
*Life Science-Based Writing Lessons in
Structure & Style*

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Sample

Lesson	TWSS Unit	Life Science Topic	Style	Suggested Grammar
1		Life on Earth	strong verb/quality adjective	verbs
2	I/II	Life Sciences	“-ly” words	adverbs
3	II	Classification	who/which	adjectives/phrases
4	II	Cell Structure	decoration: simile/metaphor	
5	II	DNA	www.asia	commas
6	III	Cells Discovery		run-ons, fragments
7	III	Bacteria	decoration: dialogue	quotation marks
8	III	Fungus	because clause	clauses
9	IV	Botany	subject, “-ly” opener	sentence structure
10	IV	Botany	prepositional	prepositional phrases
11	IV	Botany	clausal opener	fragments
12	IV	Botany	transitional sentences	transitions
13	V	Cell Division		
14	IV	Zoology	-ing opener	participial phrases
15	VI	Invertebrates		
16	Library Research Workshop			
17	VI	Vertebrates	VSS	
18	VI		Advanced stylistic techniques	
19	VII	various		
20	VII	Experiments		
21	VII	Ecology		
22	VIII	various		
23	Internet Research Workshop			
24	VIII: Research Paper Unit			
25				
26				
27				
28				
29	IX	Fiction		
30	IX	Documentaries		

Introduction

To the Teacher

These lessons have emerged as a combined effort between my father and me. Our teaching backgrounds are science and writing, respectively. We have each tried to teach the other's classes at times and realized that writing and science really do come from different sides of the brain most of the time. At one point, I had to teach for my father during an emergency hospitalization. Of course, he became ill just as he was beginning to teach genetics. Ask me to diagram compound-complex sentences or compose an essay, and I can do it on the spot. Tell me to explain a Punnett square, and I am in deep trouble. As we have worked on these lessons, however, we have confirmed something we both always believed: writing about something helps you to learn it. As we shared topics and information back and forth, I discovered that I can wrap my brain around DNA, and Dad has realized that the phrasing of a writing assignment makes a difference in how the students complete it.

As we worked, three goals became plain. First, we wish to help you use the IEW materials to teach communication to your students. They have made a tremendous difference in our efforts as teachers and home school parents both. Second, we want to encourage students who are "science brains" in their writing skills. Scientists have to write, too; they cannot dissect and examine all day. They have to record their findings. Perhaps it will be easier to learn to write if students are writing about a topic of interest and expertise. For those who are not science brains, it will help them learn the material if they write about it. Finally, we wish to share a love of the wonder of God's creation. We do not make any attempt to hide that we believe in a Creator God who fashioned a marvelous world out of nothing. We sought interesting stories and evidence of design and purpose in nature.

Most of the lessons are narratives, as I would speak to my classes. They are designed to be completed one per week. Some advanced writers may be able to double up on earlier lessons and spend more time on the super essay unit. It is my hope that a first year IEW teacher would be able to use this to teach a writing class. It is also possible just to hand this book to students and have them work through it on their own. It is preferable to work through it with them. All the lessons assume the teacher and/or student has access to the *Teaching Writing: Structure and Style* instructional seminar, live or on DVD or video. While I have included as much detail as I can, only through watching the material will you understand and make this method of teaching writing your own.

These lesson plans are intended to provide instruction and practice in the nine units of the *Teaching Writing: Structure and Style* syllabus, using the subject area of life science. In addition, some lessons will introduce a different method of organizing a paragraph and will provide modeling and practice in writing that style of paragraph. Finally, each lesson will introduce, reinforce or practice the use of stylistic techniques that will enhance the writing style of the student.

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Typical Class Format

- Grammar/Vocabulary exercise
- Collect previous week's homework, proofread, class critique
- Discuss writing topic (structure); do in-class outlining or reviewing
- Discuss style and/or grammar topic
- Practice style with a previous assignment or exercise
- Give homework assignment

Instructions for Grading

I do not grade the first draft. I do give points for completing the first draft. Grading is reserved for the final draft. If the student has followed the instructions for the assignment and has corrected any errors noted in the editing stage, then every assignment has the potential to result in 100 %.

To the Student

Welcome to Science Based Writing Lessons! I am so excited to have you in our class, even if you do not get to come to our classroom each week. These lessons are a collaborative effort between a father and daughter team. Since I am the writing teacher, you will be hearing from me more than my dad. He is the science teacher and wrote most of the source texts you will be using in this course.

I have to tell you, we are die-hard, committed, no turning back, six day, young earth Creationists. There, now you know. However, you do not have to be like us in order to complete these units. I am telling you this up front so you know our presuppositions going into these lessons. As we wrote these lessons, because we are Creationists, we saw God's fingerprint in the life on this earth. His intelligence, creativity, and design are obvious to us, and we wanted to share that with you. The many organisms that share this earth are intricate and fascinating. We have tried to bring that aspect of life science to these lessons. We have looked for the unusual stories and discoveries that show our awesome Creator's hand.

One of the areas, along with Creationism, that I am passionate about is research and training students to do research. As a research assistant in a college library, I encountered many students who could not locate information needed in a timely manner. In my classes, I require my students to locate the sources we are going to use in class the next week. We have a variety of sources, and students learn how to locate specific types of information. We are going to do a modified version of that in this class. For all "in class" practices, I will be providing the sources. For many assignments, I will be asking you to do the research.

If you are doing this on your own, plan for one day of working through the lesson material and four days of working on the assignment. On some lessons, I have created a sample schedule to help you plan your time. Try to complete one lesson each week. Most of the lesson is structured as

though I am teaching you directly. It will be most beneficial if you can watch at least portions of *Teaching Writing: Structure and Style*.

Notebook Organization

You will need a three ring binder, 1½ to 2 inches wide, divided by sections:

1. Blank Paper (to use for note taking and outline making)
2. Reference (for handouts on style and structure you are given)
3. Assignments in progress (so you always know where your work is): keep your rough drafts here. Once you have completed a final draft, you can remove your rough drafts to keep your notebook less cluttered.
4. Completed Assignments: keep a clean copy of each final draft here. When you reach the end of the year, you will see how much you actually wrote and hopefully see an improvement in your structure and style.

I am grateful to IEW for the opportunity to share these lessons with you. May they increase your skill in communicating about our wonderful world.

Lesson 4 • Cell Structure

Objectives

- Students will make KWOs and summarize those notes in a descriptive paragraph.
- Students will incorporate all stylistic techniques learned.
- Students will use a simile or a metaphor in describing cells.

Model: Summarizing from Notes

We will continue to practice the skill of note taking and summarizing your notes in a paragraph using cells as our subject. Although cells have only one purpose—to organize material—there are many types, each performing a specific task and, therefore, varying structures. Most people have never seen a real cell. Only powerful microscopes can reveal the intricate nature of and amazing activities that go on in such a tiny space. In order to tell the non-scientific world what they see, scientists must describe the microscopic world using words that we can understand and imagine in our heads. They will use different words than they would if they were speaking to other scientists. They change their style depending on their audience.

Paragraph Type: Descriptive

When you want to write about something that most readers have never seen before, use a **descriptive paragraph** to organize your information. A well-written descriptive paragraph should give a reader enough detail to imagine the object or even draw it on paper. In addition, a descriptive paragraph must report the detail in a logical sequence so that the reader can put together an accurate picture. You would not want someone to imagine an elephant with his tail right behind his trunk and then his ears down by his toes!

Teacher: Ask students to orally describe an organism already studied in life science. Take notes. Demonstrate to your students how important it is to give details in order by mixing up your notes and orally summarizing them.

Stylistic Technique: Decorations

In addition to the dress-ups, you will be learning another category of stylistic techniques called decorations. There are six of these, just like the dress-ups. Decorations are also called literary devices, often using poetic or symbolic language or relying on the sound of the words to add variety and color to your writing.

Similes and Metaphor

This first decoration is really two, but they are similar so we group them together. **Similes and metaphors** describe something in an indirect way. They are similar because they both use comparisons. Both of these techniques fit well in descriptive paragraphs because they allow you to compare an unfamiliar object with a familiar one.

Similes always use the words “like” or “as” and may possibly be true.

Examples:

light as a feather

a road like a brown ribbon

Because they call something or someone what that thing or person cannot be, **metaphors** can never be true.

Examples:

a heart of stone *the metal sky*

flaming rose *sand for hair*

Teacher: List some organisms on the board and have your students describe them using similes and metaphors.

In order to write a simile or metaphor, you must be familiar with the object you are describing. It may be helpful to locate a picture or a drawing and keep it in front of you as you create a simile or a metaphor.

Clincher/Title Relationships

As you complete your summary, create a title for your piece from your final clincher sentence. It is usually easier to give your composition a title from its final sentence than to write a title first and make your final sentence match the title.

Clincher: From highly complex to exquisitely simple, every organism in our world is built one cell at a time.

Title: Cells: Builders of our World

Clincher: Plant cells appear simple, but the processes that occur in them are extremely complex.

Title: Simple Complexity

Assignment

1. Read the paragraphs on plant cells and animal cells. Underline the similes or metaphors that you find.
2. Take key words from each sentence.
3. Summarize your KWOs orally.
4. Write two separate descriptive paragraphs. Each paragraph must contain all the dress-ups and a simile or metaphor. Include a checklist when you submit the assignment.

Checklist			
Mechanics/Appearance			
<input type="checkbox"/> name and date on paper; title centered and underlined	5		_____
<input type="checkbox"/> stylistic techniques indicated	5		_____
<input type="checkbox"/> first line of paragraph indented	5		_____
<input type="checkbox"/> paragraph is double-spaced	5		_____
<input type="checkbox"/> KWO attached	5		_____
<input type="checkbox"/> capitalization and ending punctuation correct (-1/2 pt. each error)			_____
Stylistic Techniques (one of each in every paragraph; 5 pts. each)			
<input type="checkbox"/> strong verb	5	5	10 _____
<input type="checkbox"/> quality adjective	5	5	10 _____
<input type="checkbox"/> who/which	5	5	10 _____
<input type="checkbox"/> “-ly” word	5	5	10 _____
<input type="checkbox"/> Decoration-simile & metaphor	5	5	10 _____
Total Points			75

Source Texts

Plant Cell

A typical eukaryotic plant cell contains three distinct structures, along with several smaller organelles. The first structure you encounter is the rigid cell wall, which is composed of fibers of cellulose embedded in pectin. The next structures, the chloroplasts, are found inside the cell wall. A plant cell can contain between twenty and forty of these double-membrane organelles, which are curve-ended rectangles. The chloroplasts produce carbohydrates (sugars) from carbon dioxide. The chloroplasts are in and around the cell wall and look like miniature cells. The final main structures are the sack-like vacuoles, which serve as a toxic waste dump or food storage for the cell. These look like round or elongated bubbles. Additional structures within a plant cell include pigments, mitochondria, and Golgi complex.

Animal Cells

A typical animal cell contains many smaller structures that it uses to organize information and perform the tasks. Every animal cell contains a nucleus. The nucleus is contained in the nuclear envelope, a membrane-bound sack, more or less round or oval. Its shape varies with the condition of the cell. It very selectively allows substances in and out. Small structures in the animal cell include various filaments, microtubules, and glycogen granules. The cell manufactures most of the materials needed for the cell in the endoplasmic reticulum, which winds through the cell like Christmas ribbon candy. The pancake-shaped Golgi apparatus is perhaps the strangest sounding of the organelles, along with mitochondrion, which acts in the digestion of food particles into ATP.

Lesson 5 • The Language of DNA

Objectives

- Students will create a KWO after reading an analogy paragraph.
- Students will summarize the outline in an analogy paragraph, using all stylistic techniques learned.

Model: Summarizing from Notes

Teacher: This lesson continues the unit on summarizing from notes. There is no instruction in a new model. Collect homework and discuss any problem areas.

Paragraph Type: Analogy

An **analogy paragraph** explains a difficult concept by comparing it to a simpler concept. It can also describe an unfamiliar object by comparing it to a familiar object. The two objects usually share a single similarity but are of different classes.

Teacher: Read the analogy paragraph “The Language of DNA.” Ask your students: What is the concept being explained? To what is it compared? Can you give another familiar concept that you could use to explain how RNA and DNA work?

Style: www.asia

The new stylistic technique for this lesson is the **www.asia** clause. It modifies a verb, making it an adverb clause. Because the clause can begin with *when, while, where, as, since, if, or although*, we call this dress-up the “www.asia” clause, taking the first letter of each of the words. Other words that can begin an adverbial clause are *after, before, unless, whenever, wherever, and whether*.

Teacher: Read each of the following sentence pairs to your students and have them connect the paired sentences using one of the words above.

DNA has an essential role in the life of a cell. It can be difficult to understand.

Ribosomes choose the chemicals. Amino acids are formed.

Assignment

1. Read the source text “The Language of DNA” and create a KWO.
2. Summarize your notes in an analogy paragraph. You may reuse the alphabet bracelet analogy or create your own analogy.
3. Include all dress-ups with indicators.

Checklist

Mechanics/Appearance

- | | | |
|--|----|-------|
| <input type="checkbox"/> name and date on paper; title centered and underlined | 5 | _____ |
| <input type="checkbox"/> stylistic techniques indicated | 5 | _____ |
| <input type="checkbox"/> first line of paragraph indented & paragraph double-spaced | 5 | _____ |
| <input type="checkbox"/> KWO attached | 5 | _____ |
| <input type="checkbox"/> paragraph type followed (analogy) | 10 | _____ |
| <input type="checkbox"/> capitalization and ending punctuation correct (-1/2 pt. each error) | | _____ |

Stylistic Techniques (one of each in every paragraph; 5 pts. each)

- | | | |
|---|-----|-------|
| <input type="checkbox"/> strong verb | 5 | _____ |
| <input type="checkbox"/> quality adjective | 5 | _____ |
| <input type="checkbox"/> who/which | 5 | _____ |
| <input type="checkbox"/> “-ly” word | 5 | _____ |
| <input type="checkbox"/> www.asia | 5 | _____ |
| <input type="checkbox"/> metaphor (extra credit) | (5) | _____ |

Total Points 55

Source Text

The Language of DNA

Often called the language of life, DNA is more correctly the alphabet or information carrier of life. DNA is made up of chemicals that form four letters. When put together in the nucleus of a cell, these chemicals contain the instructions that the cell needs to form the proteins that are responsible for the processes and structures in the cell. DNA is in the form of a twisted ladder and must stay in the nucleus. When a cell needs a new structure or information to carry out a process, the DNA ladder splits in half and forms a new group of chemicals called RNA. The RNA carries the letters (code builders) outside the nucleus where the proteins are assembled. Think of an artist making a bracelet with alphabet beads. She can string the beads in a random order, which will produce nonsense, or she can select the letters in a specific order that spells meaningful words. When the words are combined, they form phrases or sentences that give information. The artist's hand can be compared to the ribosome, which chooses the letters in the order that will form the words (amino acids.) These will be combined into proteins that carry information to where they are needed. If the artist sees a mistake, she can remove or rearrange the letters and correct the mistake, just as the ribosome can rearrange or remove the letters forming the amino acid.

About the Authors

Danielle Olander, a home school graduate, writing instructor, home school conference speaker, and home schooling mom, lives in Michigan, where she and her husband are rearing the co-author's four grandchildren. She grew up hearing her dad talk science at the dinner table and even had him for a class or two. It was he who first encouraged her to provide writing classes for home school students. Family trips, which usually ended with her mom having rocks at her feet, were journeys that established a life-long wonder at the marvels of God's creation.

Peter Swett, a retired Christian and home school science teacher, pursued his masters in science education at the Institute for Creation Research. He spends his retirement sharing a love of science, especially rocks, minerals, and fossils, with home school families and church groups. He is also a certified presenter for Answers in Genesis, a creation evangelism ministry in Kentucky.