

Zoology I

Waldorf Curriculum - Fourth Grade

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Unit Design

Each unit is designed as a 3 – 4 week long main lesson block made up of four recurring lesson plan components: Introduction, Activation, Exploration and Extension.

Introduction

Before beginning a new topic, it is useful to know your child's preconceived notions about a subject; that is, a sort of a Pre-Test. The introduction generally takes the form of discussion questions or an initial activity.

Activation

The activation follows the introduction and answers the question: "Who cares?" This is similar to activating a toy for a small child; they see it but can't think of anything to do with it so they continue to complain that they are bored. Your child may see the topic at hand, but fails to see that it holds any interest for them. For a third-grade child (8-9 years), this is usually because the subject isn't seen as being relevant to "real life." A successful activation will engage your child's interest and set the stage for your explorations.

Exploration

This is the stage in your lesson plans where the subject is explored as thoroughly as possible. The process of exploration takes place in Sets, which are groups of activities completed over several days, and include a wide variety of activities and integrated subjects such as art, music & movement, nature, cooking, and handwork. You can move through these at a pace which is comfortable for your child; each Set is not necessarily one day's work. Quality is more important than quantity when it comes to completing the activities within a Set. Through the process of exploration, the child will engage in journaling and complete pages in their main lesson book, recall orally what they have learned, and synthesize new learning with previously learned content. Exploration is the process of making connections – this is the time of the "aha!" moments.

Extension

Depending on your schedule and your child's depth of interest in a subject, you may wish to spend additional time on a unit. Extension ideas are given which you can use to explore the topic further at this time (whether to give additional coverage to a subject which your child finds difficult or to give your eager child more time with a subject he really enjoys) or later in the year. They are also useful for filling in small blocks of time which come up during the school year such as transitions into and out of holiday breaks.

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Booklist: Main Lesson

Young Lions. Toshi Yoshida.

Bashi, Elephant Baby. Theresa Radcliffe.

Pi-Shu: The Little Panda. John Butler.

Crocodile: Disappearing Dragon. Jonathan London.

Pretzel. Margret Rey.

Watercolor Pencil Magic. Cathy Johnson.

The Long Winter. Laura Ingalls Wilder.

The Holy Bible.

Parent Background

The Education of the Child in the Light of Anthroposophy. Rudolf Steiner.

Sacred Fauna: World Zoology in the Light of Rudolf Steiner's Spiritual Science. Alan Whitehead.

The Human Being and the Animal World. Roy Wilkinson.

Elements of Grade 4 CD-ROM. Eugene Schwartz.

Science as Phenomena for Homeschoolers. Barbara Dewey.

Learning About the World through Modeling. Arthur Auer.

From Nature Stories to Natural Science. Donna Simmons.

Suggested Read-Alouds

Minn of the Mississippi. Holling C. Holling.

Misty of Chincoteague. Marguerite Henry.

Just-So Stories or The Jungle Book. Rudyard Kipling.

Cumulative Project

Ogden Nash's Zoo. Ogden Nash.

McGuffey's Fourth Eclectic Reader.

“A study of zoology strengthens the will life.”

Rudolf Steiner

It is very important that parents have read and understand the background reading to this unit. This material is approached from an anthroposophical context, instead of a strict zoology standpoint. This is explained well in the introduction to Roy Wilkinson's book. If you have not yet read (or it has been a while) [The Education of the Child in the Light of Anthroposophy](#) by Rudolf Steiner, it is good to do so before teaching this unit. This document may be found online at the Rudolf Steiner Archive: http://wn.rsarchive.org/Articles/EduChild/EduChi_index.html

The Archive is a donation-supported site, so please make a contribution if you find it helpful.

We are dividing the Man and Animal topic into two parts; in this section we will be covering approximately pages 1-12 of Wilkinson's book and plan to study the physical form of man and animal, diet, food chain, classification of animals, and a comparative study of teeth and bones. Creative Writing and Clay Modeling are the A and B topics which will support this.

In the second part of the unit, Zoology II, your child will spend three weeks studying several specific head and trunk animals more in-depth (there are many suggestions of specific animals to study for this) and learning more about the three-fold nature of the human being. The moral responsibilities of man in relation to the animals (stewardship) will also be discussed further.

Use the images on the Elements of Grade 4 CD-ROM to inspire and help you plan your child's main lesson book pages. I've made some specific notes on the ones most helpful for this part of the block.

Lesson Plans

Introduction

Begin with examining your teeth. Roy Wilkinson says on page 9 that "The existence of different types of teeth show how the human being is balanced. The ruminants (ungulates) have exceptional molars; the predatory animals (carnivores), canine teeth; the rodents, incisors. In the human jaw these are all present but harmoniously balanced."

How many teeth do you have? What are they called? What is the shape of each tooth? What is the job of each? If your child has never learned about this before, give him/her a selection of foods and have your child record which teeth he/she used in eating the food and what function the teeth had. Some foods you might use for this could be

- Jell-O or pudding
- Carrot
- Bread
- Lima bean
- Steak
- Saltwater taffy or beef jerky
- Corn on the cob
- Popcorn

Activation

Take your child to the dentist and ask the above questions. Get some literature with pictures of the different kinds of teeth and their functions. Have your son's or daughter's teeth checked to see that they are healthy.

Main Lesson Book: have your child compose a short text and corresponding illustration to explain the three types of teeth shared by humans and animals and what they each are for. See the "Humans and Animals" page on the Elements of Grade 4 CD-ROM and the Venn diagram with Human Beings written in the overlapping area.

Choose and begin a read-aloud book for this unit.

Explorations

Set A:

Using "By Beak or by Teeth: That is the Question" from the Peabody Fellows Program Biodiversity Curriculum Unit for reference, complete some of the activities suggested in Lesson 1A and its extensions.

http://www.yale.edu/peabody/education/fellows/pages/pdf/2001_rosner.pdf#search=%22human%20teeth%20poster%22

Donna Simmons also has some notes about the study of birds and their beaks in her book on pages 76-77. Consider becoming a bird watcher (if you're not already). Try to visit various zoos and science museums as you go throughout this unit, to supplement what you are learning.

Also, if you have a pet, visit a veterinarian to discuss your animal's teeth, their function, and how to maintain their dental health.

Set B:

In addition to specialization in teeth, animals have other qualities which have adapted to their environment and their prey. Read as many stories as you can which illustrate this – the examples Wilkinson gives in his book are:

Mole – front leg for digging
Tiger – claw for holding prey
Rodent – teeth which continually renew themselves
Cow – digestive system
Elephant – trunk

Donna Simmons gives the following examples:

Deer – fleetness of foot
Eagle – keen eyesight
Rabbit – sharp hearing

Some suggested books:

Young Lions. Toshi Yoshida.

Bashi, Elephant Baby. Theresa Radcliffe.

Pi-Shu: The Little Panda. John Butler.

Crocodile: Disappearing Dragon. Jonathan London.

On page 79 of From Nature Stories to Natural Science Donna Simmons gives a long list of suggested books for this block. You can also, of course, tell your own stories or you can

substitute other books based on what is at your local library and in your own collection. Another alternative is to study the animal through some nonfiction materials and then have your child do a creative writing assignment where he/she tells a story about the life of that animal.

Have your child brainstorm a list of animals which he/she has noticed that have specialized body parts or traits which help them achieve a necessary task.

Main Lesson Book: have your child compose a short text and corresponding illustration for each animal discussed to describe *how* it is specialized and *why* (explaining for what precise reason is that specialization helpful). See "The Rodents" page on the Elements of Grade 4 CD-ROM; also "The Three Groups of Animals".

Set C:

Another way to look at specialization is to examine the incredible history of dogs. These adapted to a variety of settings through human intervention rather than on their own. Your child might enjoy a study of all the different sizes, shapes, colors, and personalities of various breeds of dogs and learning more about why they were made to be that way. Pretzel is a good book to read for this.

List of dog breeds: http://en.wikipedia.org/wiki/List_of_dog_breeds

Breed categories:

Dog breeds can be divided into different categories, such as:

- Hunting
 - Hounds, including Sight hounds and Scent hounds
 - Gundogs, including Pointers, Retrievers, and Spaniels
 - Terrier
 - Curs and Feists
- Working (or Utility)
 - Pastoral dogs, including Livestock guardian dogs, Guard dogs, His/herding dogs, Sheepdogs, and Drovers
 - Sled dog
- Bulldogs
- Extinct dog breeds
- Fighting dogs
- Toy

Where do dogs come from? Learn more about some of the relatives of *canis familiaris* here: <http://ctd.mdibl.org/voc.go;jsessionid=0621D8FCE872E29168973FF887FD4F8F?voc=taxon&acc=9611#tree9611>

Eugene Schwartz's CD shows a page from a main lesson book describing the taming of wolves into dogs. On this page, he mentions that Zarathustra tamed the first dog. I couldn't find anything about that online but if you know the story you should certainly tell it.

You may also enjoy reading "The Cat That Walked By Himself" from Just-So Stories <http://www.boop.org/jan/justso/cat.htm> to compare the relative tameness of cats and dogs. Donna Simmons also talks in her book about using the dog to demonstrate the soul quality of "loyalty".

And, for fun, attend a dog show and see the great variety of breeds firsthand!

Main Lesson Book: have your child compose a short text and corresponding illustration to explain the great number and variety of dog breeds and why this is so.

Discussion question: do you think that humans ought to be breeding animals for certain traits or otherwise interfering with the natural development of the animals on this earth?

Set D:

"The animal and its surroundings are one. Where the environment becomes unsuitable, the animal dies out." Roy Wilkinson

It is also valuable for your child to study the concept of extinction. This comes up in the dog breed list but you should list a wide variety of animals which have become extinct and why. Consider the dodo for instance.

You can also discuss animals which are on their way back from extinction, such as the giant panda. Perhaps you can raise some money to adopt an animal, like a dolphin, gorilla, or manatee.

Set E:

Another aspect of animals you might want to study is their colors. Not only is camouflage an example of specialization (and something humans are able to change – by changing clothing – there are so many ways we do not have the limits of animals, so as many different ways you can make this understanding known, without being explicitly stated, the better) but it leads you to a discussion of habitat.

Visit a pet store or zoo to watch a chameleon change colors. Take a nature walk and try to discover as many animals as you can hidden around you. Grasshoppers blend in with the colors of the grass, toads blend in with the fallen leaves, and so on. Take a nature journal and sketch some of the animals you find, using Watercolor Pencil Magic to help you create the textures and colors of the environment. First draw or paint the entire scene, then use a different pencil to trace the outline of the animal cleverly hidden inside it. Consider the thought that "The animal is equipped for its surroundings. Human beings create their own."

Set F:

The final comparison for this unit is the idea of instinct versus choice. "Human beings have all the possibilities inherent in the animal but they can direct them in their own way by means of the

individualized intelligence. In the animal, what is experienced goes straight into deed. This/here is no reflection. It reacts immediately. It neither decides nor declines." Roy Wilkinson

There is a wonderful passage at the beginning of The Long Winter by Laura Ingalls Wilder -- overall I think this book might be too scary for a child this age but you can certainly read all of it if you wish -- about the instinctive of all the animals who are fleeing the area or preparing for the terrible winter ahead. The building of the muskrat den (Chapter One) is a wonderful example of instinct and her Pa's explanation of how humans have choice but animals don't, and the corresponding responsibility that we all have, is a perfect fit for the Man and Animal unit.

Take a walk outside and all around your house. Where do you see animals preparing for the winter? Do you believe it is going to be a hard winter? What other ways can you learn from animal behavior?

Extension – Evolution

Although we often hear that monkeys are nearly as intelligent as humans, able to use both tools and language, what are the differences between us? IF you believe in evolution, have your child study this theory about the development of mankind at this time. Do you believe that humans evolved from monkeys? In what ways are we still similar? What qualities of humans are different from monkeys? Do you think we are superior?

Independent Activities

For independent work for this unit, you might want to consider

- Creating models of different kinds of human teeth out of clay. Perhaps your child could get permission to put this on display at his/her dentist's office.
- Having your child plan and implement a scheme to raise enough money to adopt an endangered animal OR research an animal in his/her area for which this/here is not enough awareness, create a poster campaign, and place the posters in his/her local library.
- A longer creative writing project where your child actually creates a chapter book about the life of an animal of his/her choice. Try to achieve a tone such as the one found in Minn of the Mississippi, where the reader is sympathetic to the animal but the animal is not overly anthropomorphized.
- The Laura Ingalls Wilder scavenger hunt (Webquest)
<http://www.macomb.k12.mi.us/wq/WebQ97/LAURALES.HTM>

It would be nice, both for this unit and for the second part of it, to have a model of a human skeleton for the classroom and to visit some museums with skeletons of other types of animals on display. Depending on your scientific resources and your squeamishness, you can also do some animal dissection for this unit. Your goal would not be to memorize the names of all the bones, or to identify every organ in the body; rather it would be a low-key general comparison of how the animal is similar to or different from humans. You can also choose one or several new class pets if you wish – maybe something like an earthworm, a guinea pig, and a songbird – to have on hand for observations. This will give your child some more background and experience before entering the second part of the unit. Donna suggests the following:

Salamander
Toad
Garter snake
Stick insects
Vole
Wood mouse
Horned Toad
Chameleon

On page 77 of From Nature Stories to Natural Science she also recommends keeping wild animals only for a short time (as the stress of captivity often leads to death) and the importance of returning wild animals exactly where you found them. This leads to an attitude of stewardship. If you like, you can read the section of Genesis where God commands Adam to take care of all His creatures. Not everything we see belongs to us!

Cumulative Project

Your child's cumulative project for this unit is to create a food chain poster featuring an animal of his/her choice. She must first choose an animal and then explore and, finally, illustrate all the levels of the food chain it is a part of. She *does not* have to choose an animal which is at the top of the food chain. You'll have to decide for yourself if you want her to have the option of doing the food chain for human beings, if she asks about this.

Here is a nice handout to explain food chains and webs:

<http://www.vtaide.com/png/foodchains.htm>

I also like this one because each tier is clearly labeled:

<http://curriculum.calstatela.edu/courses/builders/lessons/less/biomes/desert/hot-desert-chain.html>

There are plenty of images online and posters if you need more examples to explain this concept to your child. The idea of stewardship comes in here, too, because you quickly realize that even something that seems tiny or irritating, like a mosquito, has a purpose in the grand scheme of things. You might enjoy reading the poem "The Fly" by Ogden Nash or the story of "The Nettle" (lesson XLIV) in McGuffey's Fourth Eclectic Reader to reinforce this.

Try to encourage your child to choose an animal that lives nearby so that he/she becomes more familiar with the regional biome (this ties in with local geography, studied this year as well). If your child has his/her heart set on another favorite animal, however, let him/her do that. By the way, if you allow online games, here is a link to a website by Earth Day Canada called "EcoKids", which has a game about food chains:

http://ecokids.earthday.ca/pub/eco_info/topics/frogs/chain_reaction/index.cfm

Cumulative Project

Steps in the process:

1. have your child choose an animal to research
2. have him/her learn everything it eats as well as what eats it
3. have him/her identify and sketch the complete food chain of the animal chosen
4. have him/her create a poster and a presentation

Elements of the poster:

The poster must have a title. Each animal drawn on the poster should be clearly labeled. Your child should first create the poster in pencil and then color in the animals and plants (refer to [Watercolor Pencil Magic](#)). Arrows should be drawn in a bold color and clear and easy to understand. The poster will be most successful if it shows the tiers in the process, such as the desert biome example (primary producers – plants, primary consumers – plant eaters, small predators, and larger predators). She can decide whether to include the sun and rain as the “food” for the plants and whether she wants to include the death and decay of the animal at the top of the food chain, which enriches the soil and helps the plants to grow, thereby helping the cycle to continue on.

Elements of the presentation:

The presentation may be before a group of other homeschooling children or just for the members of your own family at home. In your child’s presentation he/she must clearly explain the food chain, using the poster as his/her visual, and be able to answer questions about the food chain he/she has drawn. He/she should speak clearly and confidently, make eye contact, and seem comfortable taking questions. It’s important for your child to have experience with all aspects of learning including

1. identifying his/her own list of things he/she wants to learn about,
2. making predictions about what he/she will learn,
3. knowing how to competently and confidently – and accurately! – research a topic,
4. having the ability to synthesize new pieces of data together,
5. developing an understanding of greater picture,
6. drawing conclusions and determining the answer to his/her questions, and
7. being able to present and share what she has learned to others.

Assessment Criteria

Content/declarative knowledge: how well does the student know the **content**?

Assess your child's work during introduction, activation, exploration, and extension components of the unit. Assess his/her independent skills review activities. For example,

- Can he/she explain the different types of teeth that she has and how they work together?
- Can he/she identify animals which have only one type of teeth and draw conclusions as to what type of food they eat?
- Can he/she give other examples of specialization and how each helps the animal?
- Can he/she explain why there is such an incredible variety of dogs?
- Can he/she identify several animals which are extinct and say why?
- Can he/she explain what camouflage is and give an example of an animal which uses it?
- Can he/she explain what habitat is and explain how an animal adapts to its habitat?
- Can he/she explain the difference between animals and humans in the matter of instinct versus choice?

Quality of the **product**: how well did the student present the work in writing, speaking, etc.

Assess the quality of your child's main lesson book work. For example,

- Did he/she concentrate on using his/her best handwriting and work diligently on his/her illustrations?
- Were his/her explanations clear and easy to follow?
- Did he/she synthesize his/her learnings and use his/her main lesson book to summarize new information?

Quality of the **application**: how well did the student execute the knowledge application process?

Assess your child's cumulative project. For example,

- Did he/she research his/her chosen animal with enthusiasm?
- Did he/she take the time to learn everything about the animal's diet and its predators instead of stopping at the first few?
- Did he/she use several sources to find information about his/her animal and check that he/she found each fact in three separate places?
- Did he/she understand how to use arrows to show the sequence of events in the food chain?
- Did he/she take the time to draw each animal and plant in the food chain accurately?
- Did his/her presentation clearly explain his/her knowledge of the food chain?
- Was he/she comfortable answering questions?
- Did his/her understanding of the interwoven relationship of animals and all life on this planet lead your child to a greater sense of stewardship for the world around him/her?

Zoology I

Planning Page – Unit Plan

This unit covers four weeks. I expect to cover

Week One:

Week Two:

Week Three:

Week Four:

Zoology I
Planning Page – Weekly Plan

Zoology I

Journaling Page

Lesson:

Date:

Today we

The most successful part of the lesson was

I wasn't as happy with

I noticed that my child

Tomorrow we will

Brainstorming/To-Do List for the next lesson: