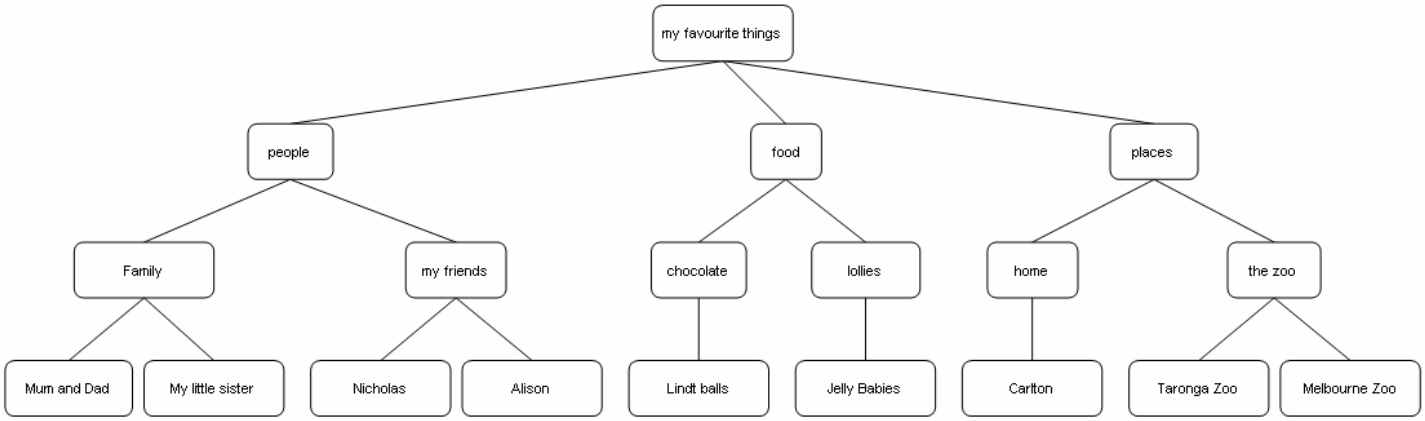
3. Adding another category and more examples



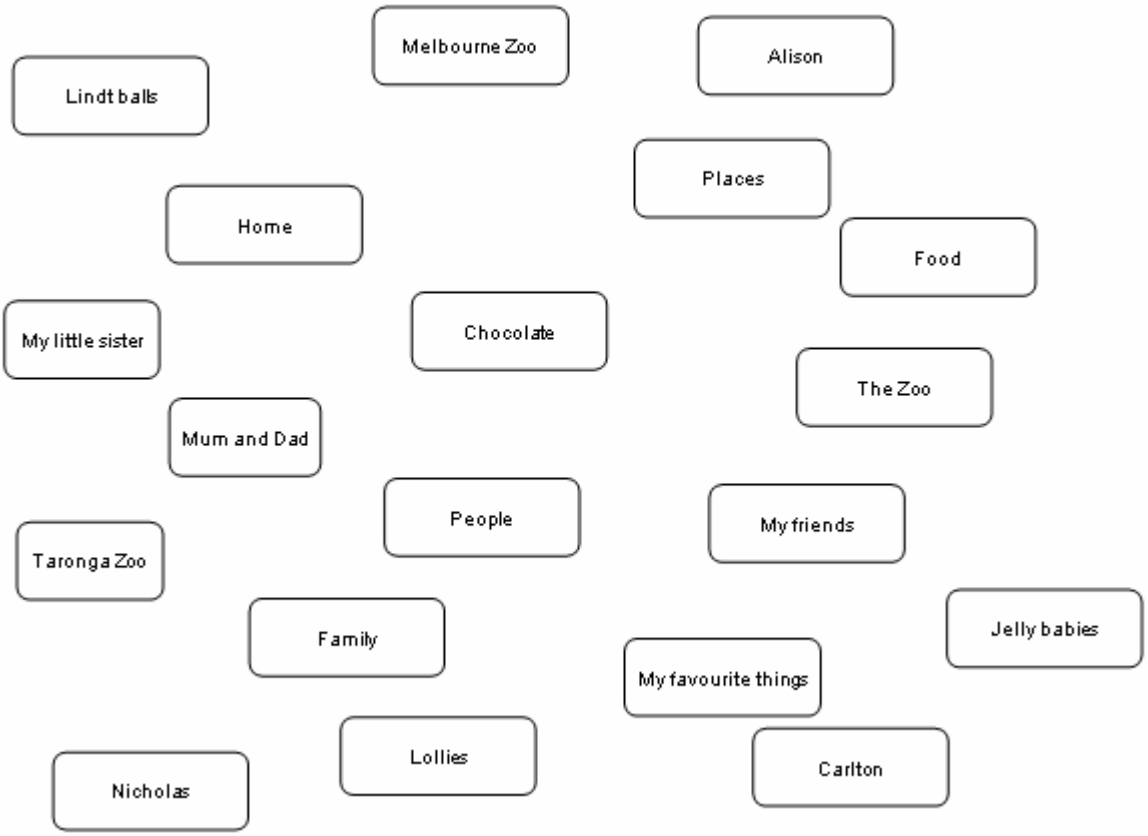
4. Jigsaw pieces



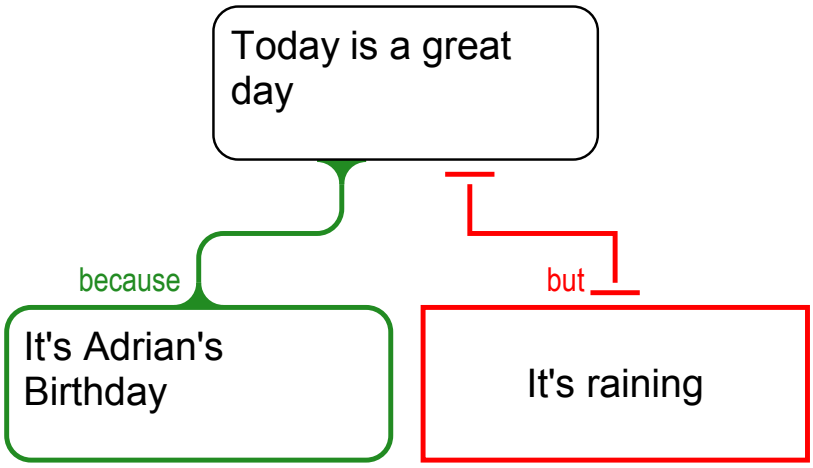
5. Extension:
Adding another
level of detail.

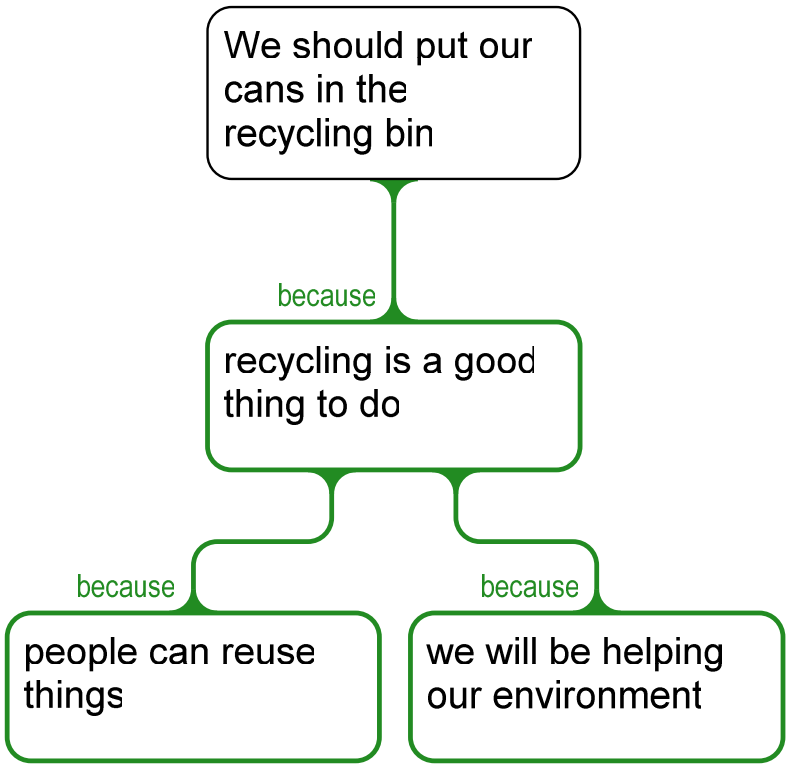


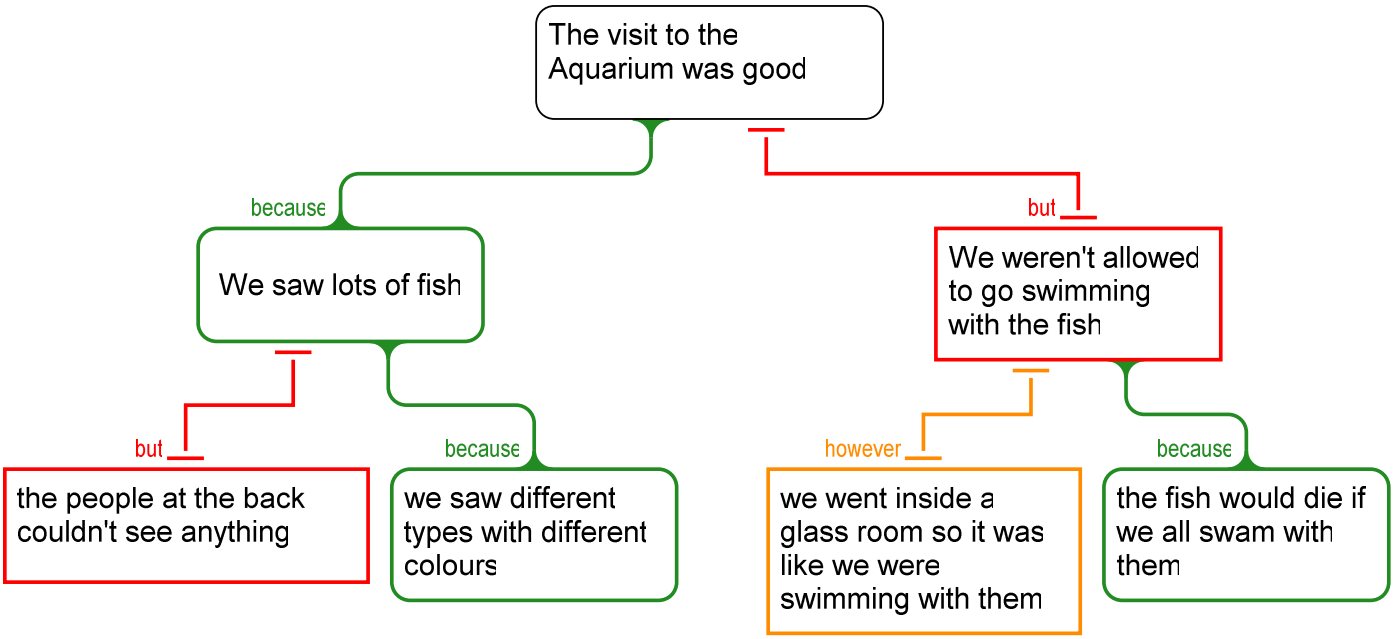
More jigsaw pieces

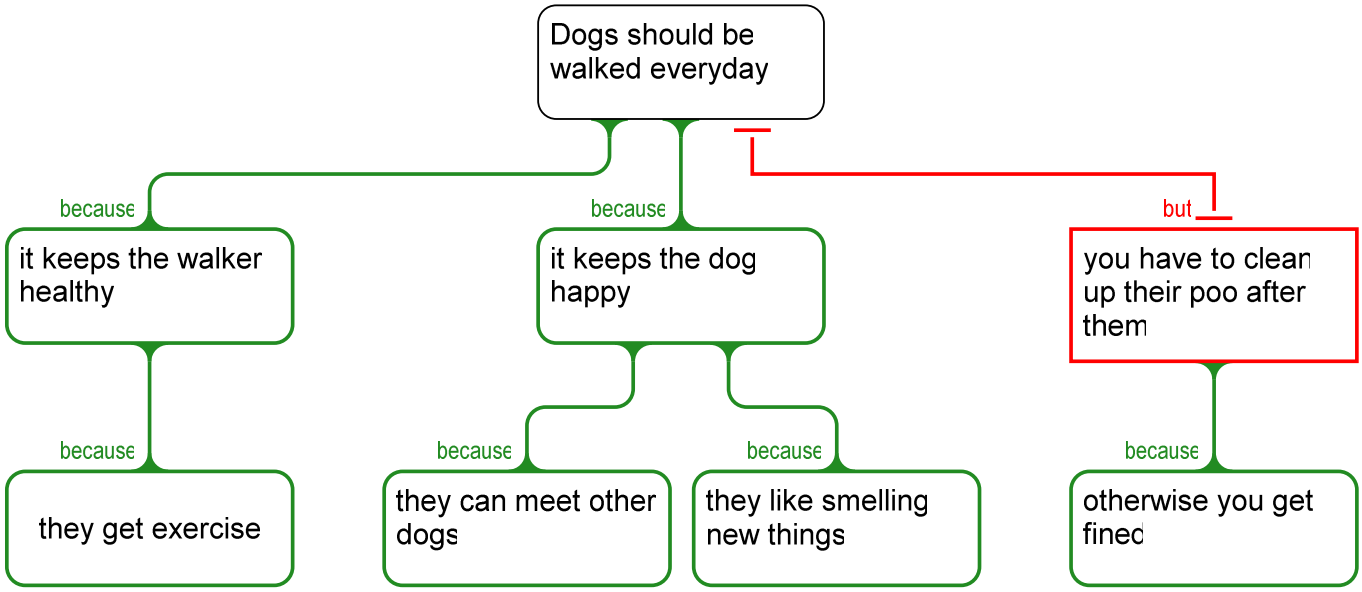


B. Reasoning Maps






The visit to the Aquarium was good
because
We saw lots of fish
but
the people at the back couldn't see anything
because
we saw different types with different colours
but
We weren't allowed to go swimming with the fish
however
we went inside a glass room so it was like we were swimming with them
because
the fish would die if we all swam with them


Dogs should be walked everyday
because
it keeps the walker healthy
because
they get exercise
because
it keeps the dog happy
because
they can meet other dogs
because
they like smelling new things
but
you have to clean up their poo after them
because
otherwise you get fined

C. Grouping to Reasoning Maps

you have to do homework (Jane)

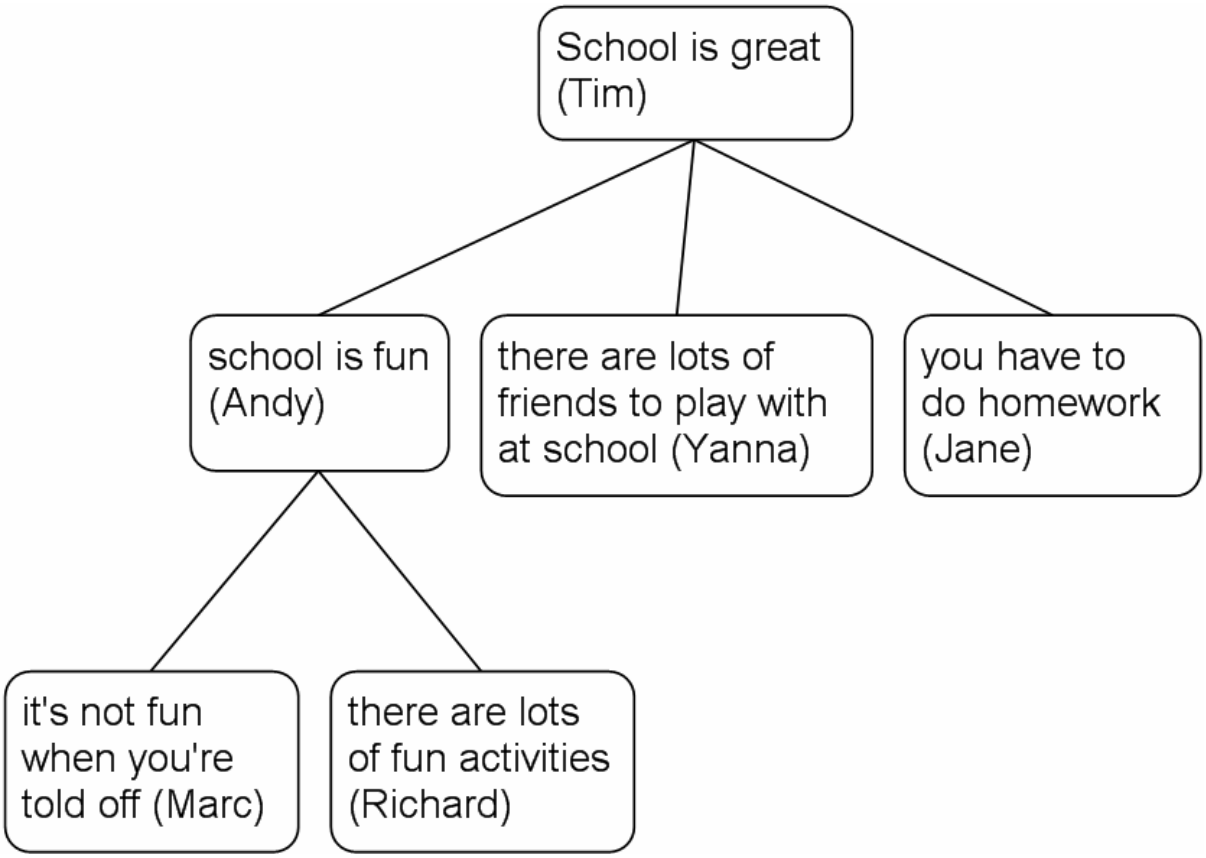
School is great (Tim)

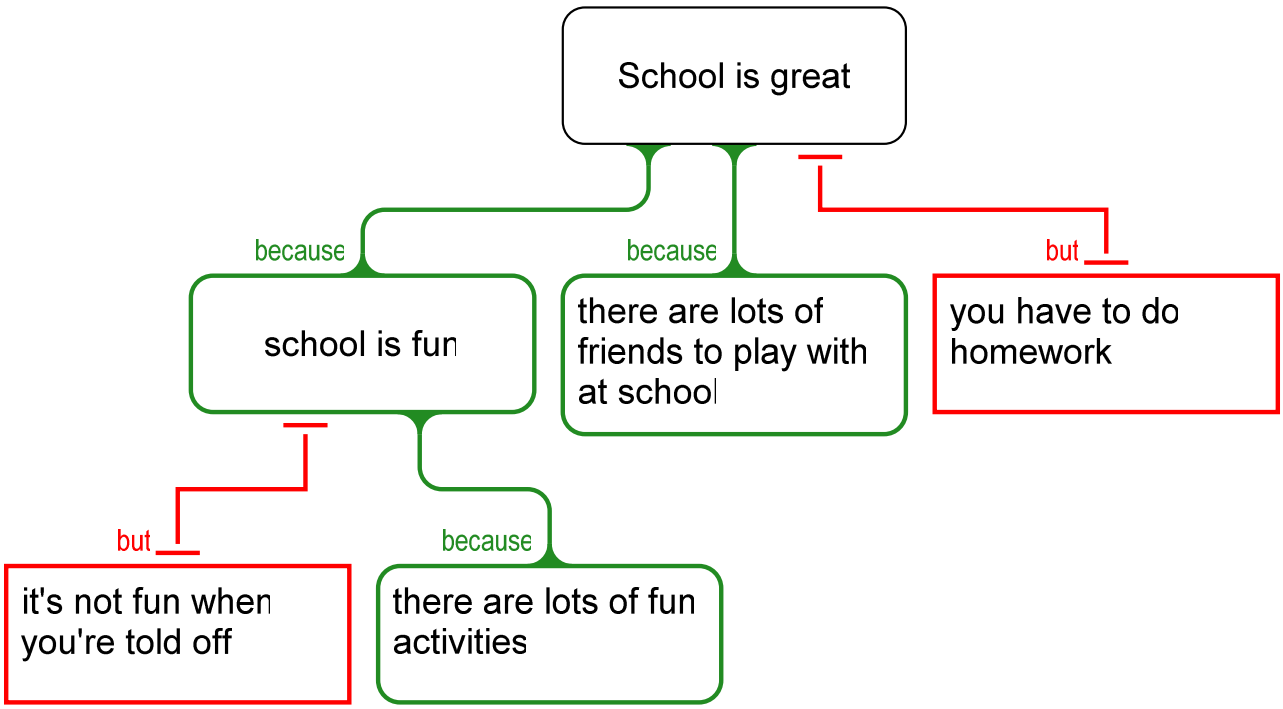
there are lots of friends to play with at school (Yanna)

it's not fun when you're told off (Marc)

there are lots of fun activities (Richard)

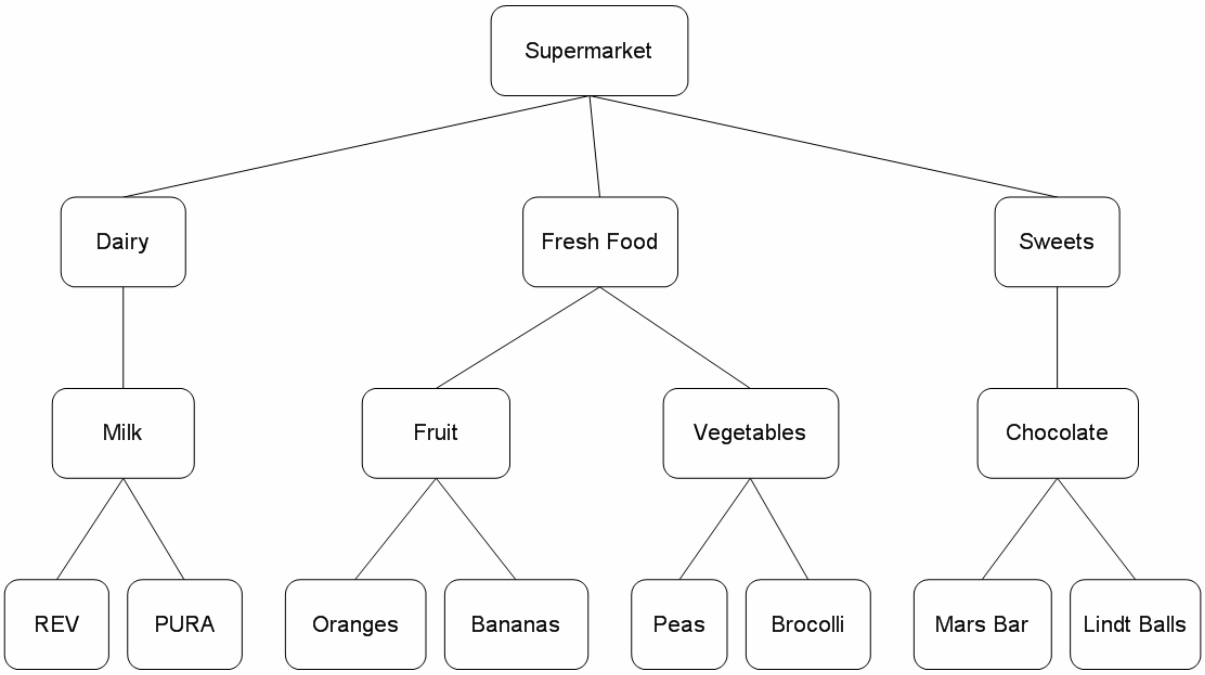
school is fun (Andy)

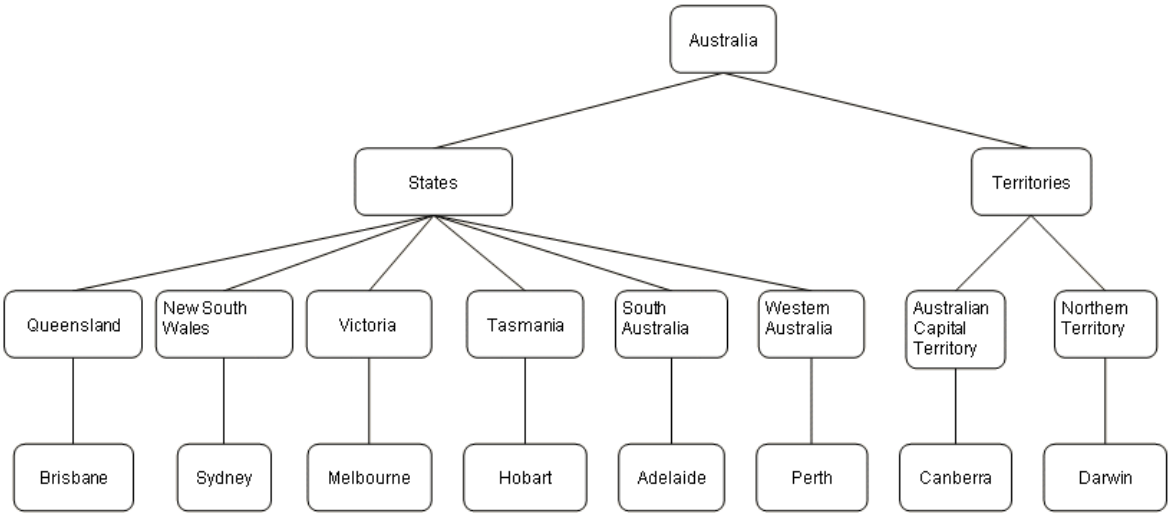



School is great
because
because
but
school is fun
there are lots of friends to play with at school
you have to do homework
but
because
it's not fun when you're told off
there are lots of fun activities

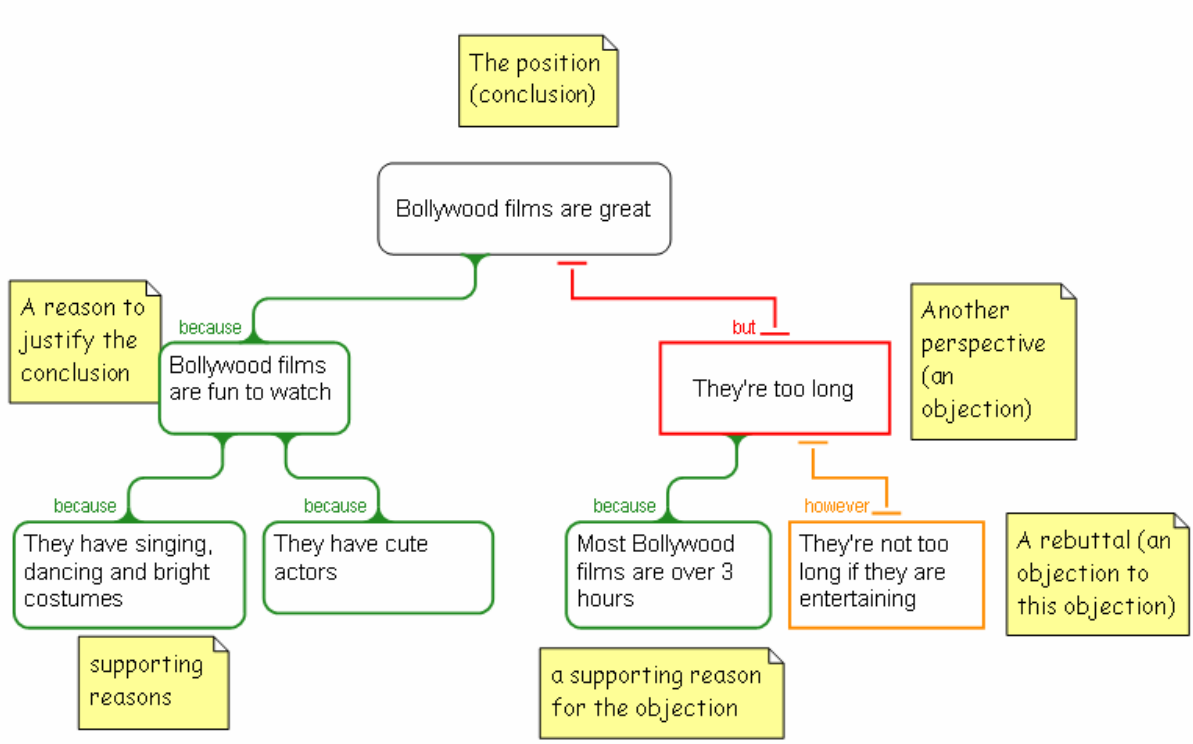
2.2 Primary Learners (Grades 4-6)

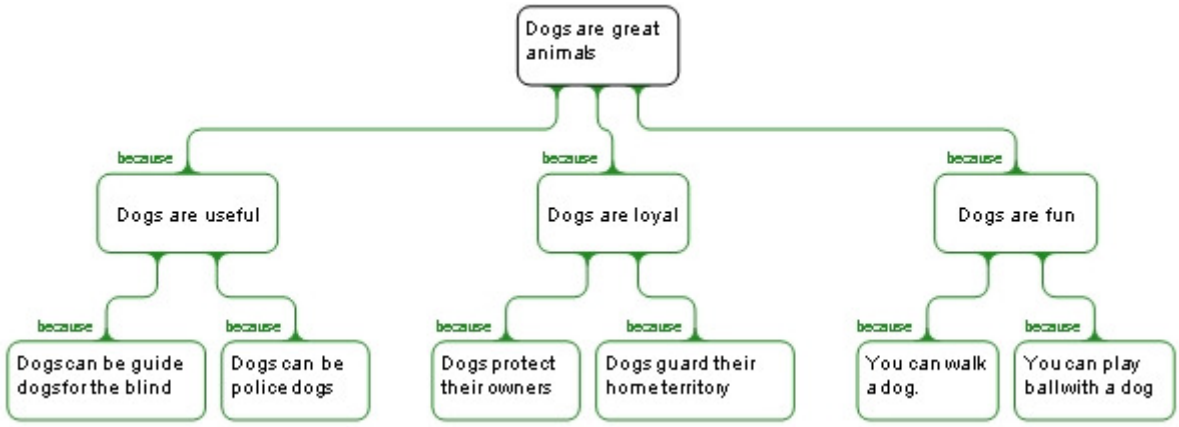
A. Grouping Maps

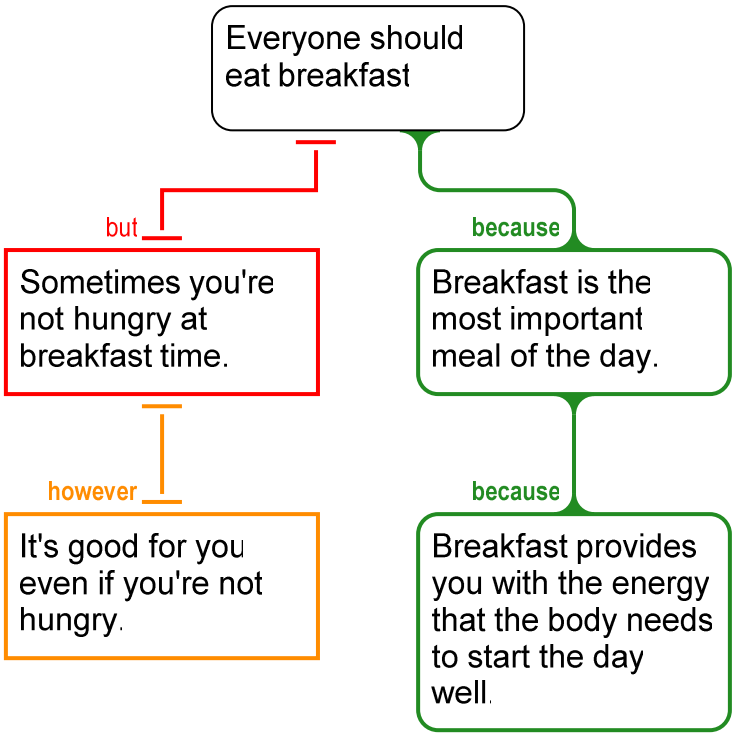




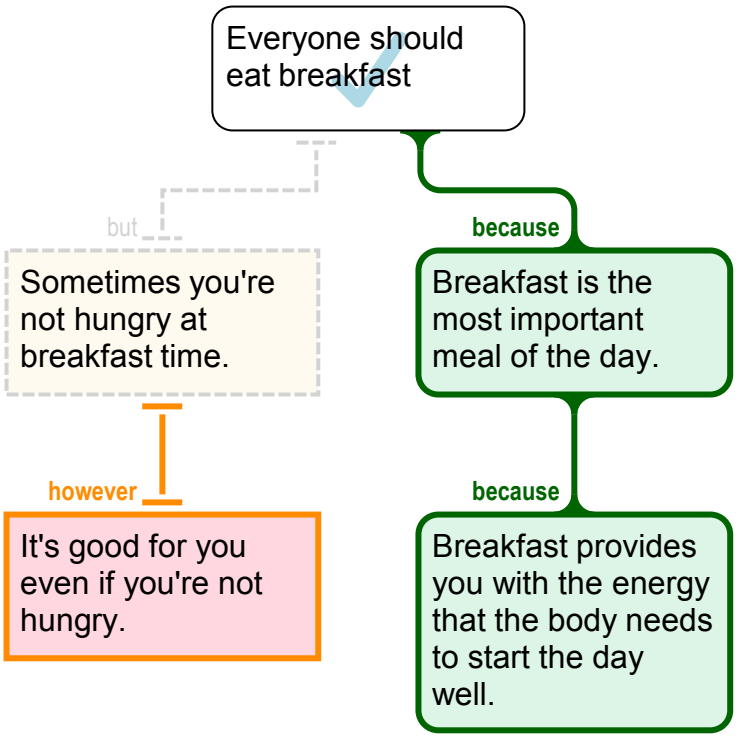
B. Reasoning Maps



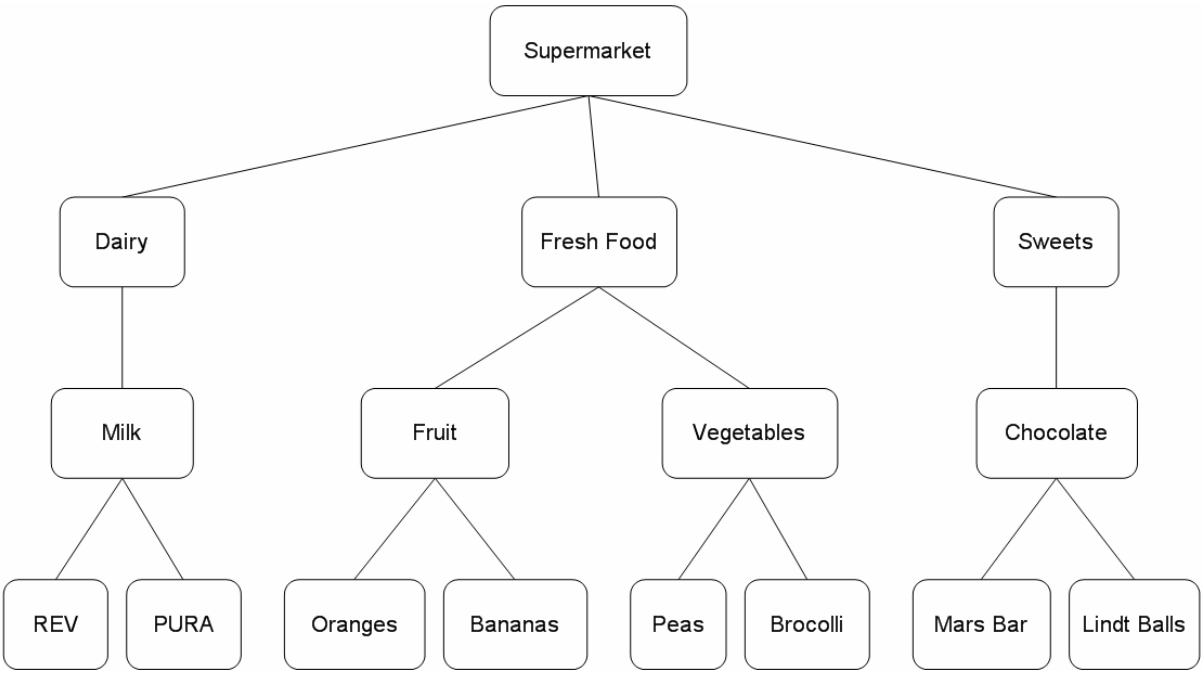


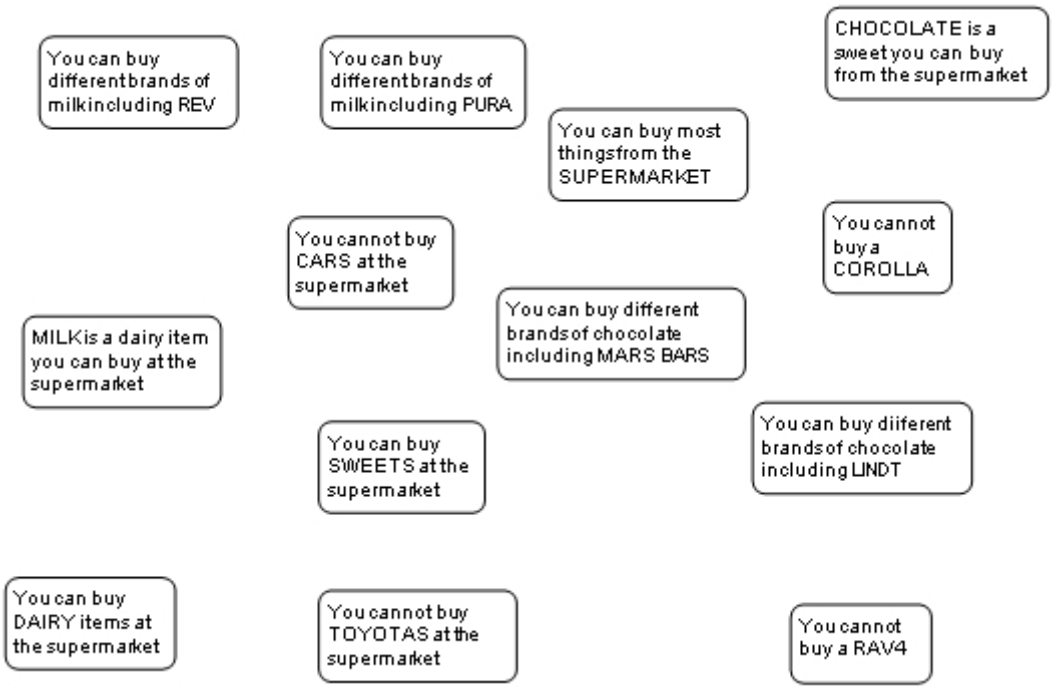


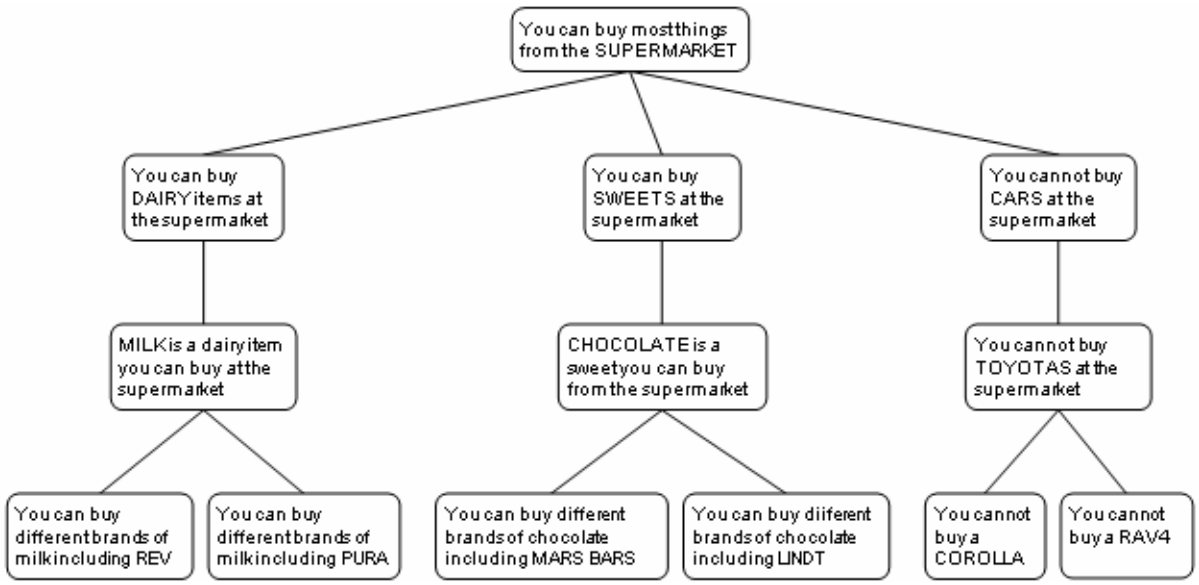
Evaluated reason map

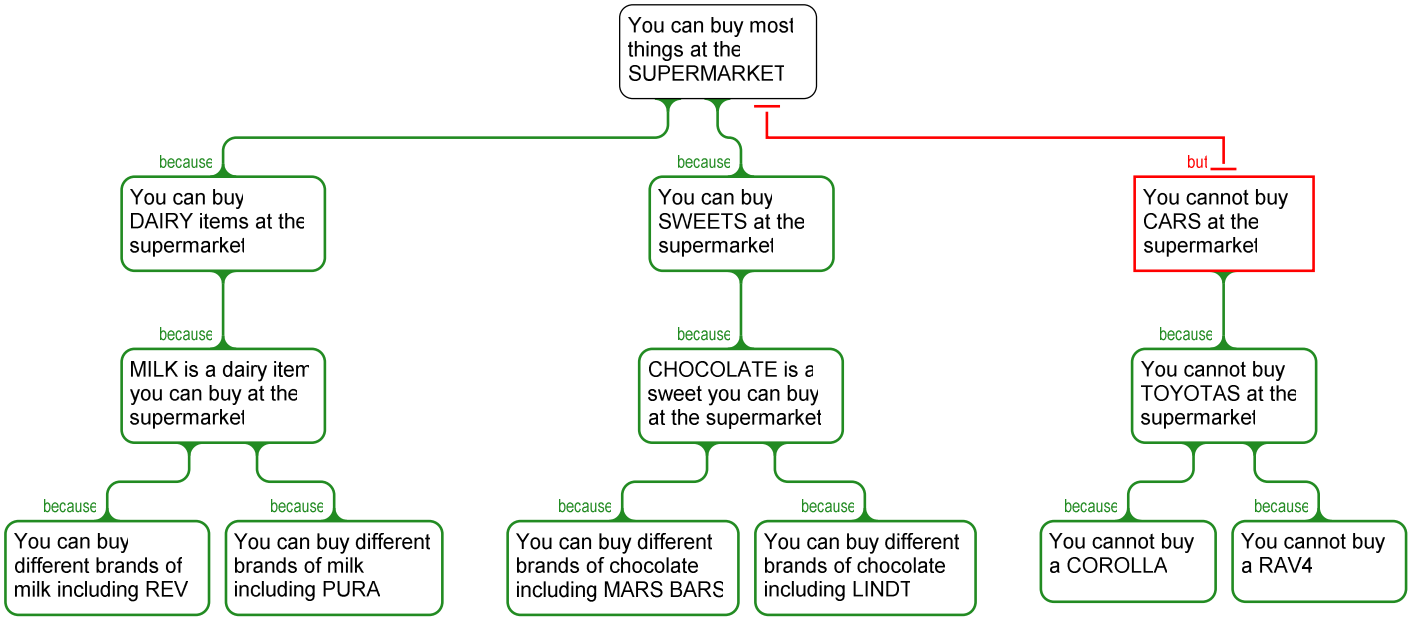


C. Grouping to Reasoning Maps






You can buy most things from the SUPERMARKET
You can buy DAIRY items at the supermarket
You can buy SWEETS at the supermarket
You cannot buy CARS at the supermarket
MILK is a dairy item you can buy at the supermarket
CHOCOLATE is a sweet you can buy from the supermarket
You cannot buy TOYOTAS at the supermarket
You can buy different brands of milk including REV
You can buy different brands of milk including PURA
You can buy different brands of chocolate including MARS BARS
You can buy different brands of chocolate including LINDT
You cannot buy a COROLLA
You cannot buy a RAV4

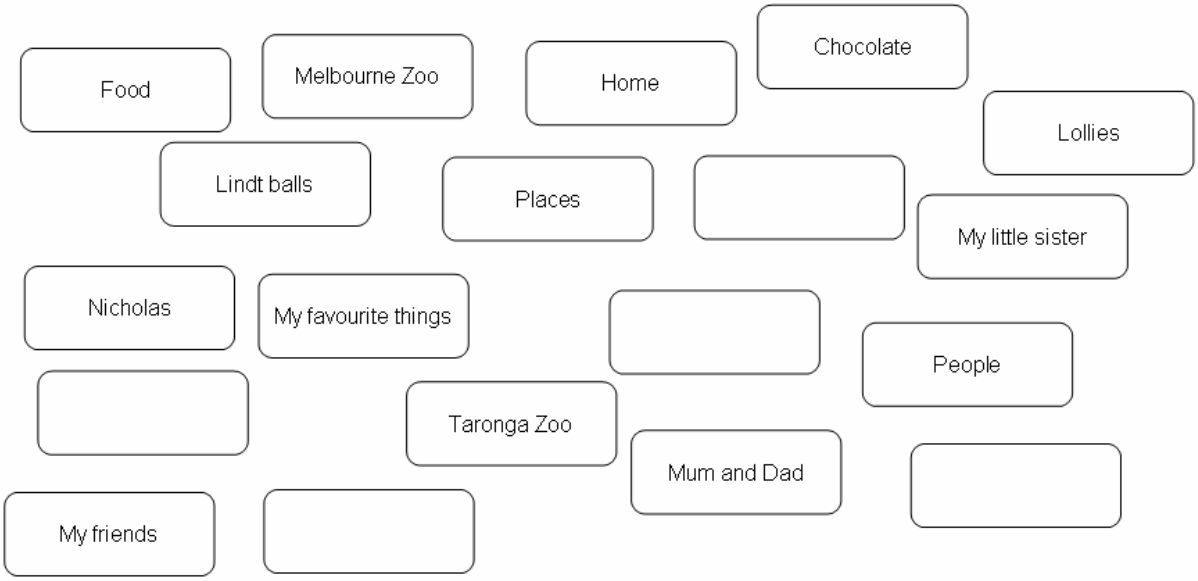

You can buy most things at the SUPERMARKET
because
because
but
You can buy DAIRY items at the supermarket
You can buy SWEETS at the supermarket
You cannot buy CARS at the supermarket
because
because
because
MILK is a dairy item you can buy at the supermarket
CHOCOLATE is a sweet you can buy at the supermarket
You cannot buy TOYOTAS at the supermarket
because
because
because
because
because
because
You can buy different brands of milk including REV
You can buy different brands of milk including PURA
You can buy different brands of chocolate including MARS BARS
You can buy different brands of chocolate including LINDT
You cannot buy a COROLLA
You cannot buy a RAV4

3. Rationale Templates

3.1 Activity Templates

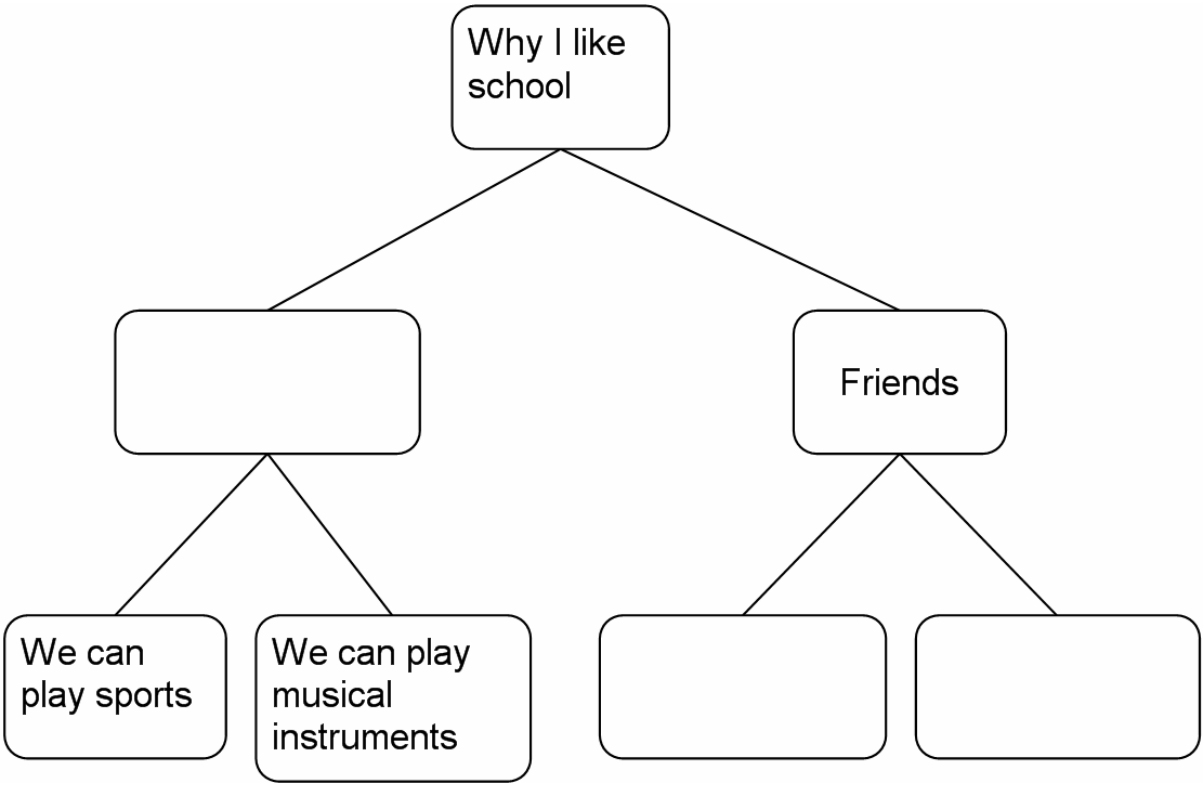
Missing Objects and Concepts – Jigsaw

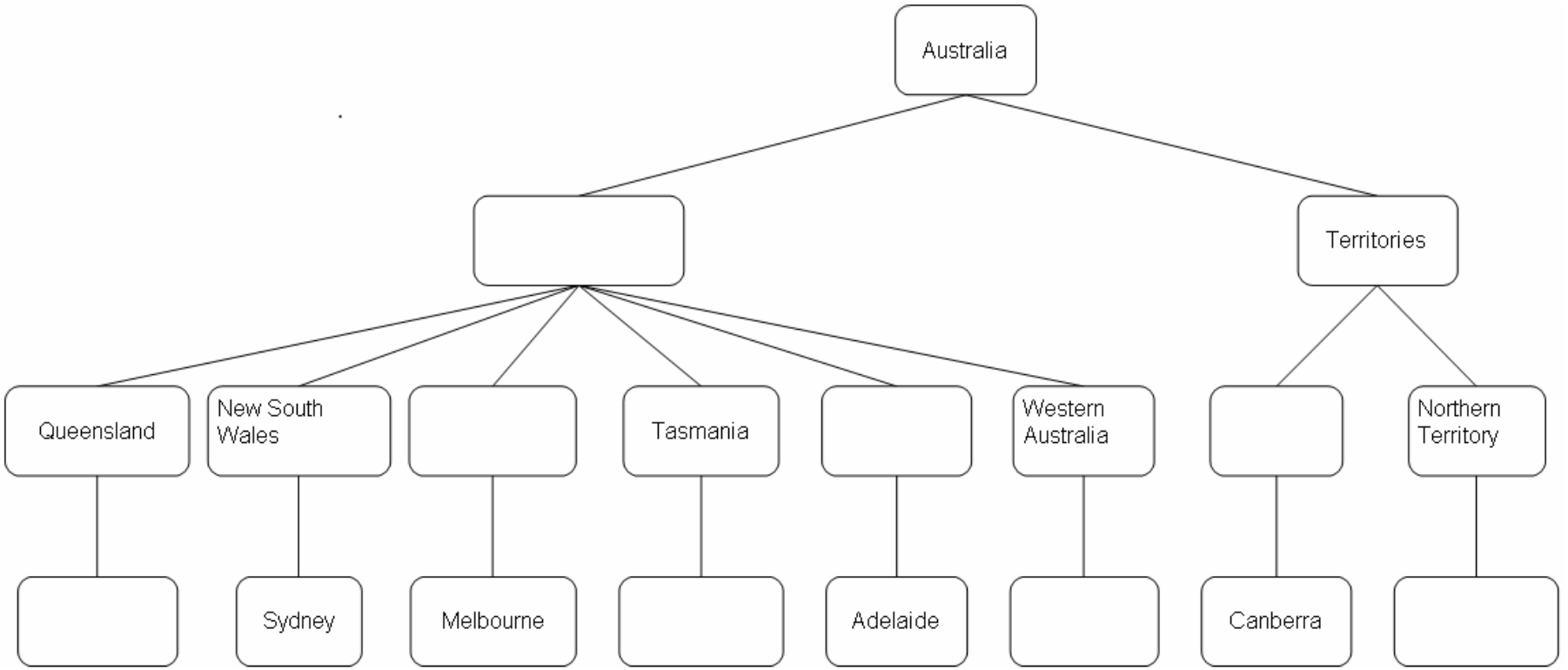
Jigsaw the grouping boxes below (see Jigsaw activity) and fill in the missing labels.

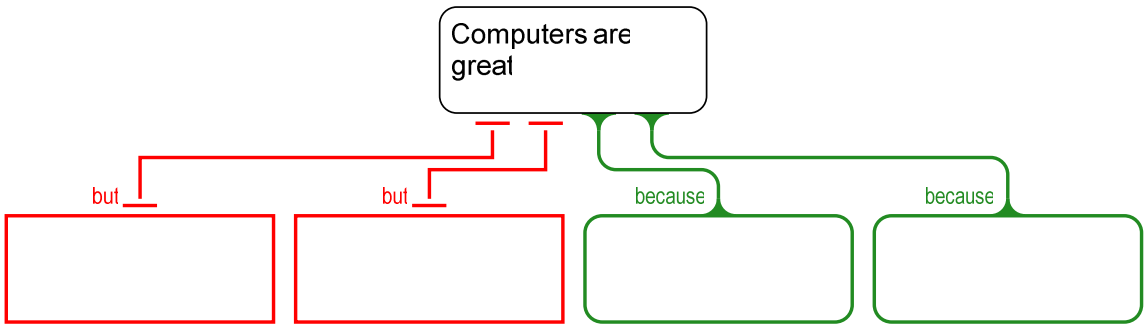


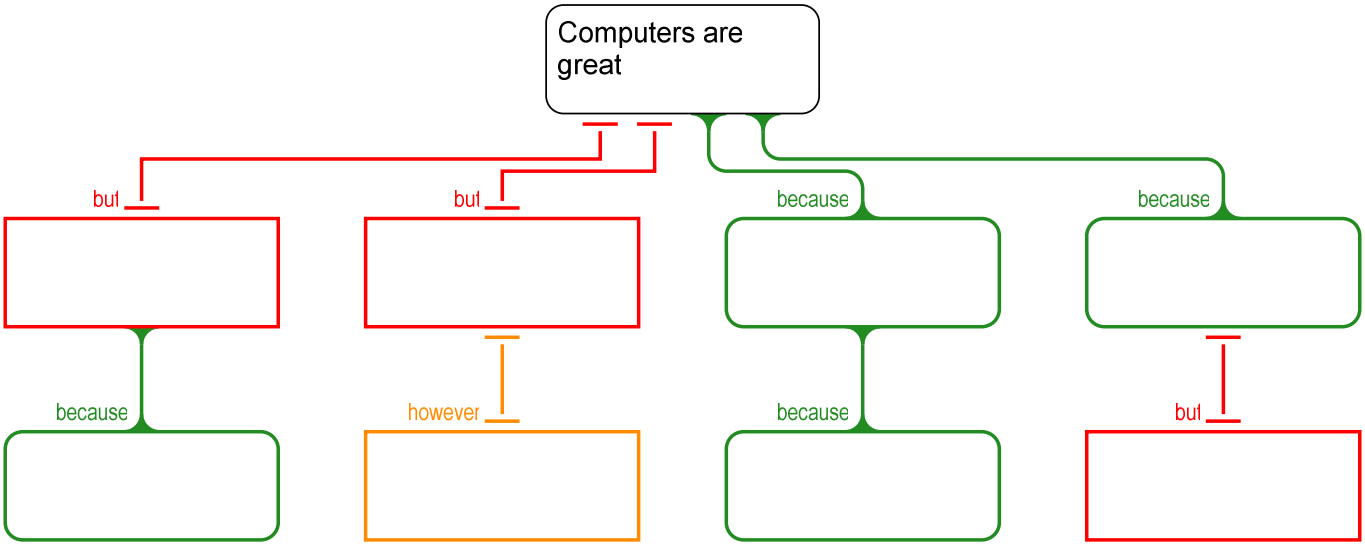
Missing Objects and Concepts – Map

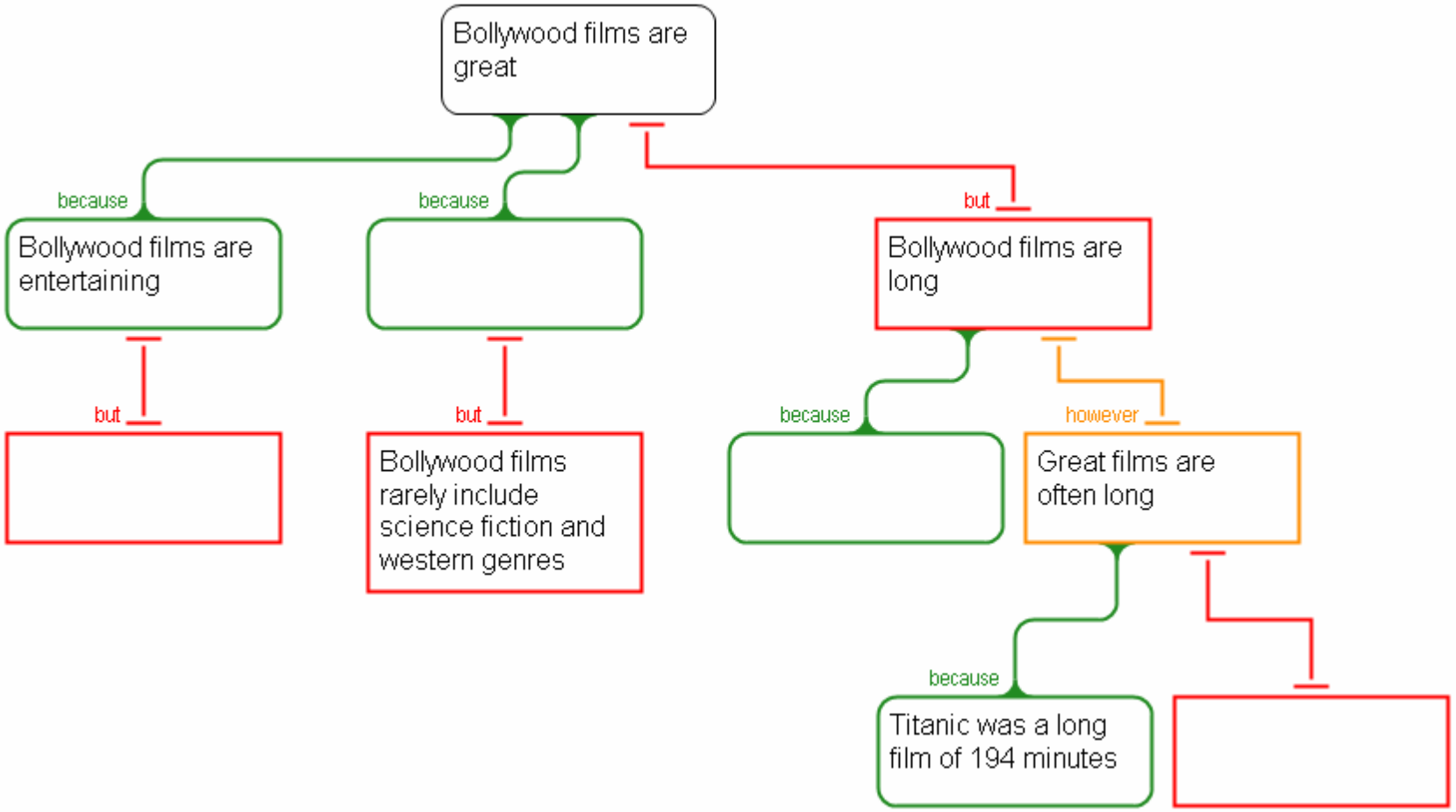
Fill in the missing labels



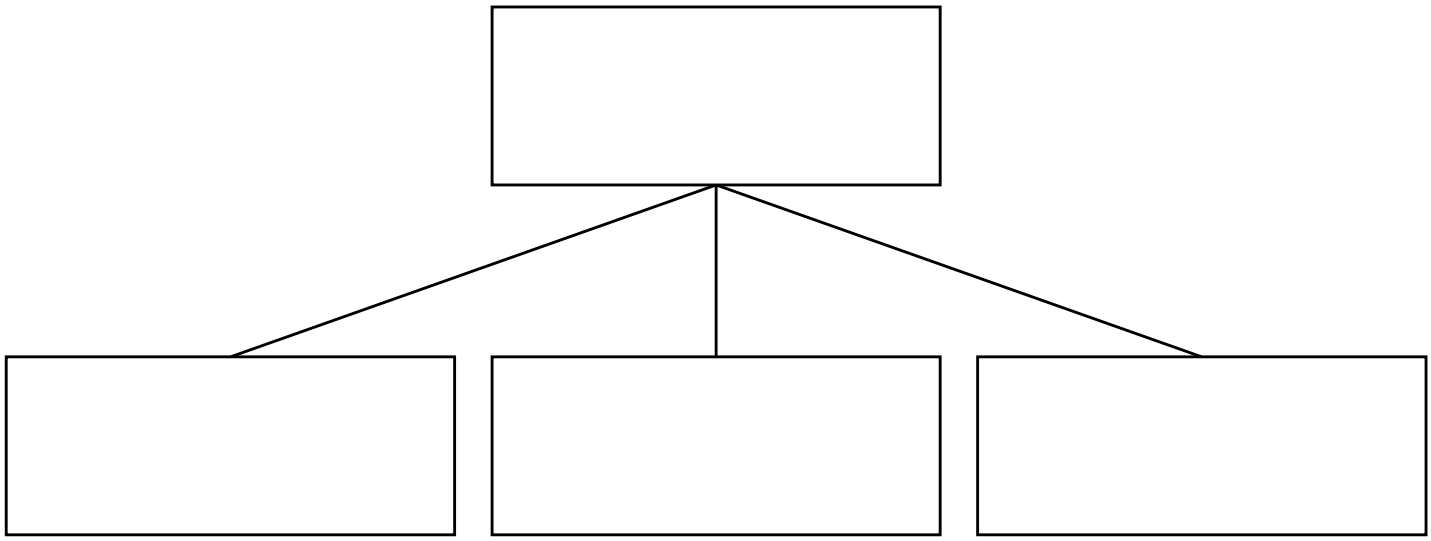

Australia
Territories
Queensland
New South Wales
Tasmania
Western Australia
Northern Territory
Sydney
Melbourne
Adelaide
Canberra

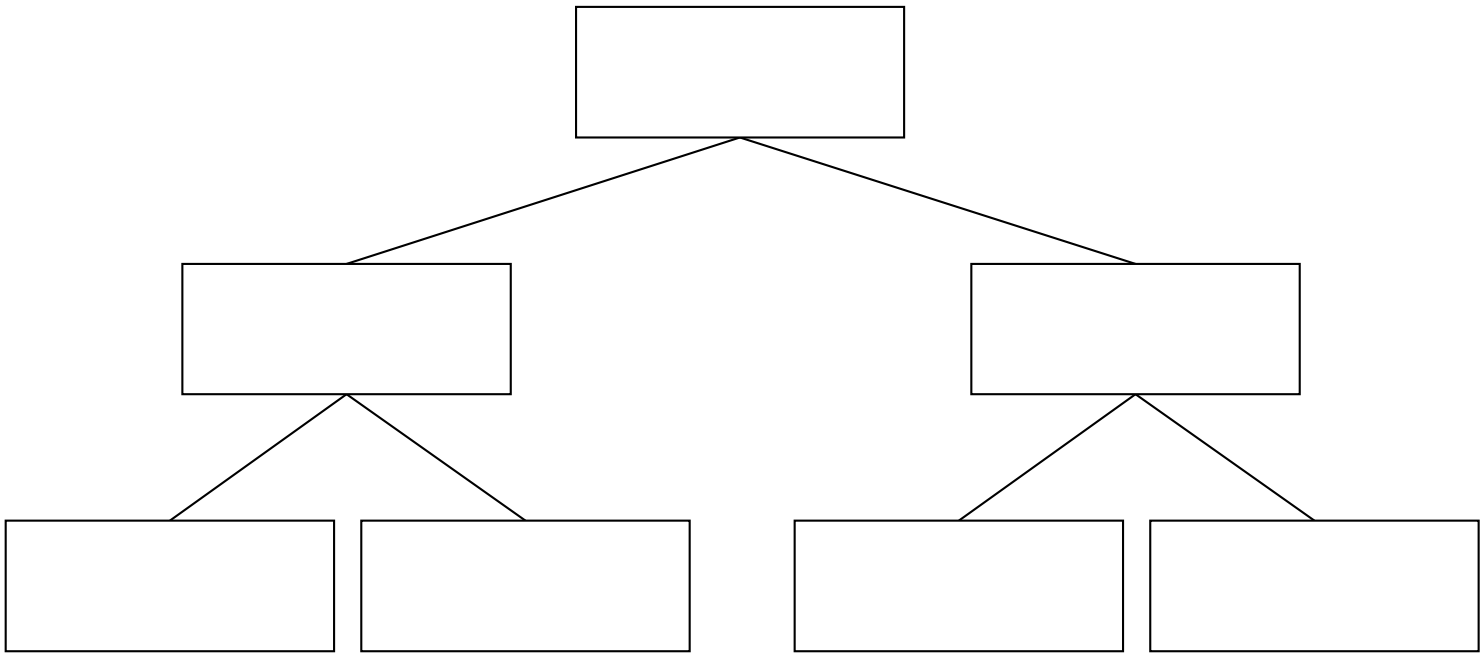

Computers are great
but
but
because
because

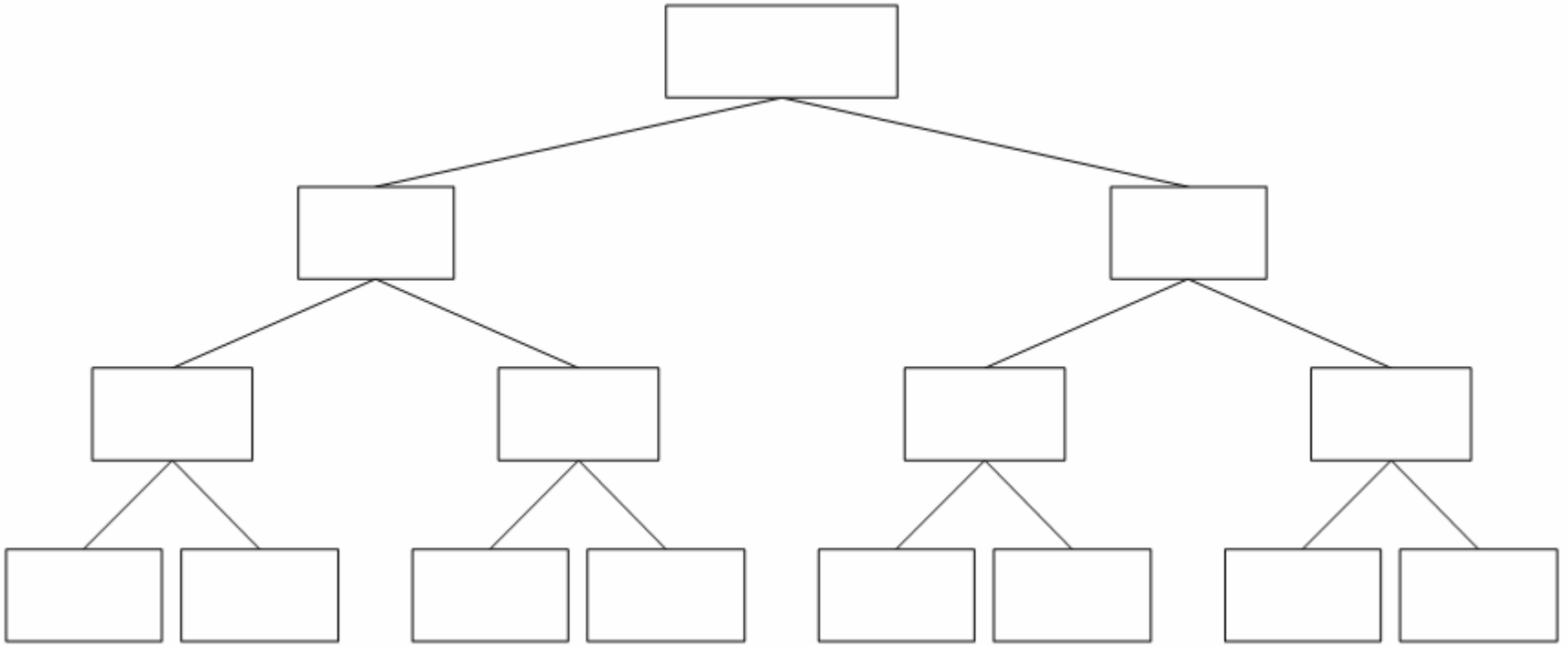

Computers are great
but
but
because
because
because
however
because
but

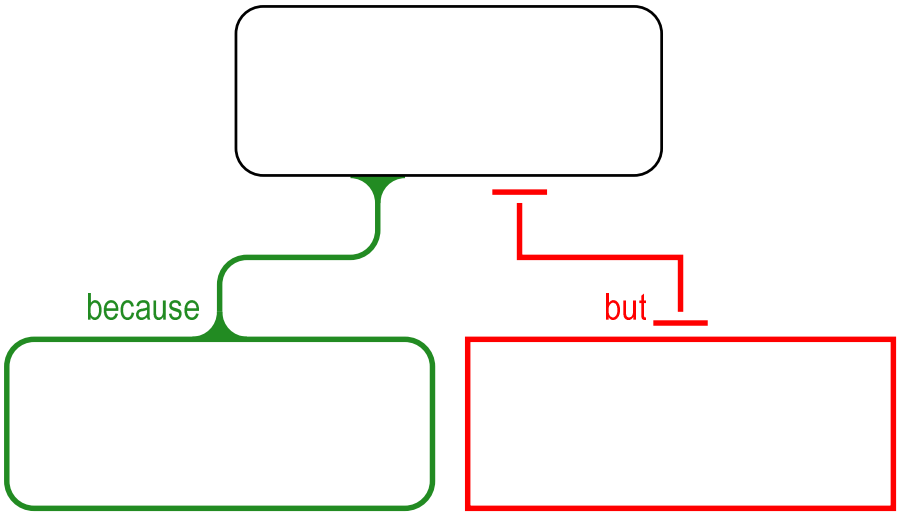

Bollywood films are great
because
Bollywood films are entertaining
but
because
but
Bollywood films rarely include science fiction and western genres
but
Bollywood films are long
because
however
Great films are often long
because
Titanic was a long film of 194 minutes

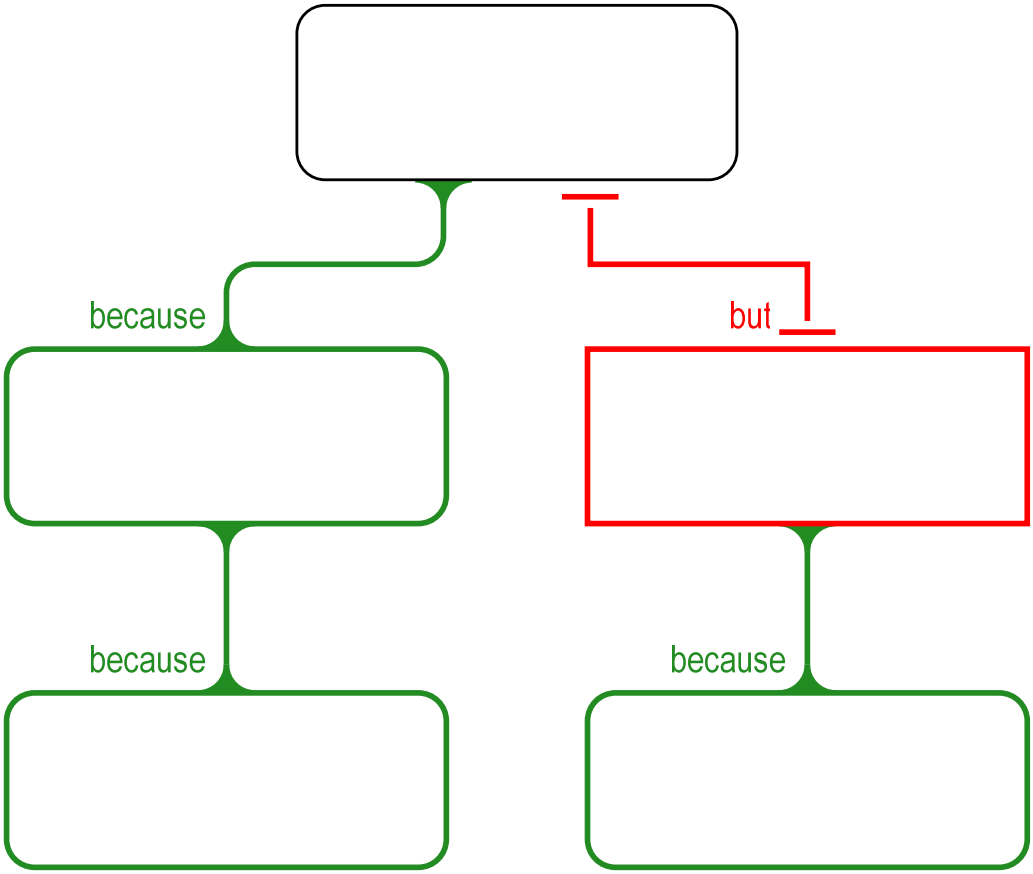
3.2 Map Templates

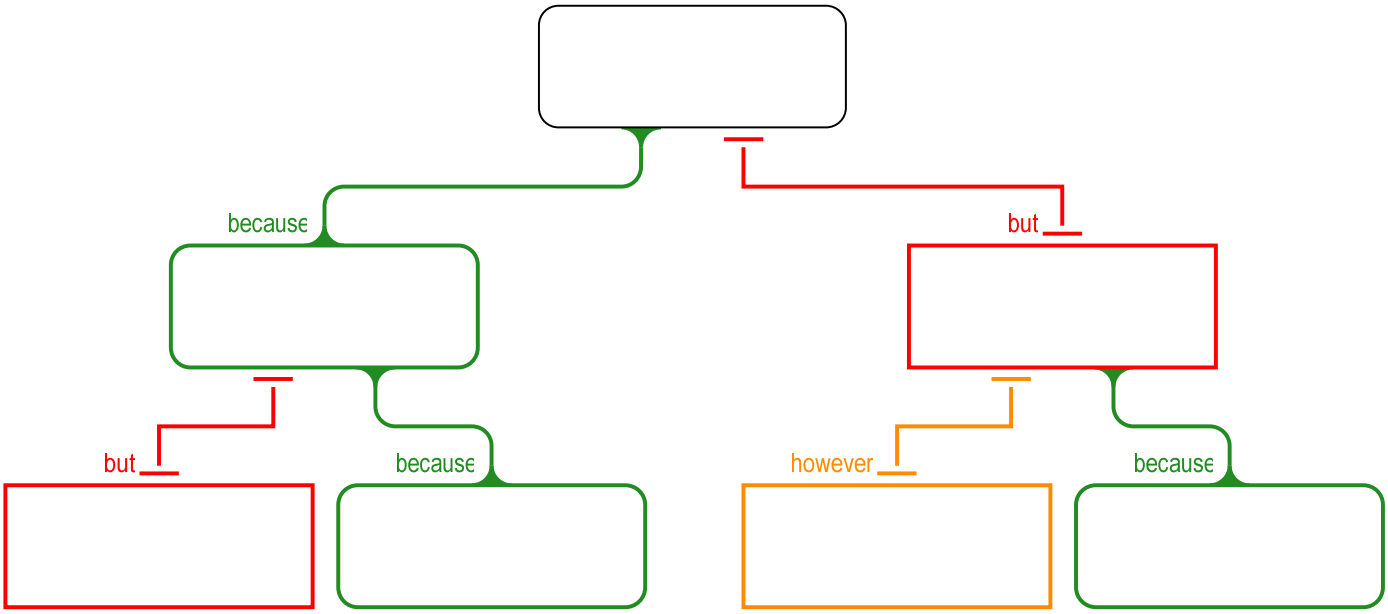


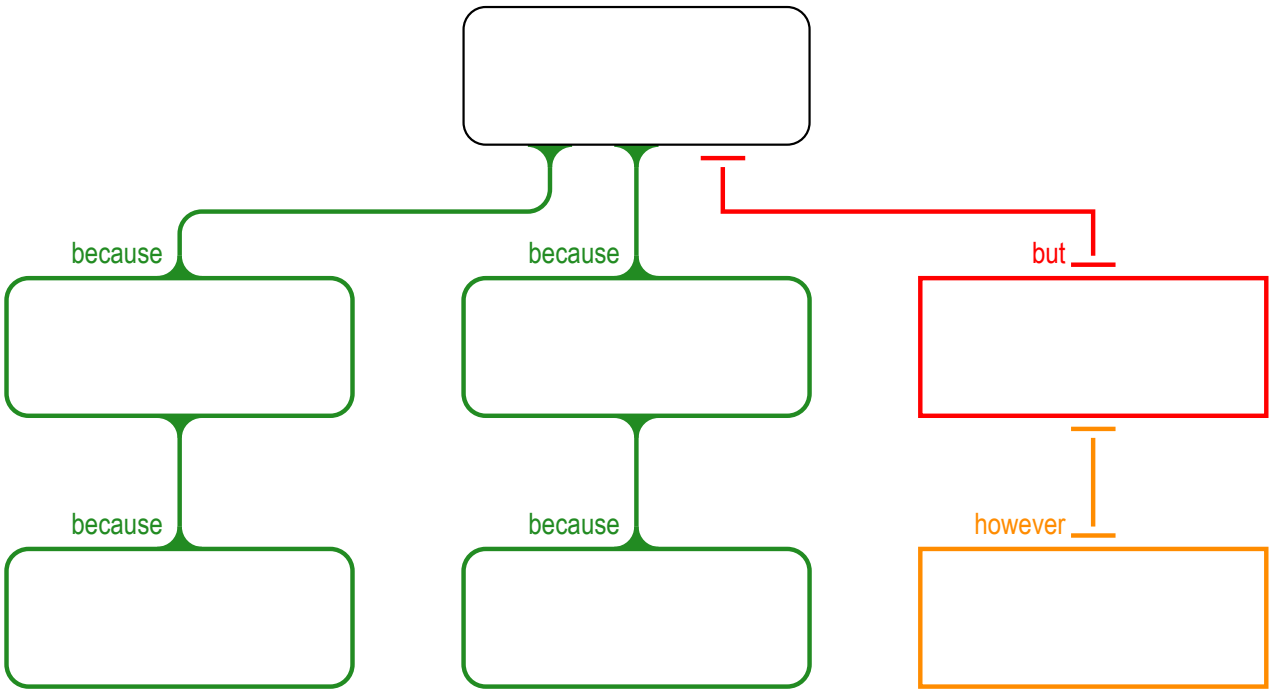


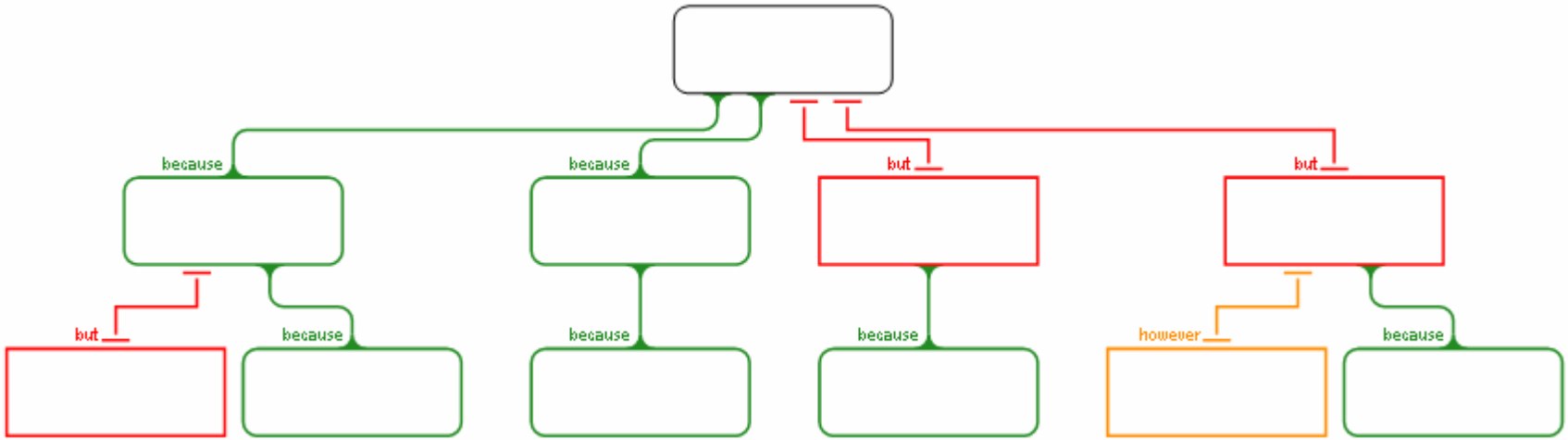



because
but


because
but
because
because


because
but
but
because
however
because


because
because
but
because
because
however


because
because
but
but
but
because
because
because
however
because

4. Rationale Unit Plan

4.1 Early and Primary Learners

Lesson	Early Learners	Primary Learners	Title	Activity
1			Introduction to Grouping	Free picture grouping
2			Grouping Pyramids	Supermarket listing
3			More on thought pyramids	Extended list
4			What can I see … what can I group?	Video listing
5			Grouping claims	Jigsaw
6			Groups to Reasons	Jigsaw 2
7			Reasoning Maps	Class reason map
8			More on Reasoning Maps	Argument chess

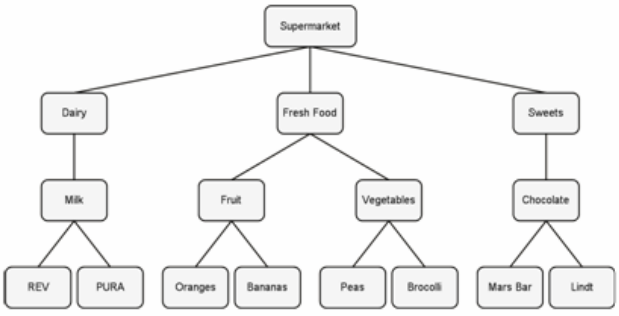
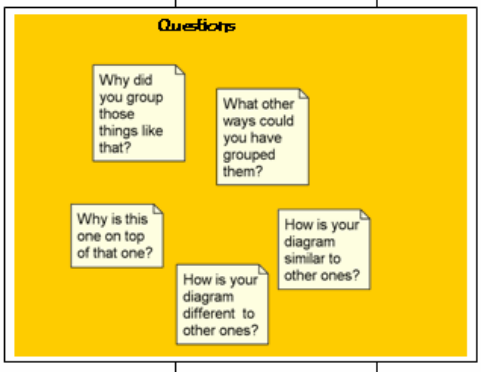
The lessons you choose for your students will reflect their stage of development and level of understanding. Early learners will probably focus on grouping maps while primary learners will be likely to extend this knowledge to reason maps. The lessons outlined by no means suggest a limit to when these thinking skills are taught. On the contrary, the more practice your students get, the more they will improve. Likewise, the more varied category and reasoning tasks they receive, the more they will advance. These lessons are a suggested introduction to each type of task. Perhaps use these to introduce some concepts and methods for good thinking and supplement them will varied examples in your everyday classes as the need arises.

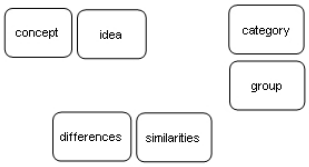
The following are full lesson plans as an example for your classes

Lesson 1

E. Teaching Methodology & Learning Experiences

Learning experience	Teacher	Students	Time
1. *Introductory activities : Engage & Diagnose* *Object free grouping*  Teacher instructs students to form pairs or small groups and collect an envelope and large sheet of paper. In the envelope are a series of pictures. The teacher asks the students to find a way to group these items in 10 minutes.	Instructs Monitors Questions	Listening Forming groups Collecting materials Grouping	15
2. *Developmental activities : Build, Transform & Present* *Supermarket grouping* Students invited to look at other students' diagrams and find out why other people grouped the way they did. Teacher invites student responses and explanations, asking what things were similar and what were different. Teacher asks students to imagine they are in a supermarket and have a list of things they need to buy. S/he asks them to think about how they may group these items – what aisles or sections they would go to in order to get these items. With this in mind, the teacher instructs the students to now group the items as you would find them in a supermarket. Teacher instructs the students to add a label identifying each group and then to look at other people's work and see how they arranged the groups.	Instructing Questioning Directs to ideas created by students Inviting responses Monitoring	Observing other diagrams Thinking about similarities and differences Imagining Grouping items Adding label Observing other diagrams and asking questions	20

Learning experience	Teacher	Students	Time
Supermarket listing: pyramid grouping Teacher asks the students to sit and look at board. On the board s/he advises they are going to create a group diagram to combine all the best things from the diagrams they have created in their groups. The teacher models the grouping exercise in the form of a hierarchical (pyramid) structure, asking the students which item should go in at each level and WHY.  	Modeling Questioning  	Listening Responding Thinking! Explaining	10

Learning experience	Teacher	Students	Time
3. Concluding activities : Reflect  When completed the teacher summarises the diagram, asking for students to explain why one item is not in another place. S/he asks them to explain the following terms, which is written on the board. The teacher instructs the students to copy the diagram in their books together with the new terms. 1. Group 2. Idea 3. Concept 4. Similarities 5. Differences	Instructing Questioning Instructing to write in notebooks	Listening Offering ideas Reviewing Reflecting Writing	15

4. After class : Teacher's reflection

a. How did I do as a teacher?

b. How well did the students' knowledge & skills develop?

c. What else do I need to do to develop these skills and knowledge?

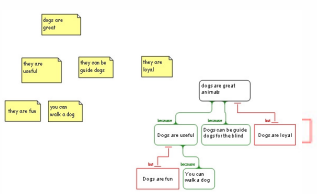
d. What requires following up?

Lesson 1 (double lesson)

E. Teaching Methodology & Learning Experiences

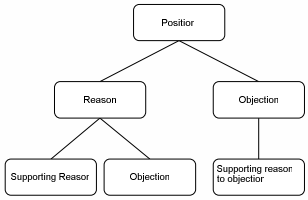
Learning experience	Teacher	Students	Time
1. Introductory activities : Engage & Diagnose  The teacher poses a claim to the class (eg. Dogs are great) Teacher asks for some views (why this is and is not the case) Class brainstorms ideas. Teacher jots some of their ideas on board.	Questioning Inviting responses Writing ideas	Listening Thinking Offering ideas	10
2. Developmental activities : Build, Transform & Present *Class reasoning map:*  The teacher types the claim given at the outset as a "position" box using Rationale (projected onto the board at the front of the classroom). Then s/he asks the students to decide whether they agree or disagree with the claim. The teacher asks someone WHY they agree with the statement (pointing at the position box). The student offers their opinion and the teacher types in a reason box to represent their idea. The teacher asks someone else why student "P" may think that this is a good reason (i.e. a supporting reason). The brainstorming ideas may assist the student in ascertaining a good "back up" reason. The teacher then creates a supporting reason and lets the students know that the job of this box is to help the one above it and is thus called a supporting reason. This process progresses until a map is created (1-2 primary or top level reasons and objections with 1-2 supporting reasons each)	Modeling map Questioning Inviting responses Directs to ideas created by students Creates argument map Provides bridge between language students know and the new concepts.	Deciding Justifying Explaining Offering reasons Listening to others' ideas Observing model	20

1

Learning experience	Teacher	Students	Time
Individual/Pair reasoning map: The teacher instructs the students to form pairs or small groups (though individual work is fine if this is the best for your students). A new claim (position or conclusion) is placed on the projected image of *Rationale*. The students are instructed t hat they will be building their own reasoning maps and are asked as a group how they think they should proceed. After discussing, the steps are confirmed on the board and the students collect their reason maps and sticky notes and commence. 1. Do you agree or disagree with the claim? 2. What reasons do you have or can you think of? Write them each down on a sticky note. Create about 2 3. What objections do you have or can you think of? Write these down on a sticky note. Create about 2 4. Now structure all you ideas in a pyramid form. This means showing the main point (the claim or position) and then showing the "yes/ agree/ reason" claims and the "no/disagree/objection" claims. 5. Identify reasons and objections by adding a coloured dot. Green=reason, Red=objection. 6. Think of any other reasons or objections that support or "back up" your first set of reasons, applying red or green dots. 7. Now look at your map. Does it make sense? Do you still agree with the claim? Or have you changed your mind? If there is time the teacher can model an answer on the board using Rationale. 	Instructing Set task Inviting responses Confirm how students should proceed Monitoring and assisting individuals/ groups Time keeping	Forming pairs/groups Listening Determining method Building map Reasoning! Thinking of other perspectives and alternatives Reviewing Reflecting	25

Tip
Commence with language that is appropriate to your students, eg. a **position** could also be referred to as a statement, a claim, a position, the main point or the conclusion. A **reason** could be the "yes" case, the agreeing points, what "backs up" or supports. The **objection** could be the "no" case, the disagreeing points, or what rejects, refutes or does not accept.

2

Learning experience	Teacher	Students	Time
3. Concluding activities : Reflect   Students are instructed to look at the two maps either side of them and see how other people constructed their maps. They are encouraged to ask their peers questions if they don't understand something. The class all sits and the teacher has a discussion about what they have done with questions such as: 1. How did you find creating a reason map? 2. What was easy/ difficult? 3. Did you change your mind after you had completed your map? Why? 4. What is the top claim called? What are the green and red ones – what is their role/job. Students write down 3 new terms they have learnt with an explanation and a sentence summarizing their experience about the task.	Instructing Facilitating discussion Questioning Instructing to write in notebooks	Look at other people's work, discuss, ask questions. Listening Offering ideas Reviewing Reflecting Writing	15

4. After class : Teacher's reflection

a. How did I do as a teacher?

b. How well did the students' knowledge & skills develop?

c. What else do I need to do to develop these skills and knowledge?

d. What requires following up?

5. Rationale Assessment

5.1 How to assess an argument map

Assessment is a joy! Ok, I'm not completely serious – the truth is, it is quite a burden and represents a significant workload for teachers. The trouble with assessing "thinking" is that it goes on in the head and so is difficult to monitor, let alone assess. The great thing about grouping and reasoning maps is that they allow you to see what is occurring in a student's thinking process. Thus we can ask questions and provide appropriate guidance in order that their thinking is logical and clear.

The **ASPIRE** acronym will assist your assessment because it focuses on the various elements of effective critical thinking. The following examples show how the ASPIRE rubric may be implemented with various tasks. The rubric also provides a checklist to aid in the planning of work in order that adequate provision is made for thinking tasks.

For early learners (Kinder to Grade 3) the central aspects of the **ASPIRE** rubric are structuring, presenting and informing. For Primary learners (Grade 4 to 6) this would extend to advocating with some introduction to evaluation.

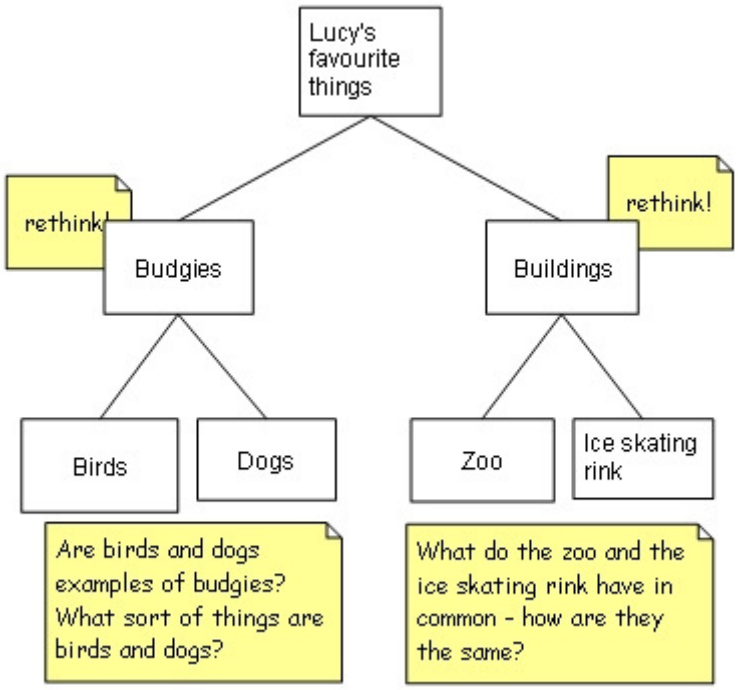
ASPIRE: *Assessing Critical Thinking*

Reflects the student's ability to...		Related terms
A **Advocate**	Clearly and effectively advocate a position or advance the position/s of others.	Argue Advance Persuade Select Conclusive Discuss Analyse
S **Structure**	Logically structure claims or ideas to illustrate the relationship to other claims or ideas.	Classify Abstraction Hierarchy Group Organise Categorise
P **Present**	Transfer the mapping skills to an oral presentation, report or essay.	Report Essay Write Communicate
I **Inform**	Be selective in the choice and range of information utilized.	Select Question Collate Organise Inquire Judge Collect Research
R **Refine**	Refine claims such that they are both clear to an audience and appropriate for the task of evaluation.	Simplify Clarify Declare Literal Precise Concise Unambiguous Emotionally measured
E **Evaluate**	Assess claims with respect to their truth and to their level of support they achieve for other claims.	Justify Judge Conclude Determine Consider Reflect

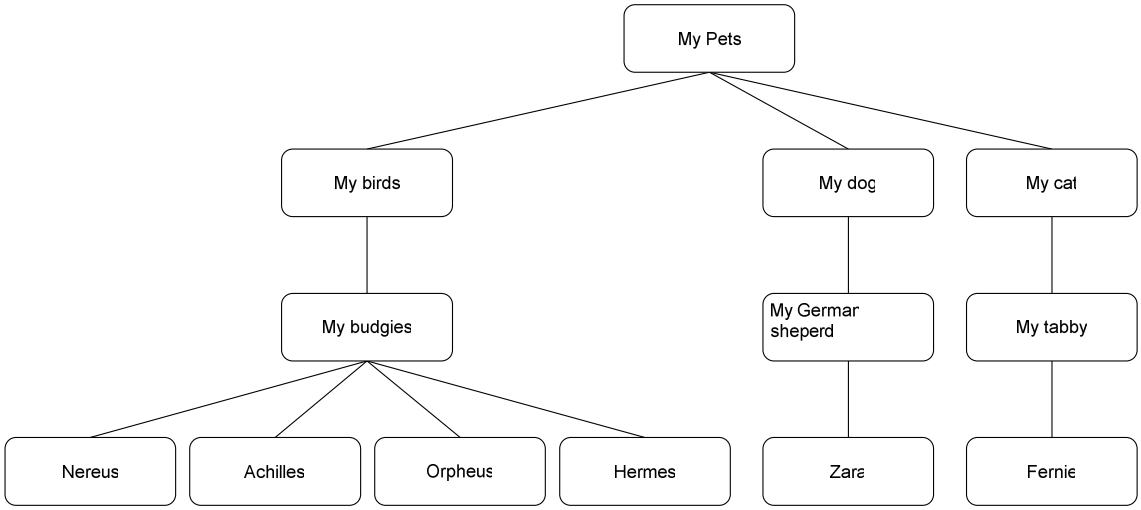
ASPIRE marking rubric

Criteria	Mark Allocation				
	5 Excellent work	4 Very Good work	3 Good work	2 Fair – needs some more practice	1 We need to go over this together.
A Advocate					
S Structure					
P Present					
I Inform					
R Refine					
E Evaluate					
Comments					

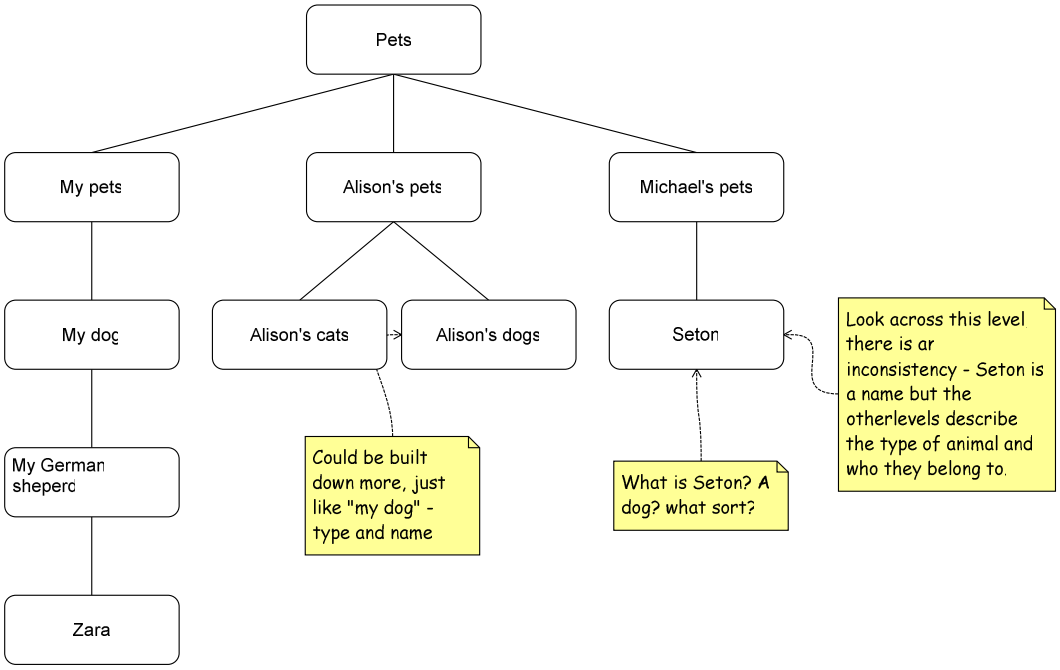
5.3 Assessment examples



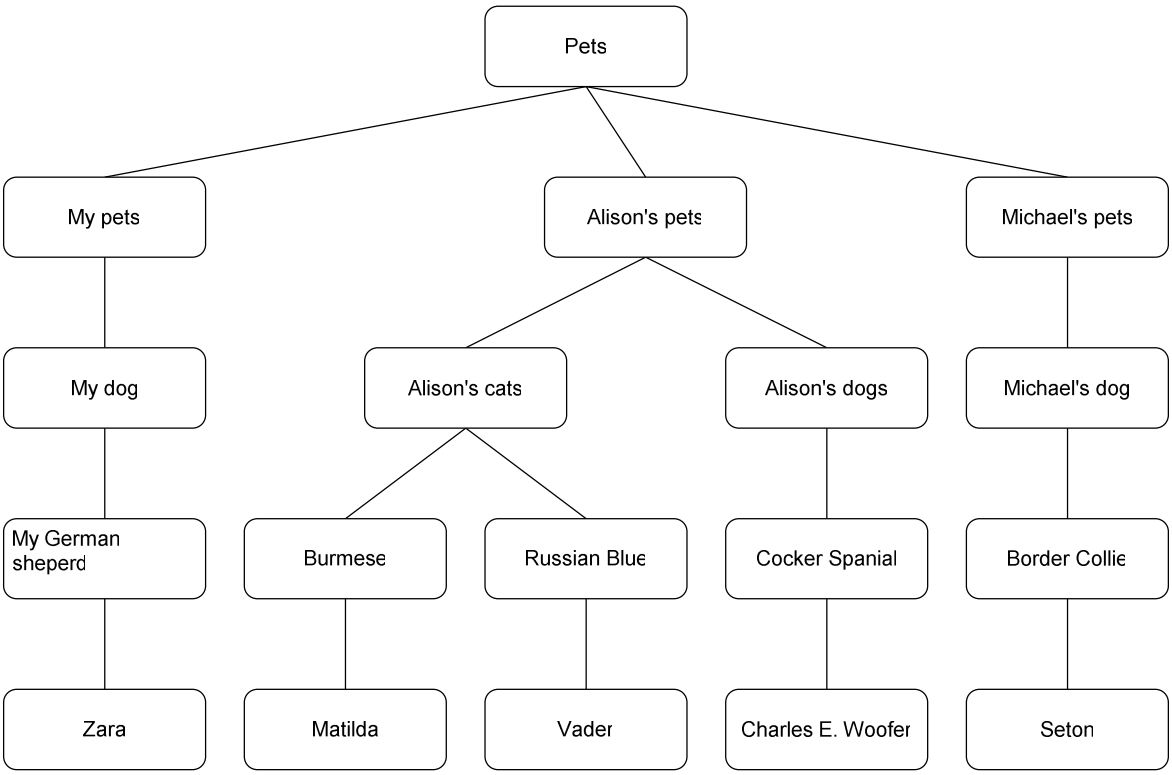
Criteria	Mark Allocation				
	5 Excellent work	4 Very Good work	3 Good work	2 Fair – needs some more practice	1 We need to go over this together.
S Structure				☑	
Comments	Lucy, you have the idea about organizing groups. You have grouped the items very well into two main groups to show two main categories of things – animals and places. What we can practice is the middle level – the category for which birds and dogs are an example and the category which names the sort of thing a zoo and an ice skating rink have in common. 2/5				

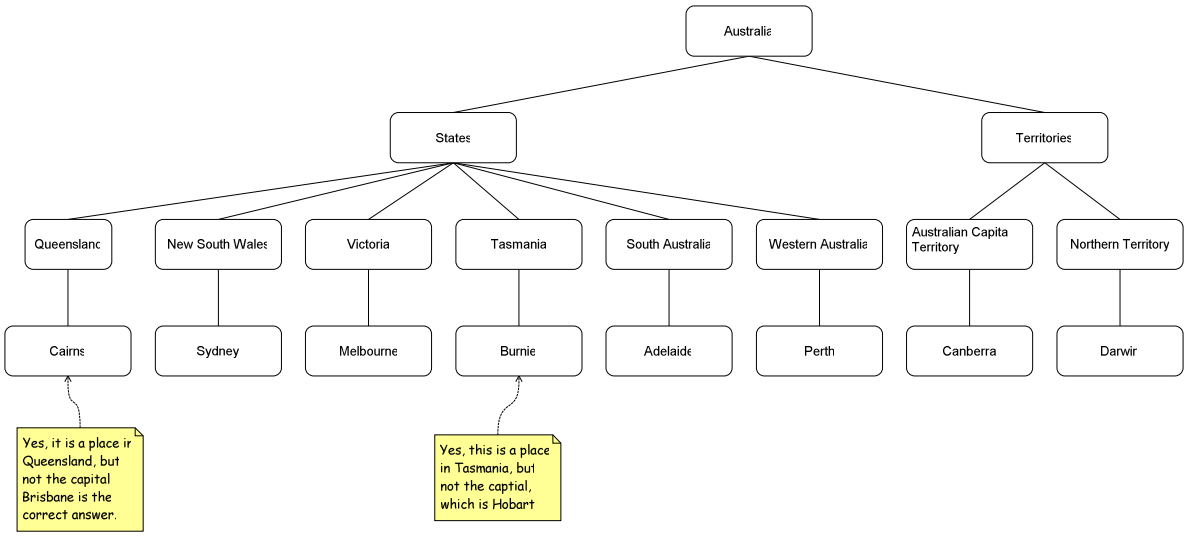


Criteria	Mark Allocation				
	5 Excellent work	4 Very Good work	3 Good work	2 Fair - needs some more practice	1 We need to go over this together.
S Structure	☑				
Comments	Richard, excellent work! You have created well structured groups that show how a general category is broken into smaller categories with the particular example on the bottom level. Well done! 5/5				

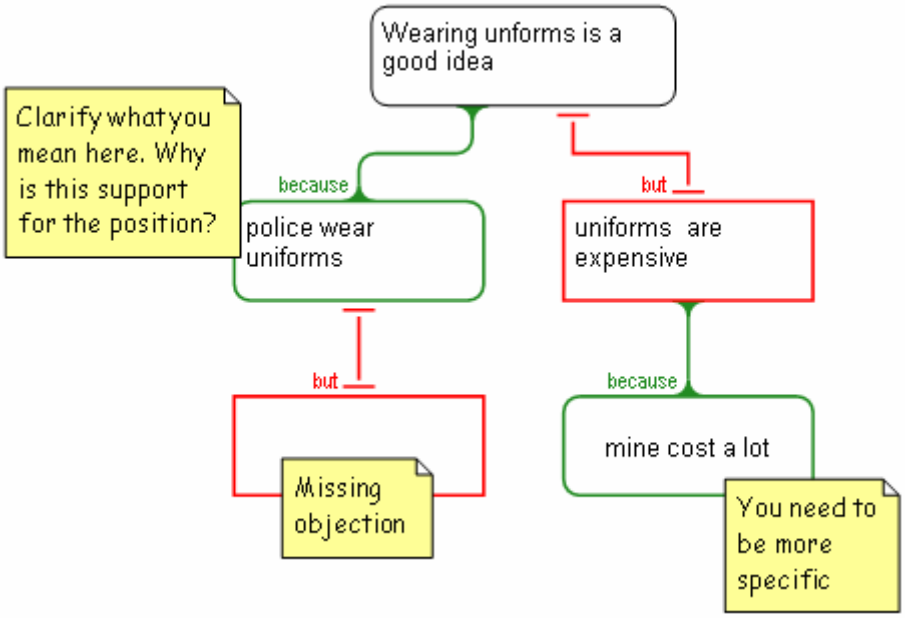


Criteria	Mark Allocation				
	5 Excellent work	4 Very Good work	3 Good work	2 Fair – needs some more practice	1 We need to go over this together.
S Structure				✓	
Comments	Lyn, you have undertaken a challenging grouping map and have done reasonably good work. The first group is very well done – you start with a general category and keep breaking it up into smaller categories until you get to the example – the name of your dog. The groups for other people's pets start well, though need to be developed – just like the "my pets" group. Try and create a pyramid structure and remember to look across the levels to see if they are consistent. This means that you look to see if the groups across the same levels describe the same type of groups at that level. I have attached a map of how you could do this. We'll try another one in class. 2.5/5				

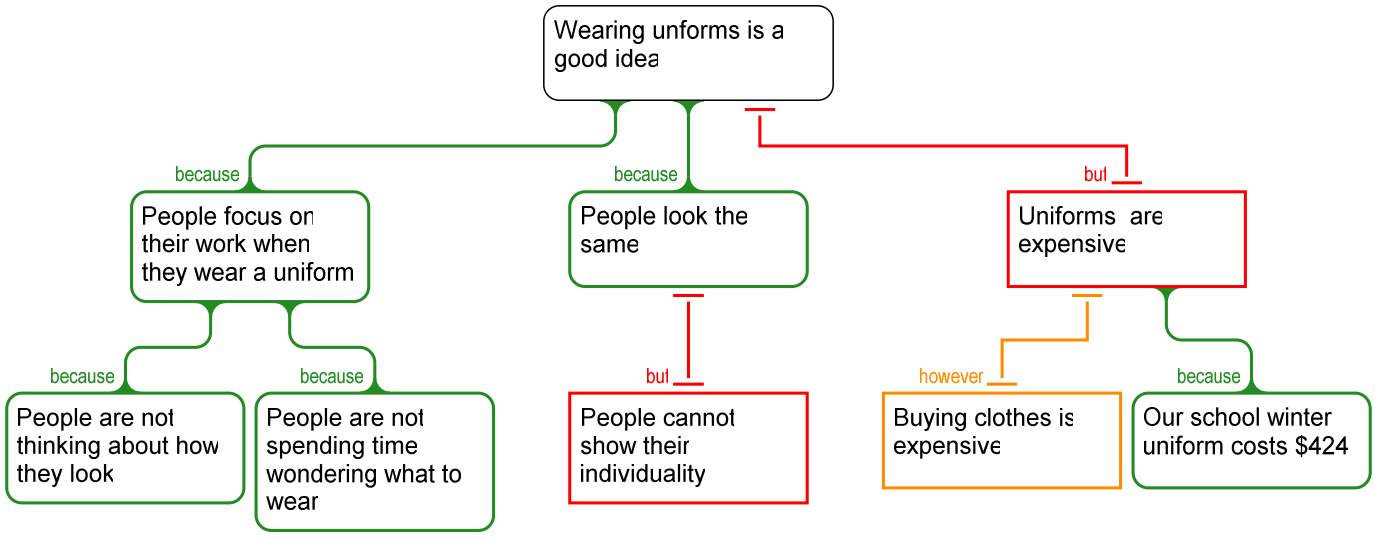

Pets
My pets
Alison's pets
Michael's pets
My dog
Alison's cats
Alison's dogs
Michael's dog
My German sheperd
Burmese
Russian Blue
Cocker Spanial
Border Collie
Zara
Matilda
Vader
Charles E. Woofer
Seton



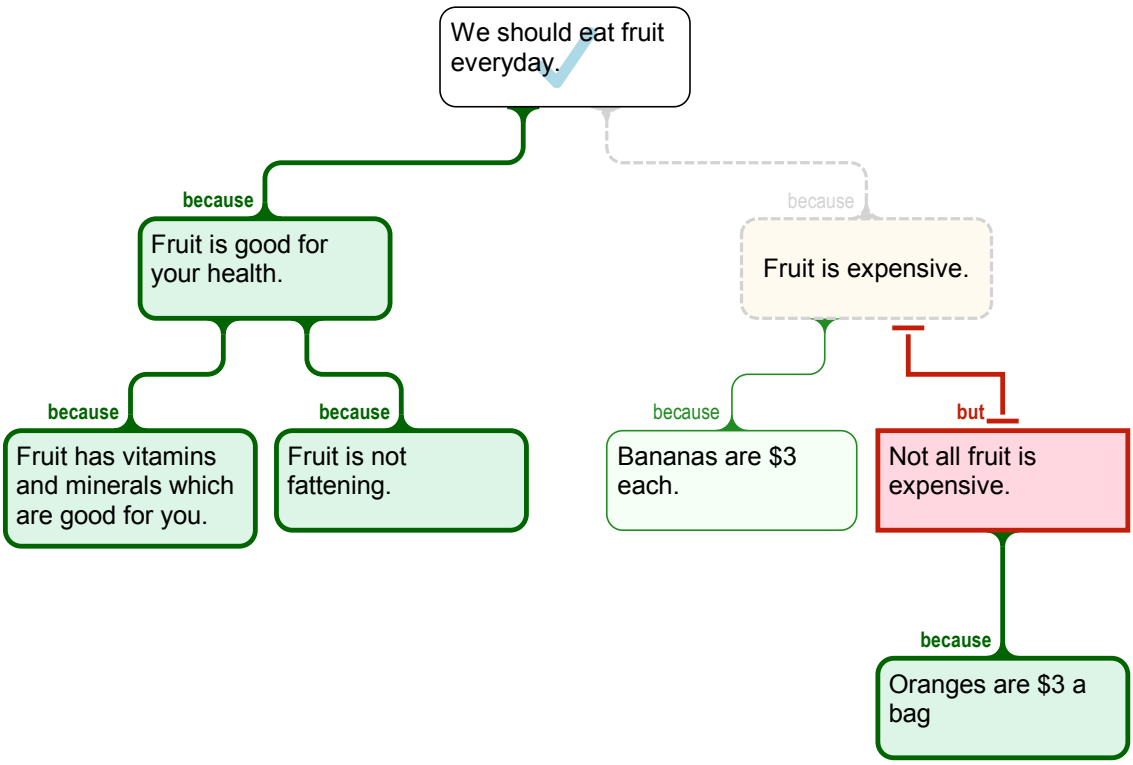
Criteria	Mark Allocation				
	5 Excellent work	4 Very Good work	3 Good work	2 Fair – needs some more practice	1 We need to go over this together.
S Structure	☑				
I Inform			☑		
Comments	John, a very good effort! Your structure is excellent – the categories of States and Territories are spot on! The errors were in the information you provided – cities rather than capitals. 8/10				



Criteria	Mark Allocation				
	5 Excellent work	4 Very Good work	3 Good work	2 Fair – needs some more practice	1 We need to go over this together.
S Structure			✓		
I Inform				✓	
R Refine				✓	
Comments	Sam, you have the idea of structuring an argument. What needs practice is finding good supporting reasons and refining reasons – so that it is clear what you mean. 7/15				



Criteria	Mark Allocation				
	5 Excellent work	4 Very Good work	3 Good work	2 Fair – needs some more practice	1 We need to go over this together.
S Structure	✓				
I Inform	✓				
R Refine	✓				
Comments	Jessica, this is excellent work. You have structured the argument very well and provided a good range of supporting reasons and objections. You have also provided a range of relevant and appropriate information in clear sentences. Very well done! 15/15				



I think that we should eat fruit everyday. I believe this because fruit is good for your health. This is because of two reasons, firstly that fruit has vitamins and minerals which are good for you and secondly because fruit is not fattening.

Some people think that we should not eat fruit everyday because fruit is expensive . They think this because bananas are $2-3 each. This is right, but it doesn't mean all fruit is expensive because oranges are only $3 a bag.

To conclude I think that there is a strong reason why we should eat fruit each day and that fruit is not always expensive. Therefore I accept that we should eat fruit everyday.

Criteria	Mark Allocation				
	5 Excellent work	4 Very Good work	3 Good work	2 Fair – needs some more practice	1 We need to go over this together.
A Advocate	☑			.	
S Structure	☑				
P Present	☑				
I Inform		☑			
R Refine	☑				
E Evaluate		☑			
Comments	Chris, this is excellent work. You have advocated a position very clearly and logically. Your structure is correct and your presentation sets out the argument well. You provide good information – though perhaps some evidence of what vitamins and minerals are provided by fruit would be useful to strengthen your reason. The claims are full sentences and are clear and your evaluation is also good You are correct that you cannot make a generalization from one example – perhaps you could provide several counter examples of fruit that are not expensive. Great work! 28/30				

6. Rationale Assistance

6.1 Glossary

Abstraction

Abstraction is the process of identifying and structuring concepts and their particulars. In a hierarchical structure, the higher levels represent more general or abstract concepts while the lower levels are concrete examples of the concept.

Argument

An argument is a structured set of reasons or objections bearing upon some claim.

Argument, Complex

An argument where there is more than one reason or objection bearing upon a claim.

Argument, Multi Layer

An argument where reasons or objections are themselves supported or opposed by further reasons or objections.

Argument, Multi Reason

An argument where there is more than one reason or objection bearing upon a claim.

Argument, Simple

An argument consisting of just one reason or objection bearing upon a claim.

Basis

A basis is a kind of support which is not itself a reason (though a basis can generally be converted into, or articulated as, a reason). A basis can be solid or shaky, as compared with a reason which can be strong or weak.

Case

A case is a set of reasons or objections within a complex argument, grouped together because they play a similar role (such as to support or oppose a position).

Case, Opposing

The opposing case consists of all reasons and objections whose role in the argument is to provide evidence in opposition to the position.

Case, Supporting

The supporting case consists of all reasons and objections whose role in the argument is to provide evidence in support of the position.

Claim

A claim is a statement that someone puts forward as true. In a reasoning map, a claim may be the position, a reason, an objection or a rebuttal.

Coherent Groups

Coherent or properly thought out and presented groups should be complete (no gaps), internally distinct (no overlaps), minimal (no outsiders) and ordered.

Conclusion

A conclusion, or contention, is a claim which is the central focus of an argument. It is the position for which reasons and objections are provided.

Congruence

A hierarchy is fully congruent when similar grouping principles are used throughout the hierarchy. Congruence has two aspects: horizontal and vertical congruence.

Contention

See conclusion.

Co-premise

A co-premise is any premise in a reason other than the main premise (the central and first claim).

Critical thinking

Critical thinking is applying those general principles and procedures of thinking which are most conducive to truth or accuracy in judgment.

Deductive

A deductive argument is one whose validity (if it is valid) is guaranteed by the formal structure of the argument.

Fallacy

A fallacy is a common pattern of reasoning which is usually, or at least often, poor reasoning. Many fallacies have been identified and given names.

Group

A group is a collection of items which belong together in some way.

Grouping

The process of forming or specifying groups.

Grouping principle

A grouping principle is an explicit statement of the essence of the group, i.e., the sense or respect in which the items belong together.

Hidden premise

A hidden premise is part of a reason which is not explicitly stated when an argument is presented, such as an assumption. A hidden premise is also a co-premise.

Hierarchy

A hierarchy is a nested structure of groups and subgroups, with all the children of an item constituting one group.

Hierarchical grouping

Hierarchical grouping is organising items and groups into hierarchical structures.

Inductive argument

An inductive argument is one which purports to extend our knowledge, i.e., to draw a conclusion which goes beyond the information contained in the premises. Typical inductive arguments involve some kind of generalisation.

Inference objection

An inference objection is an objection to an assumed or hidden claim that is not explicitly stated in a reason (eg. a hidden premise).

Item

An item is a broad term to represent anything you choose to put in a grouping box. For instance, these can be objects, ideas, categories, beliefs, plans.... whatever you need to group or categorize.

Main premise

A main premise is the most important claim in a reason or objection.

MECE

An acronym for "mutually exclusive, collectively exhaustive" - or "no gaps, no overlaps". MECE is a fundamental of properly formed groups.

Objection

An objection is a claim which provides evidence that another claim is false.

Path

A path shows you the connection of a line of argument. To "show path" select a box or claim and it will follow the line of argument from this point to the top or originating box.

Position

A position is the main point being advocated or considered. It can also be called the contention, the conclusion or the issue, depending upon your context.

Premise

A premise is a claim which is part of a reason or objection.

Reason

A reason is a claim which provides evidence that another claim is true.

Reason, Primary

Reasons are all claims that seek to show the truth of another claim. A primary or main reason is at the top level and seeks to provide evidence that the position or main point is true.

Rebuttal

A rebuttal is an objection to an objection. That is, it seeks to provide evidence that an objection posed by someone is actually false.

Syllogism

A syllogism is an argument made up of a single reason with two premises, bearing upon another claim, generally known as the conclusion.

Syllogism, Categorical

A categorical syllogism is one constructed from simple "categorical" statements, i.e., statements constructed using terms such as all, some and none.

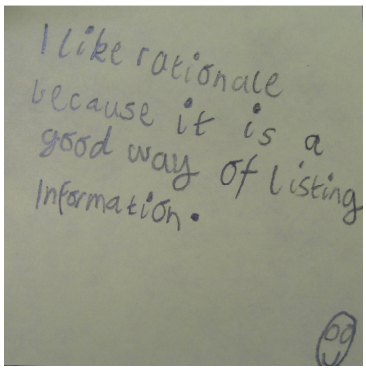
Valid

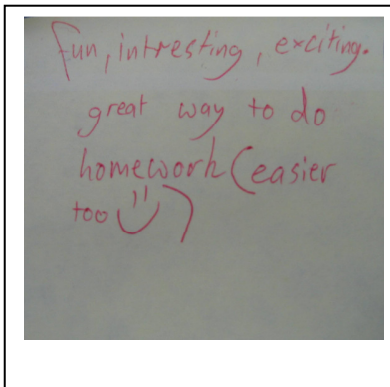
A valid argument is one in which the premises guarantee the truth of the conclusion, i.e., if the premises are true, the conclusion *must* be true.

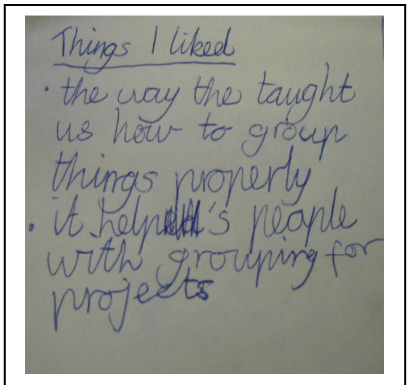
6.2 Feedback

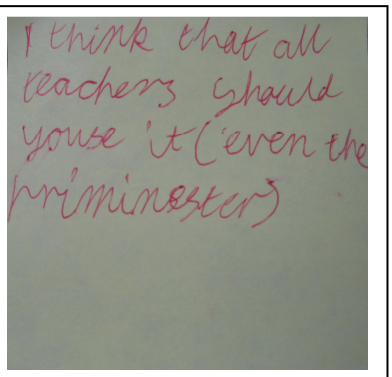
Feedback is always welcome,

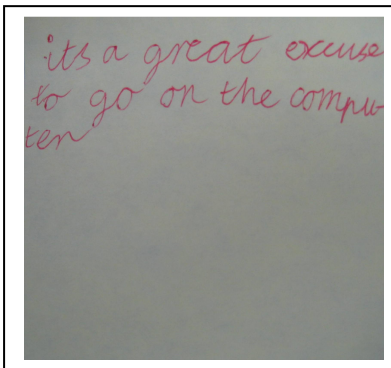
especially from our primary users…

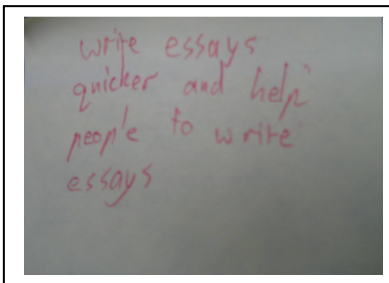

I like rationale because it is a good way of listing information.

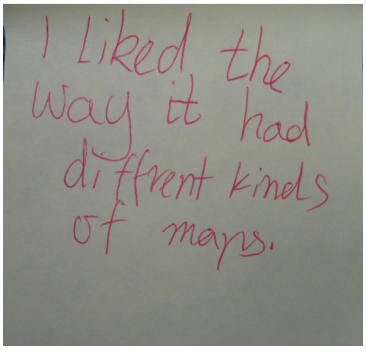

fun, intresting, exciting.
great way to do homework (easier too :'))

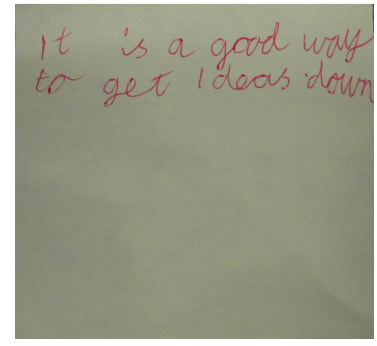

Things I liked
· the way the taught us how to group things properly
· it helps people with grouping for projects

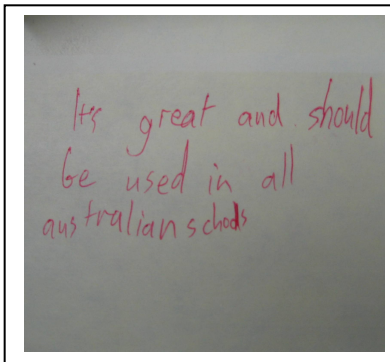

I think that all teachers should youse it (even the priminester)


its a great excuse to go on the computer


write essays quicker and help people to write essays


I liked the way it had different kinds of maps.


It is a good way to get ideas down


Its great and should be used in all australian schools