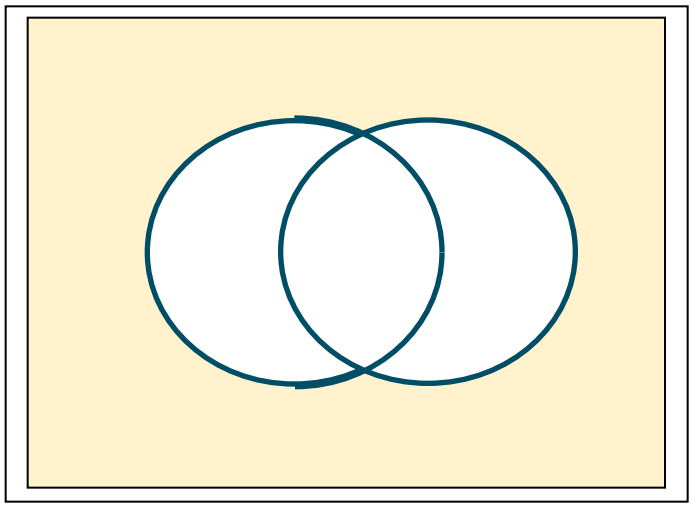
Compare/Contrast graphic organizers

Compare/Contrast graphic organizers depict basic relationships between two or three major concepts are designed to help the learner understand similarities and/or differences between them. There is a wide variety of formats for depicting compare/contrast relationships. This book features Venn Diagrams, Main Idea Comparison Frames, Semantic Features Analysis Charts, Induction Matrixes and Synetic Charts. Since graphs and charts are an excellent way to depict compare/contrast relationships when quantity is of concern, these have been included as well.



Using *Venn Diagrams* to depict compare/ contrast relationships

Venn diagrams are excellent devices for helping students distinguish between shared and non-shared, inclusive versus unique, and so forth characteristics of two or three concepts. They work best when two concepts are compared (e.g., the two circle Venn diagram).

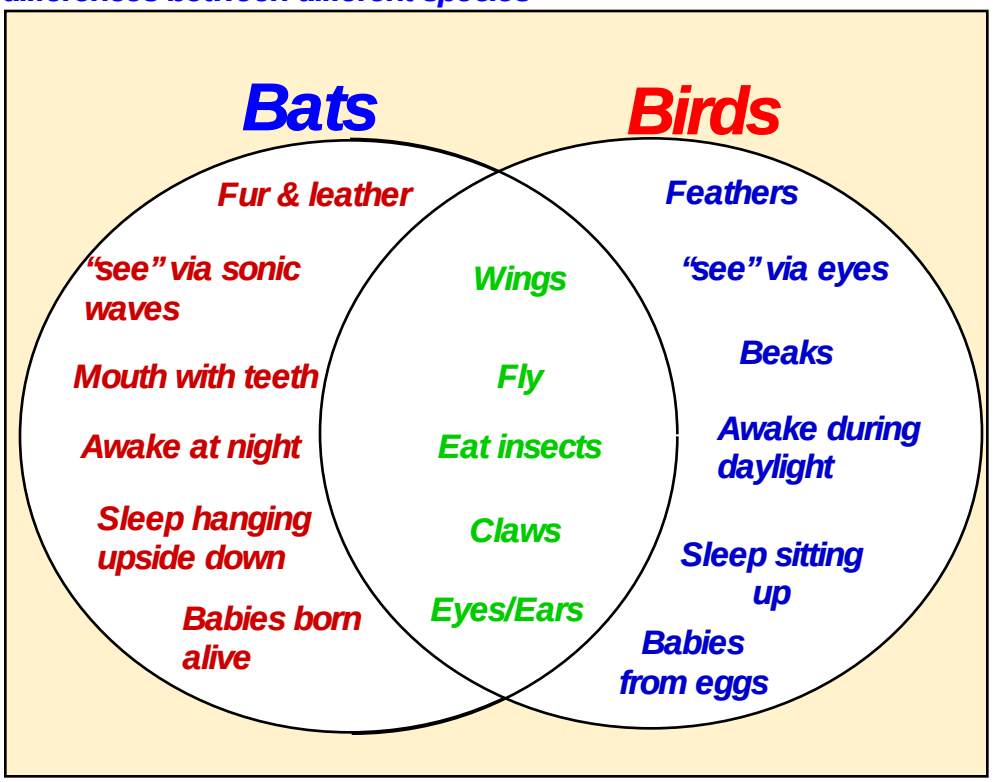
While other compare/contrast graphics very effectively address the comparison of hierarchic information (e.g., the comparing of main ideas and supporting details of two or three concepts), Venn diagrams are not the best devices for this type of information. Venns work best when the information is discrete, but not hierarchically structured.

When students are constructing Venn diagrams, they often focus initially on ***differences*** between two concepts, and indicate them first on the Venn diagram. Differences between two concepts tend to be very specific. When these are exhausted, they usually then turn to analyzing ***similarities***. Often, more general features are identified in this category. For example, in the Venn diagram illustrated below comparing endocrine and exocrine systems, the differences listed were very specific. The similarities listed, on the other hand, tended to be

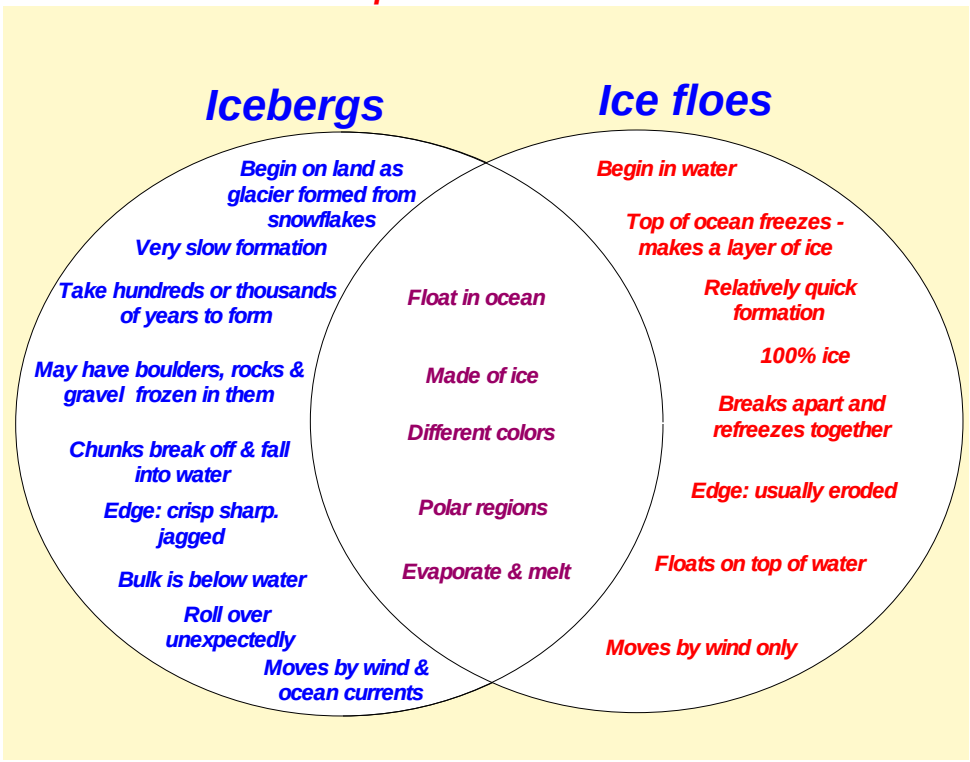
much more general statements (e.g., they are both types of glands, they both secrete substances necessary for organs to function, etc.).

Biology example

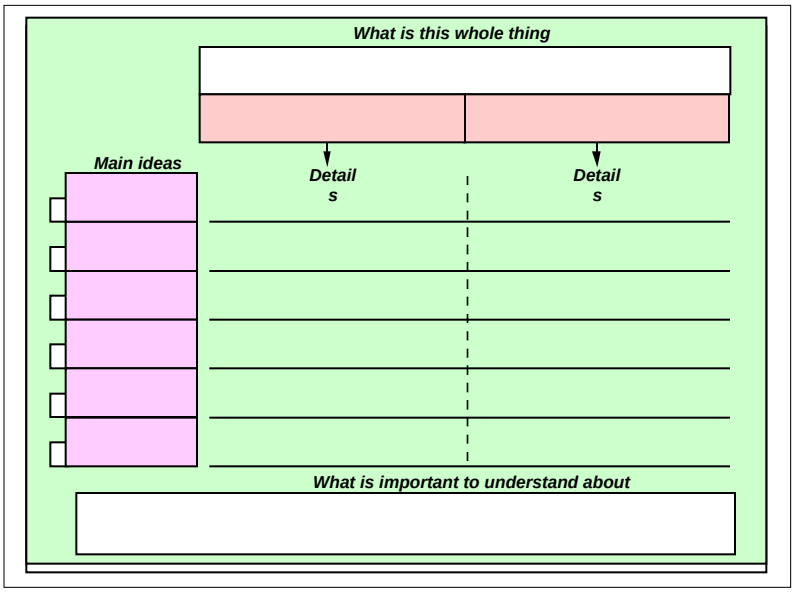
The Venn Diagram could be used to facilitate understanding of similarities and differences between different species



Additional science example



You may find that Venns also work well when sophisticated learners are comparing three concepts (e.g., using the three-circle Venn diagram), but not as well for less sophisticated learners, as the three-circle Venn can be very confusing . Rarely do four circle Venns work for all learners.

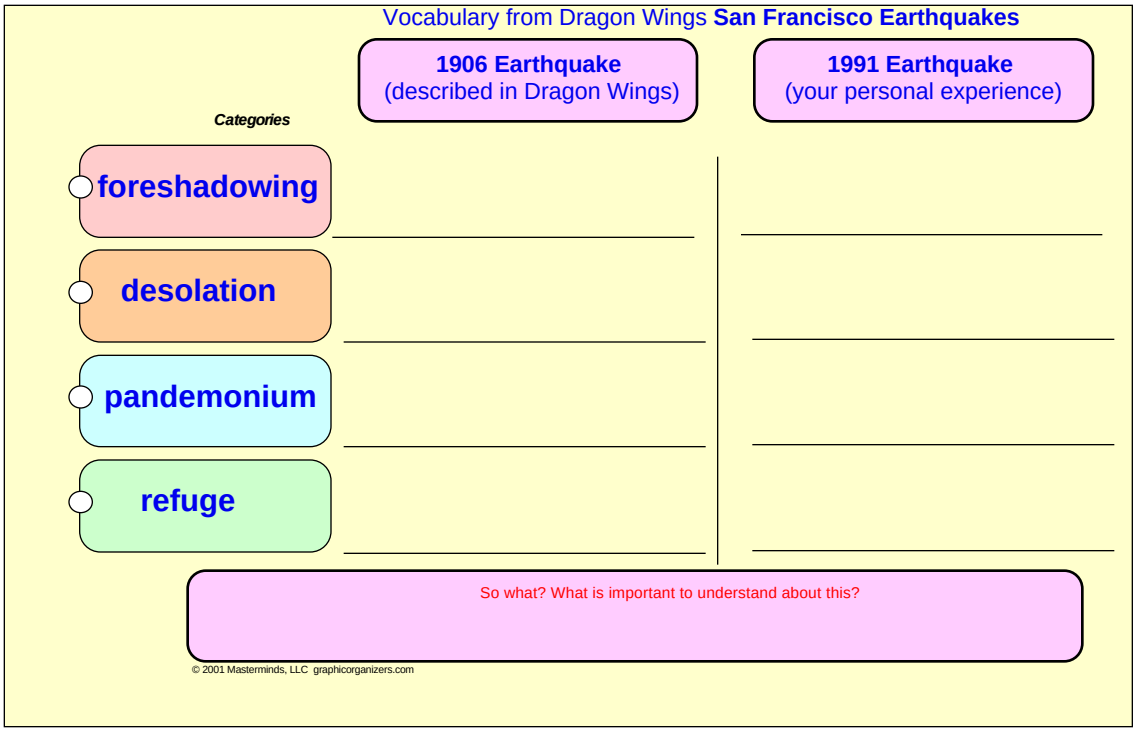


Compare & contrast *Frames*

Two Concept Comparison Frame

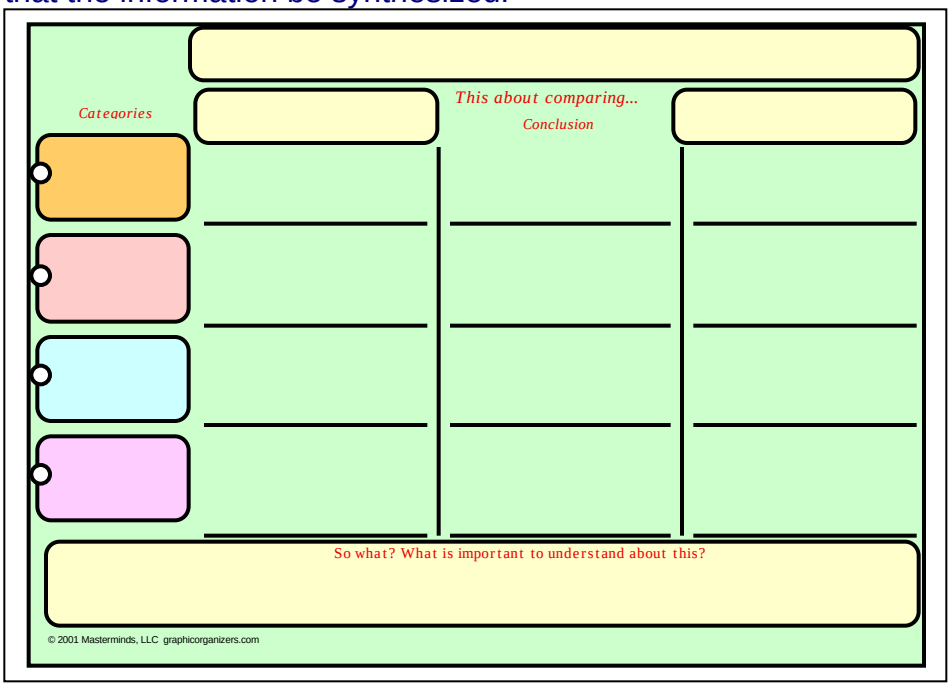
Language Arts

The Two -concept Comparison Frame could be used to teach vocabulary by comparing use of terms in different contexts....



Comparison (synthesis) Frame

The Comparison Frame can also be presented in a manner that requires students to understand the "bigger picture" as related to <u>each</u> specific main idea on the frame. The middle section of the graphic below, titled "So What?" requires that the information be synthesized.

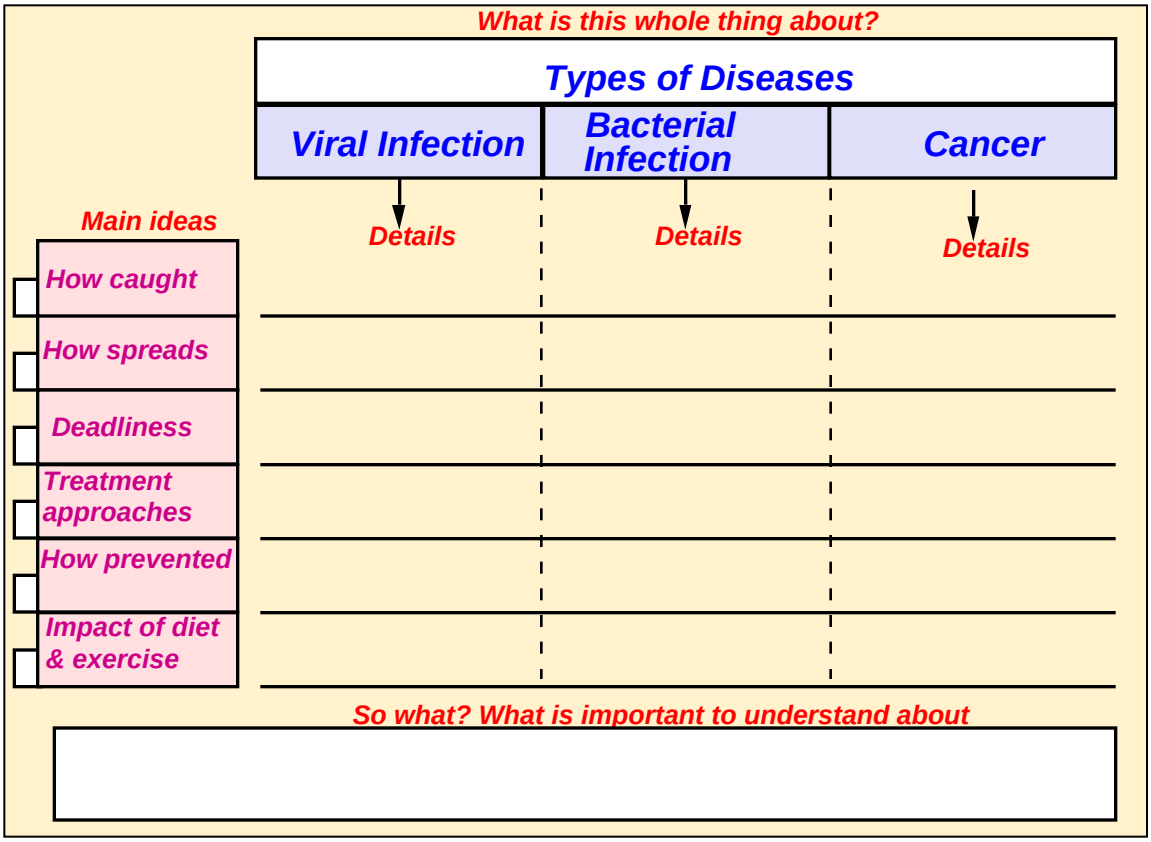


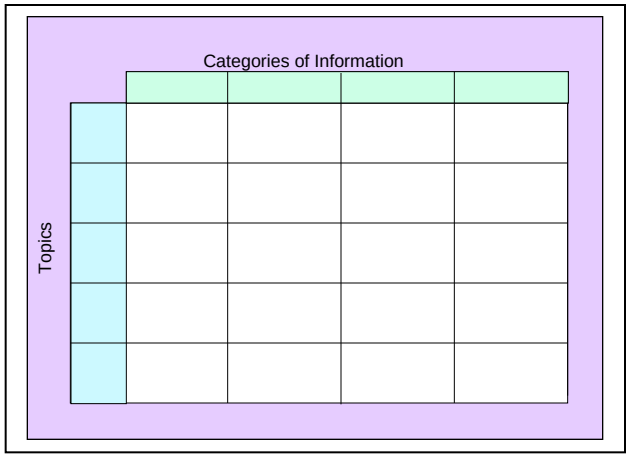
Three Concept Comparison Frame

Comparison Frames can be used effectively to compare three concepts. Other than the overall synthesis at the bottom of the form (“***So What? What’s important to understand about this”),*** this graphic does not, however, provide space for synthesizing conclusions for each main idea being compared.

Health Science example

The Three-concept Comparison Frame is used here to analyze three forms of disease.





Using *Induction Matrixes* to depict compare/contrast relationships

To compare multiple concepts along several dimension, you can also use an Induction Matrix. Here, the overall topic and components of the topic are listed on one side of the matrix, and the dimensions for comparison are listed on the perpendicular side.

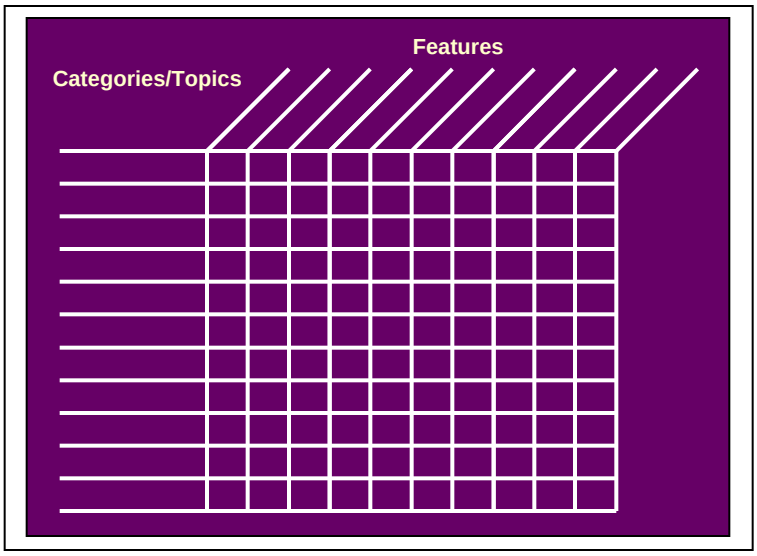
Note that both parallel and vertical columns end with a space labeled “So What?” These allow students to draw conclusions, summarize, or synthesize information in each category.

Health Science example

The Induction Matrix could be used to compare multiple topics and facilitate students forming conclusions. In this example, students and the teacher co-construct the graphic by filling in each of the various boxes as the different factors that affect the cardio-respiratory system are examined.

Relationship of Cardio-Respiratory Risk factors

	CAN YOU CONTROL THIS?	EFFECT ON CIRCULATORY SYSTEM?	EFFECT ON RESPIRATORY SYSTEM	SO WHAT?
AGE	NO	Older you get the weaker your system	Older you get, the weaker your system	Risk increases with age
GENDER	NO	Men =poor Women = better		
HEREDITY	NO	+/-	+/-	Risk of C-R disease increases if there is a family history
DIET	YES	+/-		Diet high in saturated fats & salt increases the risk of heart disease
STRESS	YES	Negative impact	Negative impact	Too much stress can lead to heart disease
SMOKING	YES	Negative impact	Negative impact	Smoking is extremely hazardous to C-R system
EXERCISE	YES	Positive impact	Positive impact	Great way to minimize negative risk factors & maintain a healthy C-R system



Using *Semantic Features Analysis grids* to depict compare & contrast relationships

The Semantic Features Analysis Grid can be used to facilitate an understanding of the common traits or features shared by a group of concepts as well as how they differ among these features.

The example below illustrates how a Semantic Features Analysis grid was completed during a study about Ancient Egypt.

Features	Pyramids as tombs	Stone tombs	Considered a god	Em bombed	Buried with treasures	Buried with artifacts	Appear in Hieroglyphs
Pharaoh	✓	✓	✓	✓	✓	✓	✓
Generals & High priests		✓		✓	✓	✓	✓
Scribes & Gov'nt officials		✓		✓		✓	✓
Crafts workers				✓		✓	✓
Peasants				✓		✓	✓
Slaves	✓						✓

The example below illustrates the application of a features analysis grid about vehicles.

VEHICLES \ Features	two wheels	four wheels	more than 4 wheels	motor	diesel fuel	gasoline fuel	people power	handle bars	passengers	used on land
car		+		+	⊕	⊕			⊕	+
bicycle	⊕						+	+	⊕	+
motorcycle	⊕			+		+			⊕	+
pickup truck		⊕	⊕	+	⊕	⊕			⊕	+
transfer truck			+	+	+				⊕	+
train		⊕	⊕	+	+				⊕	+
skateboard		+					+			+
row boat							+		⊕	
sailboat				⊕	⊕	⊕			⊕	
motorboat				+	⊕	⊕		⊕	⊕	
airplane				+		+			⊕	

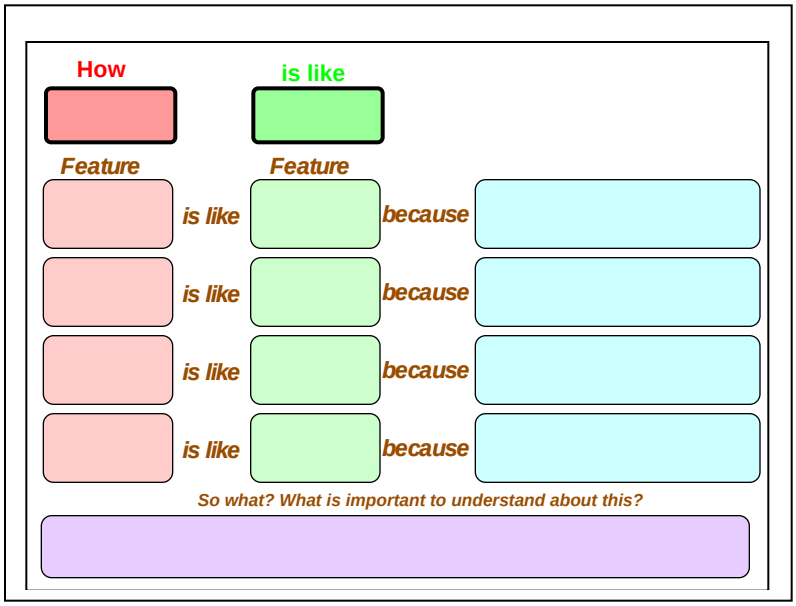
\+ = feature ***always*** present

⊕ = feature ***sometimes*** present

Anatomy Science example

A Features Analysis Grid can be used to facilitate an understanding of the unique and shared functions of various tissues

Endocrine GLANDS	impacts metabolism & growth	regulates growth	impacts absorption of nutrients	impacts fluid balance & ions	responds to stress	impacts sexual characteristics	impacts reproduction processes	targets fat tissue	targets liver	targets heart /blood	targets thyroid	targets kidney	targets uterus	targets ovary & mammary	targets bones	skeletal muscle	targets immune tissues	most body tissues
Pituitary	+	+					+					+		+				+
Thyroid	+		+							+					+			+
Thymus										+							+	
Adrenal			+		+	+		+	+	+		+				+	+	+
Pancreas			+						+	+						+		
Ovaries						+	+							+				+
Testis						+	+								+	+		+



Using *'Is Like'* *Synetics* to depict compare & contrast relationships

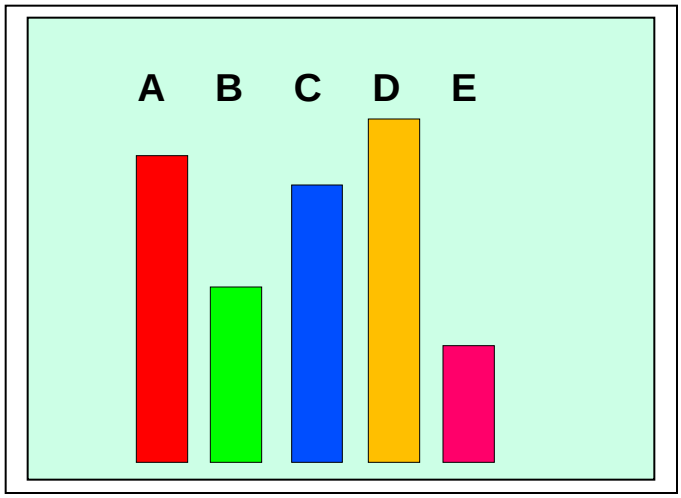
Political Science example

The Is Like Synetic could be used to help students recognize similarities in different forms of governments...

How		is like		
feudalism		*communism*		
Feature		**Feature**		
serf	*is like*	*collective farm worker*	*because*	*must give to government what you grow -- can't sell it on your own - no choice but to work on the farms -- can only leave with permission of government leaders*
king owns all land, homes, business in kingdom	*is like*	*government owns all land, houses, etc.*	*because*	*common people can't own land, homes, etc. -its 'lent' to them by gov & can be taken away if someone does something that displeases the people with the power*
kingdom attained by inheriting it or winning war	*is like*	*power attained by overthrowing old leadership*	*because*	*'might makes right' ....who ever is the strongest rules Changes in leadership often involves violence*

So what? What is important to understand about this?

In both feudalism & communism, people in power use their power to keep it. Common people have few, if any rights and little ability to control what happens to them (no freedom!). All the power is centered at the top, so must be careful not to displease people in power or else ...



Using *Bar Graphs* to depict compare & contrast relationships

Bar Graphs always either compare quantities of something across two or more dimensions within the same time span (e.g., ***compare wheat production of U.S., Canada, Russia, and China during 2001***) or compare changes in quantities of something within a single dimension across different time spans (e.g., ***wheat production in Canada during 1998, 1999, 2000, 2001***).

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