

1. Taxonomy - The Science of Classification

1.1 Objectives

- Understand what classification is and how it is used in a variety of every day situations
- Students recognise patterns of similarity and difference within and between groups of familiar living things. (LL - D3.4)

1.2 Required Materials

- Board and markers, various objects suitable for grouping, overhead projector, Five Kingdoms transparency

1.3 Program

Lesson Element	Time
➤ Introduce classification as a concept. Why do it? Is it useful? School Library as an example.	10
➤ General discussion about grouping things together emphasising shared traits. Dingo, Labrador, Chihuahua example	10
➤ Grouping exercise with objects. Student groups to classify objects into just two categories - discuss results. Now students classify objects however they like - then share and justify their method.	15-20
➤ Introduce hierarchy as a concept. Using the school as an start-point have students nominate groupings within the school. Emphasise commonality of traits and the "groups-within-groups" nature of hierarchical structures.	10
➤ Introduce Animal Classification - Five Kingdoms with Phyla and Classes below. Reiterate the presence of hierarchy	10-15

1.4 Assessment

- Homework - find out what "class" your favourite animal belongs to
- Discussion participation and demeanour

1.5 Reflection

Association with the Library and St Anthony's went well but the analogy of the dogs did not resonate. Most seemed to grasp the concept of shared traits as an accepted way of classifying. Whale and Mouse in the same grouping as Humans was sufficiently curious to capture attention. The OHP is a little glary off the whiteboard but worked OK - even though it provided cover for Thalia's table to chatter. They responded well to a curt but personal request to pay attention. The girls are lovely and seem generally inclined to do the right thing in most cases and senses. Both phases of the grouping exercise went especially well and some of the grouping criteria that the girls came up, while exceptionally creative, were also solidly justified. I must remember when I give an activity to just shutup for a while. Hierarchy as a concept seemed less well grasped - might have to discuss it again differently. Need a better graphic representation to make it clearer. Ran of time to do a proper job on introducing the five Kingdoms but its revision will make a good start point for tomorrow anyway. Forgot to give out the homework.

2. Animal Classification System(s)

2.1 Objectives

- Students identify and analyse similarities and differences in the ways that different living things reproduce. (LL - 4.2)
- Students recognise patterns of similarity and difference within and between groups of familiar living things. (LL - D3.4)
- Apply the above to classify animals. Students use scientific ideas of classification to group living things. (LL - D5.4)

2.2 Required Materials

- Board and markers, Animal Pictures, overhead projector, Five Kingdoms transparency, Homo Sapien chart transparency

2.3 Program

Lesson Element	Time
➤ Revise prior understandings of classification. Random check of homework.	5-10
➤ Animal grouping exercise. Students classify animals however they like - then share and justify their method.	10-15
➤ Revise the 5 Kingdoms and introduce Phyla emphasising shared traits. Now students group the animals according to Kingdom/Phyla. Discuss the differences and similarities between the results of each grouping method.	10
➤ Introduce the next classification level - Classes. Display and discuss the full classification chart to Homo Sapien	5
➤ Elicit from the students what they think would be the best way to group the next step in the hierarchy. Emphasise the important, shared traits	10
➤ Worksheet/Quiz	remainder

2.4 Assessment

- Work Sheet/Quiz

2.5 Reflection

Began with an unplanned Y chart for revision which worked fairly well as a focussing tool. Lesson began after a book reading segment so everyone was already well settled. Right brained free-thinking seems very natural to these girls, whereas systematic left brained methods seems more challenging. Stereotyping maybe, but I think I am seeing something real. Again the free grouping of animals was characterised by logical but very creative (sometimes outright lateral) thought by the girls. Yet they struggled a little to master that laterality when the actual rules for grouping the three animal Phyla were imposed upon them. No big deal. There are however a few, unfocussed and disengaged girls. Katie P is obviously somewhere else, and a couple of others too. Nonetheless, I find the girls very easy to get along with. I really enjoyed myself in this lesson and my sense was that they did too. Results for the quiz were mixed - acceptable without being great.

3. Classifying Animals (1)

3.1 Objectives

- Students identify and analyse similarities and differences in the ways that different living things reproduce. (LL - 4.2)
- Students recognise patterns of similarity and difference within and between groups of familiar living things. (LL - D3.4)
- Students use scientific ideas of classification to group living things. (LL - D5.4)

3.2 Required Materials

- Board and markers
- Data projector & network access
- Various digital images and web links

3.3 Program

Lesson Element	Time
<ul style="list-style-type: none"> ➤ Announce the Animal Classification Quiz for tomorrow. ➤ Revise the Five Kingdoms and the 3 Animal Phyla. ➤ Discuss quiz outcomes and reiterate what a Phylum is. 	5-10
<ul style="list-style-type: none"> ➤ Display and explain a computer folder model of the Animal Classification System. Compare with AnimalKingdomTree.gif 	5-10
<ul style="list-style-type: none"> ➤ What makes a Mammal a Mammal - web site review and brief discussion ➤ Some Important Animal Classes.pdf. Go through and have students write out the highlighted comments ➤ Classifying Animals Matrix 	15-20
<ul style="list-style-type: none"> ➤ On line classification quiz - go through together after handing out the Animal Classification Key 	15-20
<ul style="list-style-type: none"> ➤ Crossword Puzzles 	remainder

3.4 Assessment

- Crosswords
- Discussion participation and demeanour

3.5 Reflection

You can't always get what you want - you get what you need. Data projector malfunction ate up all of my (and Mr S's) lunch time. I was about to fall back on OHTs, but Mr S made some calls and organised a Library presentation space. That space however, contravenes two fundamental principles without which I don't believe it is possible to make a quality presentation. They are: You must be able to see, simultaneously, the faces of the audience and a monitor of the presented material. The audience must be able to see, simultaneously, You and the presented material. So, I was up the back, the presentation was up the front and the students were swivelling their heads back and forth. Accordingly the girls were fractious and inattentive and I, already a bit jangled with my carefully crafted plans going somewhat awry, also performed poorly. Despite this we did get the animals divided into classes, we did get the point taking done and some of the on-line quiz and activities. I know that it is foolish to get precious about plans, which, if good, are also flexible. However, this lesson seemed to leave me more dissatisfied with it than was actually warranted, given that its objectives were, arguably, well achieved.

4. Classifying Animals (2)

4.1 Objectives

- Students identify and analyse similarities and differences in the ways that different living things reproduce. (LL - 4.2)
- Students recognise patterns of similarity and difference within and between groups of familiar living things. (LL - D3.4)
- Students use scientific ideas of classification to group living things. (LL - D5.4)

4.2 Required Materials

- Board and markers
- Data projector & network access, various digital images and web links
- Animal Pictures for Classification

4.3 Program

Lesson Element	Time
<ul style="list-style-type: none">➤ Reminder of the Animal Classification Quiz for tomorrow.➤ Revise the Important Animal Classes and the 3 Animal Phyla.➤ Student driven clarification discussion	10-15
<ul style="list-style-type: none">➤ Hand out pictures of Animals and have the Students, working in pairs, classify them using the Animal Classification Key	15-20
<ul style="list-style-type: none">➤ Early finishers continue with Animal Crossword puzzles til quiz commences	5
<ul style="list-style-type: none">➤ Animal Classification Quiz	20

4.4 Assessment

- Formal Unit Formative Assessment - Animal Classification Quiz

4.5 Reflection

The revision went particularly well with the new graphic and attendant discussion seeming to clarify a lot of student misconceptions about the classification hierarchy. The students were able to use the Animal Classification Key in concert with their own notes from yesterday really well to classify the numbered animal pictures. The rotation of those pictures from group to group could have been handled better with (naturally) some groups finishing before others and then having to wait for the next set. The girls, observing this phenomena, then began to exploit it. This could have been better allowed for but the expedient of enforced rotation overcame the issue completely. Mr S suggested that the crosswords would be better used as students finished the Quiz. This proved to be precisely true, the crossword occupied fast finishers and eventually almost everyone reinforced or corrected their learning with it, post quiz. The wrap up also went very well, tying back in with the earlier promise to make sense of the whale-mouse-human grouping, the gist of which I feel everyone now grasps. This is reinforced by the Quiz scores, which are quite good.

5. Animal Class Games - 18/02/09

5.1 Objectives

- Students recognise patterns of similarity and difference within and between groups of familiar living things. (LL - D3.4)
- Students use scientific ideas of classification to group living things. (LL - D5.4)

5.2 Required Materials

- Board and markers
- Animal Pictures and game instructions

5.3 Program

Lesson Element	Time
➤ General discussion ascertaining other class members knowledge of animal classes	5-10
➤ Hand out pictures of Animals and have the Students come to front one by one and mime their animal. ➤ As each animal is guessed put on the board under the appropriate class heading	20-25
➤ Game explanations. Break into groups for game playing.	5-10
➤ Play Animal Class Games	20
➤ Regroup for wrap up	5

5.4 Assessment

- Mime and game participation & demeanour

5.5 Reflection

Getting to do this lesson twice was quite beneficial in that it allowed me to observe the lesson's shortcomings and take steps for their correction second time around. The behaviour of the students in "broken play" is unpredictable and difficult to channel. These activities required constant capture and release of control. Capture, so that they focussed on the mime, then release for the free form guessing and interchange of ideas that followed. Their response to my feigned exasperation and melodramatic chastisements allowed the activity to proceed acceptably but it could have been smoother. Must work on better words, tones, mannerisms and gesticulations to arrest attention, time after time, with more immediate effect. The card games worked well and I felt that some good learning and much reinforcement of prior lessons was achieved, which was especially valuable for these groups of Grade 6's alone.

6. Basic Heredity - 19/02/09

6.1 Objectives

- Revise and assess previous learning of animal classification
- Apply previous learning in introducing students to basic genetic concepts including that of evolution & dominance and recession.

6.2 Required Materials

- Board and markers
- Traits Generation Activity components.

6.3 Program

Lesson Element	Time
➤ Y Chart - What do we know, What do we want to know, Where are we going.	5-10
➤ Introduction to genes and general discussion eliciting from students their understanding of heredity and the role of genetics. ➤ Why are brothers & Sisters not identical? Some basic rules for heredity - dominant and recessive genes.	5-10
➤ Display and explain Traits Generation Activity ➤ Conduct activity in groups	20-25
➤ Activity debrief and results discussion, touching on evolution.	5-10
➤ Around the World knowledge activity	10

6.4 Assessment

- Activity participation and sheet completion. "Around the World"

6.5 Reflection

Cut the "Y" chart off the front of the lesson as the Grade 7's had other duties for 15 minutes or so. Got the data projector going and used it in the first half of the lesson. Students responded very well to the combination of direct instruction, reinforced by imagery and You Tube. The images from the Illustrated Britannica were compelling and on the big screen I had a sense that they spoke very strongly to the students. The You Tube genetics videos were perfectly pitched, exactly pertinent to the subject (with a little high end chemistry) and of a quirky animated style that endears them to young people. Talk of sperm, eggs and creating babies generated some knowing looks and small snickering but nothing obtrusive. The link from the subject of the YouTube to the subject of the activity seemed very clear to all. It was a shame that the activity required such elaborate instructions, I think they were unavoidable. It would have been better if I had not garbled those instructions slightly. It is so important to get everything out at once. Dismissing their attention and then requiring it back for some other small thing is a real enthusiasm killer. The activity itself worked very well and student responses indicated that they were surprised by but understood the results that emerged. Mr S's suggestion that some students be given roles definitely made the groups more effective in performing what was a quite complicated task

7. Genetics - My Traits - 04/03/09

7.1 Objectives

- Revise and assess previous learning of basic heredity
- Apply previous learning in introducing students to basic genetic concepts including genetic code.
- Students understand that people's physical traits, including their own, are directly affected by their genetic makeup

7.2 Required Materials

- Board and markers
- Data projector & network access, various digital images and web links
- My Traits Inventory and Crack the Code activities.

7.3 Program

Lesson Element	Time
➤ Revision with discussion of Traits Generation activity emphasising inheritance of traits and its unpredictability	5-10
➤ Introduce codes. Who has heard of codes? Morse code? Reinforce DNA as a simple recipe for making a human (in code) ➤ Illustrate how simple codes can carry complex information with the Crack the Code activity.	10-15
➤ Discussion about physical traits - students name some, height, hair colour etc. Compare Genotype & Phenotype ➤ Introduce Traits activity emphasising that these traits are being used because they are determined by just one gene.	5-10
➤ An Inventory of My Traits Activity	15-20
➤ What happening - debrief and summary	5

7.4 Assessment

- Activity participation and sheet completion.

7.5 Reflection

Nearly skipped the "Crack the Code" activity in an attempt to fit everything in. But decided to proceed with it - happily - since it seemed to resonate with the students and I think made its intended point well - that simple DNA signals can carry complex information. The Inventory of Traits was a little rowdy with the necessary cross communication within large groups. I reminded the girls several times and with increasing sharpness to self-monitor the volume of their table talk - but to little avail. Not really sure how to handle it better or even if it should be of concern. Mr S mentioned it also but did not seem to think it had ever reached unacceptable levels. Timing was much better and got through everything including the dominance/recessive principle as an advance organiser for tomorrow. And still had time for a decent summary - which just feels so right at the end of a lesson.

8. Genetics - Tour of the Basics - 05/03/09

8.1 Objectives

- Revise and assess previous learning of genetic traits
- Students understand the role of DNA in transferring genetic traits to offspring. generations.
- Introduce dominance and recessiveness of inherited genes

8.2 Required Materials

- Data projector & network access, various digital images and web links
- Library Computer Lab for "Tour of the Basics" Web quest.

8.3 Program

Lesson Element	Time
➤ Revision with discussion of My Traits activity emphasising the coded nature of genetic information	5-10
➤ Go through the "Tour of the Basics" in whole class mode with discussion and revision	15 - 20
➤ Students use the "Tour of the Basics" website to trawl for answers to the work sheet. ➤ Crossword for fast finishers	15 - 20
➤ Introduce dominant & recessive genes and show YouTube	5-10

8.4 Assessment

- Web Quest Completion and activity participation.

8.5 Reflection

Pretty simple lesson with little, really, on which to reflect. I went through the whole web quest with them first and I think it may have been wiser to have not done that, to have just let them web-quest away. But it was necessary because of the presence of sound in the web-quest and the cacophony that that sound would have created if all 16 computers in the lab were going simultaneously out-of-sync. Even having been guided through once it still took the students longer than I anticipated to find the answers and only a few pairs completed the sheet. Accordingly there was not enough time to go through and correct the answers and, more troublingly, I don't actually know who did well and who did poorly. But I did make time to introduce the concept of the final term assessment in science and it was seemingly well understood and favourably, even eagerly, received by the girls.

9. Genetics with a Smile - 11/03/09

9.1 Objectives

- Revise and assess previous learning of genetic traits
- Students understand the role of DNA in transferring genetic traits to offspring generations.
- Extend understanding of dominance and recessiveness of inherited genes

9.2 Required Materials

- Board and markers
- Data projector & network access, various digital images and web links
- Genetics with a smile worksheet.

9.3 Program

Lesson Element	Time
➤ Revision with discussion of and answers to Web Quest	5-10
➤ Introduce Hetero & Homo Zygous ➤ Show eye colour PPT and discuss ➤ Show Gregor Mendel You Tube and discuss	10-15
➤ Genetics With a Smile Activity ➤ Unpack with student presentations of their various Smiley Faces	15 - 20
➤ Reiterate Genome / Phenome contrast and show You Tube	5-10
➤ Genetics Crossword	remainder

9.4 Assessment

- Smiley face activity completion and activity participation.

9.5 Reflection

Expository section at the front of this lesson went particularly well and it was worth the effort to have the dictionary links setup for Homo and Hetero. The non-plussed looks when it was shown that Homo meant "same" and not something saucy were worth the price of admission alone. It also ensured that the chance of long term retention of the learning was increased. I am also glad that I spent the time to make the PP about dominant, recessive, homozygous and heterozygous as there were a lot of audible "aha"s while it was being shown. I Saved the Gregor Mendel stuff for next time as engagement with the PP was high enough to justify its extension. The activity took longer than I anticipated (again), though this time it was more due to the complicated directions that were required. At least I delivered the complicated directions with clarity this time. The smiley faces that created in the activity also helped to emphasise the contrast between genome and phenome, the discussion of which also went well at the end. Completion of the smiley faces went to homework and I can get groups of girls with the same "genetic" traits to show that their smiley faces are different - due to the action of phenomena - the phenome.