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GENRE EXPLORATION: ALTERNATIVES TO EXPOSITORY WRITING IN  
SEVENTH GRADE LIFE SCIENCE

by  
Christen Haigh

A Thesis

Submitted in partial fulfillment of requirements of the  
Master of Arts Degree  
of  
The Graduate School  
at  
Rowan University  
June 2006

Approved by \_\_\_\_\_  
Dr. Diane Penrod, Graduate Program Coordinator  
Dr. Deb Martin, Academic Thesis Advisor

Date Approved \_\_\_\_\_

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## ABSTRACT

CHRISTEN HAIGH  
GENRE EXPLORATION: ALTERNATIVES TO EXPOSITORY WRITING IN  
SEVENTH GRADE LIFE SCIENCE  
2006  
DR. DIANE PENROD  
MASTER OF ARTS IN WRITING

The purpose of this thesis is to explore the use of genre writing as an alternative to commonly used expository writing in the seventh grade life science classroom. My research includes student surveys and educator interviews. I surveyed 44 seventh grade science students using a Likert scale. The participating students include 1 eleven-year-old boy, 10 twelve-year-old boys, 10 thirteen-year-old boys, 1 fourteen-year-old boy, 11 twelve-year-old girls, and 11 thirteen-year-old girls. I interviewed 3 middle school science teachers who teach at public schools in New Jersey and Pennsylvania. I interviewed 4 composition professors and 2 college biology professors from Rowan University, located in Glassboro, New Jersey. In this thesis, I examine students' and teachers' ideas, beliefs, attitudes, opinions, and theories about writing and writing in the sciences. My findings reinforce the connection between writing and the sciences and the link between middle school experiences and future educational experiences. The conclusion of this thesis are that genre writing can help lead to more positive student attitudes toward writing in the sciences and writing in general.

### Dedication

I would like to dedicate this thesis project to the middle school students at Our Lady of Mt. Carmel School in Berlin, New Jersey. I'm honored to have shared my first four years of teaching with all of you. Thank you for all that you have taught me. "Shoot for the moon. Even if you miss it, you'll land among the stars."



## Acknowledgements

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I would also like to acknowledge my amazing students. Your energy and optimism are an inspiration. Truly, without you, this thesis project could not have happened.

I would also like to thank the middle school teachers, college writing professors, and college biology professors for their help with this thesis project. I appreciate your willingness to share your wisdom and experience.

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Finally, I would like to thank my husband, Norm, for encouraging me, supporting me, and loving me, especially during these three challenging graduate school years at Rowan University. Norm, thank you for being so very patient and optimistic. I count my blessings daily because of you.

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## Preface

Many students dislike writing. They dislike writing in the science classroom and in other classes as well. Frequently, students will do anything and everything in their power to avoid having to write.

Regularly students do the absolute bare minimum so that they can simply finish the assignment as quickly as possible. Or they copy and paste writing assignments from the internet knowing the risks of plagiarism but choosing to take that risk over having to write.

Many students buy papers to avoid having to do the work themselves. And because in today's academic world, so many students have access to and use the internet, more and more papers are showing up for sale of the net.

Obviously, these avoidance of writing behaviors are harmful to students. The more important issue; however, is determining the causes for students' behavior in terms of writing.

In the following five chapters I examine issues regarding writing and teaching writing. Specifically, the subsequent chapters discuss issues of writing in middle school science, college composition class, and college biology classes. I examine students' and teachers' ideas, beliefs, attitudes, opinions, and theories about writing and writing in the sciences. As a result of my research, I suggest possible solutions to the problems surrounding writing in the classroom.

Specifically, the following five chapters explore the use of genre writing as an alternative to commonly used expository writing in the seventh grade life science classroom. I believe that practicing genre writing in middle school science can help

students learn to write, not only in middle school sciences, but also in secondary and post secondary science classes.

Additionally, I believe that writing in various genres will help students to become better writers in subjects other than science as well. Students' writing skills will expand to writing that they do in other subject areas.

Also, practicing genre writing in middle school science helps to change students' attitudes toward writing in science and writing in general. By allowing children to have more freedom of writing topic, educators help to shape happier and more successful writers.

Students learn that writing is a process; therefore, they no longer feel incompetent about taking a long time to write and revise. Genre writing enables teachers to show students various revision techniques and allows students to interact with one another. Students become confident and successful writers when they are given the opportunity to learn about writing as a process through real writing experiences.

In chapter one, I discuss the need for an alternative to expository writing in the classroom. Specifically, I discuss the benefits of practicing genre writing in the seventh grade life science classroom.

Also, I explain that my four years of teaching sixth grade language arts and seventh and eighth grade science for four years, has allowed me to witness the frustration students experience when they write. Although expository writing certainly serves a purpose in the science classroom, it should not be used exclusively. Unfortunately, when students are asked to write in expository form only, they may become discouraged and disappointed. Many students develop feelings of inadequacy when they try to write.

These observations have led me to seek out a more successful and effective way to teach writing in the science classroom. Additionally, I explore how using genre writing creates more positive views of writing among students. In chapter one, I highlight the benefits of having fun through the practice of genre writing as well.

I also address how journals can aid in shaping students into young writers. Journaling helps students to realize that writing is a continual process that requires a lot of hard work and determination. The journaling done in my seventh grade life science classroom incorporates the use of genre writing in that I allow students to choose what genre they compose in.

Chapter one sets the tone for the rest of the thesis, which explores the idea that students are capable and willing writers. Students are waiting for gentle guidance which will allow them to learn how to write successfully and skillfully. Genre writing will help students and teachers reach this worthwhile goal.

Chapter two explains the research design of my thesis. The research that I conducted involved surveying 44 seventh grade life science students about expository writing, genre writing, writing in the sciences, and so on.

Additionally, I interviewed several middle school science teachers about writing that they do in their classrooms, how they teach writing in their classrooms, and so on. I also interviewed several college composition and college biology professors, of various levels of experience, about their methods of teaching writing, their beliefs about writing, and so on.

Also, I explain the benefits of surveying middle school students and the advantages of interviewing teachers and professors. Chapter two describes the focus and purpose of the research that I conducted for my thesis project.

In chapter three of my thesis, I discuss the responses to the questions that I asked middle school science teachers, college composition professors, and college biology professors. I examine how their response relate to the issue of students' dislike of writing and students' lack of writing skills.

The teachers' and professors' interview responses are directly related to the act of practicing genre writing in that writing problems exist for all ages and grade levels in all subject areas. Practicing genre writing can have a direct positive effect on aspects of teachers' and students' writing experiences.

Chapter four includes a discussion of the results of the seventh grade life science students surveys. I identify my preconceived assumptions about students and writing. Then I interpret the data collected from the survey and compare it to those assumptions. I also discuss what the data mean in terms of teaching and learning writing.

In chapter four I explain that a cycle exists in the world of writing. Students' dislike of writing and teachers' aggravation with the teaching of writing will continue to intensify unless changes are made. Genre writing can help to change the cycle so that teachers and students will enjoy writing and learn to thrive in a writing community.

Finally, in chapter five, I discuss my findings and discoveries overall. These discoveries include my personal teacher observations, middle school science teachers' views about writing, college composition and college biology teachers' views about writing, and seventh grade students' views about writing.

Furthermore, I discuss what effects these findings and discoveries have on my teaching and other's teaching as well. I include a discussion of the importance of writing skills for written communication, which is an essential component of students' academic and career experiences.

My thesis presents the beginning of a discussion about the importance of writing and more specifically writing in the sciences. This thesis is an exploration of alternatives to traditionally used methods of writing and teaching writing. But it only begins to scratch the surface of the thick, multi-layered issue that is writing, and only when a dialogue is initiated can progress be made.

My hope for this thesis project is that it will lead to more and more ideas and discussions and practices. And hopefully, those developments and discoveries will lead to more exploration and eventual teacher and student writing triumphs in the classroom and beyond.

## Chapter 1

### Why an Alternative to Expository Writing?

As a teacher of sixth grade language arts and seventh and eighth grade science for four years, I feel the frustration students experience when they write. Many students have a narrow conception of the role writing plays in learning. Often students regurgitate facts with the hope of pleasing the teacher. Most students feel no personal connection to the writing they do, either in language arts or the sciences. For the purposes of this thesis, I concentrate on the writing conducted for seventh grade life science, because the majority of my experience is in this area, as I instruct two sections of seventh grade life science.

Tapping into a population of forty-four seventh grade science students enables me to provide the reader with accurate and reliable research results. I have been putting my ideas about science writing into practice since last year. The grounding of my research in classroom experiences allows me to provide the reader with concrete examples and results. The chronicling of my experience teaching and my students' experience with using alternatives to expository writing in seventh grade life science contribute to the authenticity of this thesis. My hope is that other educators and those involved in education will find my ideas useful and worthwhile. In turn, I hope that educators will be able to adapt and use the ideas presented throughout.

Traditionally, middle school science teachers use expository writing in the sciences. Some examples of this expository writing in science include lab reports, essays,



and short answer questions. Expository writing assignments allow teachers to observe the factual information that a student has provided for the assignment. Short answer or essays contain information from a textbook, lecture, or notes. Other assignments may include mathematical results and other empirical findings from an experiment. Sometimes, expository writing assignments may include a summary of facts or results. Often, there is a pragmatic reason for teachers' use of expository writing in the science class: Expository writing is fairly easy to evaluate. Many times, the content of the writing is either correct or incorrect. The teacher can observe whether the students have retained and communicated the desired information. This kind of evaluating on content alone can no doubt be a time saver for a busy teacher.

While expository writing certainly serves a purpose in preparing students for writing for the sciences, genre writing fosters a learning environment where the student has not only retained the information but also comprehended it. Is expository writing the only way for the student to experience the various levels of Benjamin Bloom's cognitive domain of learning: knowledge, understanding, application, analysis, synthesis, and evaluation? Many times, expository writing engages students in the lower levels only. How can teachers be sure that students have truly internalized the information and ideas presented? Expository writing in the sciences very often demonstrates that students have a limited understanding of the material. Frequently, students have forgotten the concepts they have written about shortly after spilling those concepts onto paper.

Students are unable to consistently exhibit proof of genuine interest in writing also. Benjamin Bloom's affective domain of learning consists of values, feeling, and attitudes. The affective domain includes receiving phenomena, responding to

phenomena, valuing, organization, and internalizing values. Expository writing confines students to lower level feelings and attitudes about learning and learning writing. Again, the higher levels of learning are not fully addressed in a classroom deficient of variation.

Lack of true understanding and internalizing can result in students' inability to go beyond the realm of expository writing. Frequently, they are incapable of extending the ideas and expanding the writing to include their own thoughts. Often times, because students have mostly written exposition in the sciences, they are unable to communicate scientific ideas in any other genre. The result of this lack of flexibility is often boring and/or confusing writing that does not read well. Moreover, students tend not to value or have a willingness to engage in scientific material or topics. Frequently, this continues into adulthood as well. Many people who are trained and educated, mostly in the sciences, have difficulty communicating their research and findings in a way that is accessible to many. Likewise, these trained or educated in the humanities or other professions have no language to speak with scientists.

Another common problem with exclusively using expository writing in the sciences is the separation of science from other subjects. With Writing Across the Curriculum (WAC) so prevalent in our schools, it is necessary for students to recognize its overall importance in education. Often times, educators and administrators try to build WAC into a district's or a school's curriculum, yet they fail to define WAC for students and teach them why it is so essential to their education.

Taking science students out of their comfort zone by going beyond the traditionally used expository writing and asking them to experiment in genres not traditionally used, allows writing to learn to become a concrete exercise in WAC.

Science overlaps with English, writing, grammar, and many times even math, social studies, and special courses like art, music, and religion. Students gain a better understanding of WAC when they observe, first-hand, its relevance and significance to their complete educational lives by having writing integrated throughout the school curriculum.

As an educator, a key aspect of my job is to instill in my students a sense of responsibility for their educations. Yet, how can students be expected to feel that sense of responsibility if they don't feel connected to what they're learning? Providing for creativity and possibility while providing guidance through the WAC process empowers students. Students want to succeed not just for their teachers' benefit, but for their own benefit as learners. And if we, as teachers, could be so lucky, perhaps personal educational benefit can be the driving force behind all of our students' educational endeavors.

#### Why Genre Writing in the Sciences is Beneficial to Students

Because students' attitudes and ideas about their own education are so crucial to their present and future success, I have included student surveys and the results of those surveys throughout this thesis. The surveys administered to seventh grade life science students present authentic student opinions. In a later chapter, these opinions are gathered and analyzed, with the results interpreted. My intention is that the results and the following discussions will help to fuel new questions about the way we educate students with regards to writing in the sciences.

My thesis illustrates that when students learn how to write about science in various genres, at an earlier grade level, such as seventh grade, the result is better

understanding on the part of the students. They become more proficient at written communication and they enjoy the content that they are writing about. Students also internalize the material and make it their own, which also helps them to retain the curriculum content and they come to value scientific information. Additionally, they understand and see the purposefulness of writing across the curriculum.

Writing across the curriculum no longer exists as a phantom idea, but rather it is tangible. The ideas students express in alternative genre format become part of their consciousness because they have taken existing concepts and synthesized them into their own creations. At the very least, students may finally look forward to writing, science, and writing in science, which, at the middle school level, is a measure of success.

#### Disadvantages of Using Expository Writing in the Sciences Exclusively

My thesis research hopes to address three critical questions: If students usually despise expository writing, why is the genre so heavily used in middle school science classes? Do teachers of middle school sciences have other options? Is expository writing more valuable for science study than writing in different genres, and if so why?

Often times, expository writing is used in middle school science classes because it has always been used. Many educators are hesitant to change what seems to have worked for many years. Yet, expository writing in the sciences has only worked to the extent that it teaches students a way to recall and spit back facts.

In an expository essay knowledge is often spilled out of students' head and onto the paper, never to return to their brains again. Students summarize or paraphrase without realizing what they are saying. This is not successful writing or thinking. The idea behind having students write in the sciences is to have them communicate their

gained knowledge and apply that information to some higher order level of thinking.

This is where expository writing falls short. I have found using genre writing helps to fill the learning gaps left by expository writing in the sciences.

Another disadvantage of using expository writing exclusively is that many students develop negative attitudes toward writing. They feel that teachers are trying to make their lives miserable. It is difficult for them to see the meaning and rationale behind the writing. An equally undesirable effect of using expository writing exclusively is that students may also develop negative attitudes toward science. Or they may develop negative attitudes toward writing in science specifically. Professor S. Sivadas states, in an article appearing in *Children's Literature*, "A mass of unconnected and dry facts and figures should never be thrown to them in the name of science. Instead it should be reprocessed or resurrected in an exciting form by the process of creative science writing" (2004, p. 21).

Obviously, contributing to student's negative attitudes in writing, science, and writing in science is not a goal that teachers want to or expect to achieve. Good teachers want students to gain a sense of independence in their learning. They would like students to take pride in their work. Strong teachers want to make sure that students are growing as writers and as young scientists. Of course, not all students will become writers or scientists, but the skills that can be acquired from both of these disciplines are invaluable to all ventures, that students will encounter in the future.

Learning to write helps students to express themselves successfully in that they communicate their thoughts, opinions, and ideas clearly, effectively, and appropriately. Learning scientific strategies helps students to examine the world around them closely

and carefully. They ask questions and seek answers. Students enrich not only their learning experiences, but also their love of learning in the process. The skills that can be learned from writing and science are crucial to success in their lives in the present and future in terms of their education, career, social lives, emotional lives, and spiritual lives. Creating constant learners is often the goal that many teachers strive to reach. Constant learners have a better chance of achieving success in every aspect of their lives.

### The Benefits of Having Fun

So many students believe that school is not fun. Learning is boring. My four years of experience as a middle school Language Arts and Science teacher has enabled me to observe students' attitudes toward school and learning. I have noted their limitations, their abilities, their likes and dislikes. I have seen the enjoyment on students' faces when they are given more freedom and creative range in the science classroom. They thrive in environments and situations that allow them to express their personalities and personal flair through their writing. Tom Romano states in *Crafting Authentic Voice*, "Better than learning a form and using it in every instance of academic writing, I would rather students learn about the flexibility of written language, its playfulness, its possibility, its room for (Dare I use the c word?) creativity" (Romano, 2004, p. 63).

While Romano is addressing the five-paragraph essay issue here, other educational issues can be inferred as well: Why aren't students encouraged to flex their creative muscles when it comes to certain writing? Why is creativity often discouraged in writing for certain subjects? Science is an academic subject, which is very often void of creativity when it comes to writing. Yet I have asked my students to use creativity in their writing in science and it has proved successful time and time again. And with each

creative assignment, my students become more confident in their writing and in their knowledge of the sciences.

Beyond the benefit of students' developing more positive attitudes toward writing and science is the fact that many students' futures depend upon their ability to write well. In *The Powers of Literacy: A Genre Approach to Teaching Writing*, Bill Cope and Mary Kalantzis explain why writing is so important in the modern workforce. In their introduction, subtitled, "How a Genre Approach to Literacy Can Transform the Way Writing Is Taught" Cope and Kalantzis (1993) write the following:

Students are moving into a workforce which, with industry restructuring, requires fewer and fewer unskilled workers. Moreover, the nature of technological change and the changing nature of technology are such that written texts – reports, procedures, arguments and the like – are becoming an increasingly important element of working life. If education is to remain relevant simply to the work requirements of students who may later find employment in science-based industries, and if literacy learning in school is to give students the discursive tools to rise to higher levels in the workplace hierarchy than they might otherwise have reached, then learning science needs to be viewed quite explicitly as a discursive as well as a technical process of cultural induction (p. 12).

Cope and Kalantzis identify a crucial reason why educators and administrators need to ask questions about our current teaching methods in writing and writing in the sciences. It is imperative that we reevaluate the purpose behind our traditionally used methods, such as expository writing. It is time for educators to explore other options for teaching writing, teaching science, and teaching writing in science. Genre writing is one

of those other options, which is successful in the science classroom. Genre writing allows students to write in various genres, such as short story, poetry, fiction, biography, and more.

Practicing genre writing in the classroom guides students through the process of writing, allowing them to learn the steps typically involved, while also allowing them to develop and strengthen their own strategies and abilities. These abilities are those that will later be used in their every day lives not only for careers in writing and science but also for almost any career. In *Writing Through the Tween Years*, Bruce Morgan (2005) emphasizes the need for students to be versatile writers. He states the following:

Kids who are well versed in text structures of various genres will use the knowledge with reading and writing tasks throughout their lives. The kinds of reading and writing a person does in a day includes all genres: editorials, persuasive writing, nonfiction, manuals for computers, e-mails, summaries, reports, and personal and business letters (p. 101).

The necessity for flexible writing is constant, if not increasingly necessary, as life progresses. Communication through writing is a fundamental part of a person's academic, occupational, and social interactions. The skills necessary for successful and versatile writing have to be taught early in life. Delaying the teaching of versatile writing until later, for example in the high school or college years, may result in resistance and frustration on the part of the learner and impatience and a feeling of resignation on the part of the teacher. This is why it is imperative for the genre writing learning process to begin in middle school. Additionally, as educators, a desired goal should be to help students recognize that creativity has its place in all academic disciplines, including



science. Genre writing, with its inherent flexibility, allows more room for student creativity.

In a paper entitled, “The Biology Classroom: A Natural Place for Narrative”, Nancy Stotz (1998) of the department of English at New Mexico State University states that the author of “New goals for biology education” appearing in *BioScience*, John Penick (1995),

suggests that students should learn to recognize that creativity is an important part of science, not just something they need in English classes. Ultimately, such interdisciplinary links may help to change the way students value and reflect upon their education. If they can see the ties between the different classes they take in school, then perhaps they’ll be able to take the next step and see ties to their life outside school (p. 9-10).

Once students see that they can enjoy writing about what they’ve learned, that they are allowed to be humorous, that they can find a way to use their own voice and style, they are more likely to succeed. Content comprehension increases and improves, because the students have thought about the material they have written about. They retain this information because they have made it their own. Along with improved comprehension, comes a sense of pride in their writing and a valuing or appreciation of both the subject content and the writing process.

Genre writing in life science does not have to be forced upon students. It happens while they are enjoying themselves. My classes take the initiative and time to write well, because they have a personal investment in the work. My students enjoy writing and

enjoy having others read their writing. They are finally entertained. And simultaneously, they are learning writing, science, and writing in science.

An additional benefit to genre writing is that students who may have previously disliked science and/or writing often develop a newfound interest and fondness for both disciplines. This leads to another positive outcome of introducing alternatives to expository writing in the seventh grade science classroom. With scientific advances increasing at a drastic speed, opportunities for occupations in the sciences continue to broaden. Yet, without communication skills, these jobs will be taken by those who are able to effectively relate their research, data, findings, theories, and such.

John K. Borchhardt (2004), author of “You Can Write Rocket Science” appearing in *Writing Nonfiction*, states the following:

I have a science Ph.D., worked as an industrial chemist, and most of my 900 published articles are science stories. And yet, if I were back in college with the goal of becoming a science writer, I’d major in English or journalism.

Science and medical writing are about clearly explaining new discoveries to your readers. You need a writer’s skill to communicate complex concepts to the general public (p. 31).

Teaching students in middle school about genre writing and alternatives to expository writing in science prepares them for their possible futures in science writing. With written media playing a crucial role in practically every aspect of our lives, it would be unfair to send students into the career world unqualified and unprepared for what lies ahead. If scientists are incapable of explaining their work to others, they are doing themselves and those who would potentially benefit from their discoveries an injustice.

## Shaping Writers

How does implementing alternatives to expository writing in the seventh grade science classroom help students achieve these and other effective writing goals? What is it that makes this method effective, beyond the idea that students enjoy themselves when engaged in this kind of writing? What evidence is there that more effective learning occurs when practicing this method? Beyond the aspect of fun that occurs for students, lies the ability to learn to be a writer.

Frank Smith (1994), author of *Writing and the Writer*, claims the following:

Learning to write begins – whatever the learner’s age – with *seeing oneself* as a writer, doing the things writer’s do, and thinking the way writers think. This is a matter of *identity*, not of instruction or of effort, even of desire to learn. Teachers have a crucial role to play here, not in teaching the technicalities of writing, but in engendering appropriate attitudes to writing (p. 180).

If teachers help to open up students’ brains to the possibilities that await them in regards to writing, they begin to realize that those possibilities are very real. Their attitudes towards writing are transformed. They come to realize that they are capable of and even proficient at writing interesting, accurate, and effective material. They come to know themselves as writers, not children pretending to be writers. They are not bound by their own misgivings. Middle school students realize their potential. They recognize their abilities and the creative world, the writing world, and the science world merge. The blank white page no longer hinders them, rendering them powerless, rather the students welcome the white space to be filled and their potential becomes virtually limitless. Students become writers and the classroom becomes a community of writers

working together. Socially, students grow as a result of working with each other and learning to peer edit. Peer editing that is practiced in my middle school science classroom involves sharing ideas and shaping meaning through writing.

Peer editing starts a dialogue among students. Collaborative editing challenges them to use correct writer terminology. They begin to use words like organization, flow, genre, and accuracy. Not only do they feel comfortable using these words but also they understand what they mean and how to use them. They interpret the terms with regards to their individual pieces of writing. They learn to recognize various qualities of their writing. Weaknesses and strengths reveal themselves more clearly to the young writers. Students develop the ability to identify successful aspects of their writing, along with those aspects that need to be reworked. Students begin to see themselves as writers, so they start to develop the habits of writers.

Using checklists and rubrics, students analyze their writing and their fellow classmates' writing. The classes use the checklists and rubrics as guides that help them start their writing. With checklists and rubrics, students have something concrete to start with, which makes them feel more secure about the writing process. And they learn that writing is a process.

As a class, students write a piece, using their checklist and their rubric as a concrete guide, then they edit. And then the class edits some more. Then, they edit another time. The students exercise their editing skills every time they return to their writing. The writer in each begins to realize that writing is a continual process. A writer is never truly finished with a piece of writing. Each time the class returns to the draft, each discovers something different. One may notice something on a rubric or checklist in

reference to their writing, that he or she did not notice before. Students are no longer convinced that their final draft is their last draft.

### Journaling as a Path to Students' Writing Fluency

Weekly journal writing in science class also helps students to realize that writing is continual and is rarely, perhaps never, perfected or finished. A common student response to journaling includes moans, groans, and rolling eyes, because students don't recognize the significance of journal writing. Many students feel the teacher is trying to make their lives miserable. S/he is trying to find a way to waste some time. They do not want to be bothered with journaling and they do not want their time wasted. But if students are challenged to use innovative applications of genre writing, their negative mood shifts.

The initial reaction is shock that they can create a crossword puzzle with clues about the organelles of a plant cell and animal cell. Disbelief sets in and students are sure there is going to be a catch. Once the class realizes they are actually allowed to use their journals as their blank canvases, students take off. They create original, inventive pieces of genre writing. And they even use multiple genres at once, not knowing that they've just done something that many writers aren't asked to do until college, if ever. And students write frequently.

Writing becomes habitual for them. As they become creators of meaning, students begin to see writing as something that needs to be practiced. The idea that writing, just like any other craft, takes practice if one wants to succeed becomes evident. Basketball athletes need to shoot hoops every day. Pianists have to take lessons constantly. An aspiring painter has to observe and study and practice. Writing has to be

practiced and learned. Students notice the improvements in their writing when they study it, observe it, analyze it, and practice it. Writing in a form other than expository writing, helps students to see its value and worth, and even its connection to other disciplines.

Having students write in various forms in science allows room for cross-curricular moments that the students often discover on their own. Many times students will include information, ideas, and/or concepts that relate specifically to social studies, math, or any subject. Usually, this occurs by accident. However, frequently, students notice the curriculum overlap and usually, they mention it. Many times, they are even learning about something in another subject that directly relates back to what they are learning in science. This occurrence often tickles and surprises them, because very often subjects are emphasized as being separate entities. It pulls together what they are learning and reinforces the concepts and ideas being taught in both or all subjects. It is necessary that students recognize that ideas are connected.

Professor S. Sivadas (2004) in “Creative science writing for children” for *Kerala Calling*, writes, “[A student] not only understands science but appreciates it and transforms it to a unique literacy piece. It is not science simply explained in ornamental language. Science is transformed to literature. Rather, ideas in science are imaginatively used to write good literature” (p. 22).

Sivadas emphasizes the idea that students, when given the tools and opportunity, are capable of creative writing in science that has no boundaries. Children are creative creatures by nature. Providing them with a worthwhile and valuable outlet for that creative spark is a logical move on the part of educators. By allowing children to tap into their creative centers, teachers move children toward the regular practice of writing. And

an inevitable result of the constant practice of writing is improved communication skills, which is a key component to a student's future occupational success, especially in the field of science.

In a paper entitled, "Writing and the Pupil in the Science Curriculum", educationist Marlow Ediger (1998) argues the following:

Pupils need to become quality communicators of content in writing. Why? Scientists in a laboratory setting must be able to write their findings in an accurate, objective approach so that effective communication among experts, as well as others, is in evidence. Not being able to communicate effectively in writing would greatly hinder scientific achievement in sequence on a continuing basis. Thus, in poorly developed written communication, scientists could not benefit from each other's research and findings. It behooves the teacher to encourage, assist, and motivate each pupil to do as well as possible in writing in ongoing science units of study (p. 2).

The need for educated, innovative, science savvy minds is an obvious issue in this ever-growing technological world. Each minute, each day, new advances in the sciences abound. Advances in medicine, computers, recreation, modern conveniences, and so much more, permeate every aspect of our lives. Yet, the world is much less aware of the fact that these very science savvy individuals need to be able to share their brilliance with their contemporaries and the rest of the world in order for their discoveries to be of use. Without the ability to communicate, the full potential of their clever minds and bold ideas will not be realized.

The opportunity for students to communicate effectively should be built into teachers' lessons. Students can be given the chance to demonstrate their knowledge on a particular subject. There are various ways to do this. For example, a teacher can provide the students with various genre writing activities, while allowing the students to play around with their work. Several weeks, or even the entire year, could be spent editing and revising certain pieces of writing. Again, this constant practice in writing teaches the students that not only are they writers but also that writing is a continual process.

Creation takes place when students can be free to express themselves through writing in an atmosphere that fosters experimentation under a teacher's guidance, where students are shown that they are responsible for their words. Accuracy and appropriateness are key elements to successful science writing. Young scientists must explain their ideas and thoughts in a way that readers will recognize as real. Readers want to see students' writing as a tangible thing. Theorist, Mikhail Bakhtin (1994) discusses this need to make ideas real through writing:

All the products of ideological creation – works of art, scientific works, religious symbols and rites, etc. – are material things, part of the practical reality that surrounds man. It is true that these are things of a special nature, having significance, meaning, inner value. But these meanings and values are embodied in material things and actions. They cannot be realized outside of some developed material.

Nor do philosophical views, beliefs, or even shifting ideological moods exist within man, in his head or in his 'soul'. They become ideological reality only by being realized in words, actions, clothing, manners, and organizations of people



and things – in a word: in some definite semiotic material. Through this material they become a practical part of the reality surrounding man (p. 125)

Allowing students to sink their teeth into observable writing and meanings enables teachers to work with students in the various genres. Then, those students can feel comfortable and confident when working with alternatives to expository writing in seventh grade life science. As a result of students' experience in the practice of writing in several genres in science, they become more effective writers. Furthermore, scientific theories can become more meaningful to them and to the audience whom they are trying to inform. Finally, students begin to view literacy as a thread in their social fabric as well.

They discover through their own writing that writing, like speech and dialogue, has specific purposes depending on the social situation. Specific genres are used in speech for different situations. For example, school speech should be different from home speech. Similarly, students begin to understand that to use one genre in science all the time is not ideal. There are alternative genres to seventh grade life science writing. Writing a research report about the duckbilled platypus with the purpose of entertaining an audience is not appropriate. Writing an expository piece about the organelles of a plant cell, with the purpose of expressing awe at its minuscule size but extreme importance, would not be best said through a lab report.

So, by exploring genres and experimenting with them in science writing, students discover various aspects of writing. In *The Powers of Literacy: A Genre Approach to Teaching Writing*, Mike Callaghan, Peter Knapp, and Greg Noble (1993) explain the benefits to teaching genre writing in a chapter titled: "Genre in Practice":

[Teaching genre writing] enables a developmental approach to teaching where writers are building on and developing from what they already know about each of the genres. Teaching aspects of genres, such as structure and grammar, becomes more a part of the process of writers realising the generic purpose of their texts, rather than being fragmented and 'rule governed'. This enables the teaching of grammar to be a basic part of teaching programs for early writers onwards (p. 192).

Again, writing in various genres helps students to recognize that writing is a process. Similarly, they notice through the writing process, that choosing a genre is a process as well. They evaluate and examine the best genre choice for the piece of writing that they are working on, with the understanding that they may change that choice several times throughout the process. Additionally, as Callaghan et. al. point out, aspects of writing, such as structure and grammar become more noticeable to students, without the teacher drilling those aspects of writing into students' heads through the use of notes, worksheets, exercises and such. Instead, the students learn through the practice of writing. Using genre as a writing tool can allow students to learn content areas more effectively.

Research done by David R. Russell and Arturo Yanez (2003) demonstrates that using genres in writing is an effective option for teaching and learning. Their study discusses the combination of using activity theory (AT) and genre systems theory in the classroom. They define activity theory as, "a way of analyzing human activity over time, especially change – including that kind of change called learning. It does not claim to provide a neat way to predict outcomes, but rather offers tentative explanations" (p. 335).

They explain how activity theory and genre systems theory can be used together: “Students and teachers might profit from thinking about the ‘big picture’, how their courses (and disciplines and professions they re-present) work in terms of their own discursive systems – and in relation to those of other systems of activity” (p. 358). Not only will implementing such a mode of teaching benefit students in their writing, but also, it will benefit them in other endeavors. “Teachers might be able [] to help students see genre pathways for expanding into a discipline or, using a discipline’s critical tools, expanding into other systems of activity, civic, personal, or professional” (p. 358). Ultimately, educators would like to see students take on the task of writing and become communicative writers in other parts of their lives.

Additionally, Russell and Yanez explain how the combination of these two theories can be of benefit to composition courses:

For general composition courses AT and genre systems theory are particularly significant (Russell, 1997) because students (like those in this study) will participate in systems of activity and read/write genres that are very different than those of their general composition courses. Seeing writing as ‘Big Picture People’ means teaching students to recognize and in some sense analyze those new systems of activity and genre. They must not only learn new ways of writing but also learn when to ignore what they have learned about writing elsewhere – even when the terms used to discuss writing seem the ‘same’. To do that in a critical way, they must learn (or at least sense) not just ‘what’ or ‘how’ to write in a new discipline, but also the ‘why’ or motive of writing. They need ways of understanding the differences, especially differences in motives for writing in

different activity systems, intellectual and emotional (*motive* and *emotion* are both ways of talking about what moves us to activity) (2003, p. 358).

To take this idea a step further, combining motive and emotion in writing is an important part of using genres to write in seventh grade life science. When a student finds a way to feel something for their writing, their motive is no longer only to please the teacher or to fulfill a course requirement. A genuine interest in the writing occurs when they have thought their ideas through and created a piece of writing that they feel is important and worthwhile.

Also, students no longer view their writing as a separate identity. They are able to recognize its importance and significance in the world as they look at writing through the eyes of 'Big Picture People.' This broad view of writing allows students to have more faith in their writing and its purpose. Rather than being told writing terms, they come to understand and internalize those terms in their own way. Again, the teacher becomes the guide, and the students show signs of becoming independent writers. And if educators want students who are flexible writers, capable of exploring many genres to their fullest, this independence is crucial.

Simply teaching a student to use a writing genre and to use these genres in a particular discipline or disciplines is not sufficient instruction. If a student is confined to the restraints of a certain genre or genres, then no real progress has been made. Charles Bazerman (1998) expresses the need for flexibility when students are writing in various genres in *Shaping Written Knowledge* (1998):

Because genre is such a multidimensional, fluid category that only gains meaning through its use as an interpretive, constructive tool, the reduction of any genre to a

few formal items that must be followed for the sake of propriety (decorum in its most restricted sense) misses the life that is embodied in the generically shaped moment. As writers, we find a list of formal requirements of any particular genre gives us only weak command over what we are doing and gives us no choice in mastering or transforming the moment. As teachers, if we provide our students with only the formal trappings of the genres they need to work in, we offer them nothing more than unreflecting slavery to current practice and no means to ride the change that inevitably will come in the forty to fifty years they will practice their professions. We do better to grant ourselves and our students means to understand the forms of life embodied in current symbolic practice, to evaluate the consequences of the received rhetoric, and to attempt to transform our rhetorical world when such transformation appears advisable (p. 320).

If teachers show students the fluidity of writing in genres and the variability of writing in genres in disciplines other than writing classes, such as science, they are giving students the tools that they need in order to write in numerous situations. Genre writing in science takes the expected and creates the wonderfully unexpected. And students discover that science writing can have personality, style, and flair.

There are several things to consider, however, before implementing genre writing in science. Many times, teachers are rigid when it comes to students writing in genres. This rigidity defeats the purpose of breaking out of the mode of using only specific genres in precise ways. When genre writing is implemented correctly, instead of becoming a restraint, which unfortunately happens sometimes, it frees the writer living in the student.

It is important for teachers to remember that the reason for using alternatives is to allow the students to expand, not narrow, their writing. For example, multiple genres need not be mandatory, but can certainly be encouraged. When educators encourage students to blend poetry with short story, comic book with exposition, etcetera, the message they send is that writing wears many different faces. Each face is a different genre that expresses a unique purpose and meaning. Science, as with writing, wears many different faces. Students, as writers, need to be encouraged to be confident and skillful enough to try them all on. Everything is interconnected, even though at first glance it may not seem that way. Writing, science, imagination, passion, and innovation join together in the hands of an eager and capable student. When this happens, students begin not only to see themselves as writers but also to become what all teachers should want their students to become, which is happy and inspired students.

## Chapter Two

### Conducting the Research

A major part of my thesis was based on survey and interview research that I had conducted pertaining to writing and writing in the sciences. Upon receiving approval from IRB, I surveyed seventh grade science students from my place of employment: Our Lady of Mount Carmel School in Berlin, New Jersey. Also, I interviewed middle school science teachers about writing in the middle school science classroom. Additionally, I interviewed college writing professors about writing in the college composition classroom and I interviewed college biology professors about writing in the college biology classroom. Informed consent forms were sent to all teachers participating in the research portion of my thesis project. These forms are available for review in the Appendix.

Conducting the interviews and surveys helped me to gain insight into students', teachers' and professors' thoughts. The research collected reveals ideas about the writing and science classrooms through several perspectives. The students' surveys provide me with students' attitudes toward writing, science, and writing in the sciences. Interviewing middle school science teachers helps me to gather information about teachers' experiences with science classes and writing in the science classroom. Similarly, interviewing college composition professors and college biology professors helps me to gain insight into what these professors are looking for in future scientists and future science writers. Data collected and information gained from this research conducted

during the course of my thesis project will make my thesis authentic as the information was gathered from students and educators in genuine learning and teaching situations.

### Research Design

I surveyed approximately 44 seventh grade science students using a Likert scale. The Likert scale approach allows me to collect and analyze a large amount of data about my seventh grade science students. The participating students include 1 eleven-year-old boy, 10 twelve-year-old boys, 10 thirteen-year-old boys, 1 fourteen-year-old boy, 11 twelve-year-old girls, and 11 thirteen-year-old girls. The participants' ages and genders are significant because these students are representative of typical seventh grade students. The similarity in age and the equal number of boy and girl participants helps me to gather the opinions and thoughts of typical seventh grade life science students.

Additionally, I obtained permission from the administrator of Our Lady of Mount Carmel Regional School in Berlin, New Jersey, to conduct my research in a classroom setting on the premises. The results of my research might vary if the study was done in a public school, but I conducted my research in a Catholic school because of the students' familiarity with using genre writing. The students have been learning about and experimenting with genre writing since September. The students' knowledge of genre writing helps the validity of the study's results. The students' completed the survey after they were familiar and comfortable with answering questions about expository and genre writing.

Each child received a survey containing statements about writing, science, and writing in the sciences to be completed in the classroom. Students were asked to choose



the response that best reflects their opinion about each statement. The response choices ranged from Strongly Agree to Strongly Disagree. All data is reported in terms of group results. Individual results are not reported. See Appendix for survey instrument.

Parent permission forms were sent home prior to students' participation. Parents were informed that their decision whether or not to allow their child to participate in the study will have absolutely no effect on their child's standing in his/her class. At the conclusion of the study, a summary of the group results will be made available to all interested parents and school administrators.

These questions and the students' responses will help me to gain understanding about student attitudes, beliefs, and learning tendencies with reference to writing in the seventh grade science classroom. The survey instrument is available for review in the Appendix.

#### Middle School Science Teachers' Interviews

I interviewed 3 middle school science teachers who teach at public schools in New Jersey and Pennsylvania. I chose to interview these teachers because I was curious to see what teaching method similarities and differences existed between public and private educational institutions in the science classroom. I hoped to discover what problems exist in the science classroom for science teachers in both private and public schools in regard to writing. The individuals I chose to interview have experience with science in the middle school science classroom in both New Jersey and Pennsylvania. This range allows me to discover similarities and differences between middle school science teachers from two different areas.

I interviewed Linda Smith who is an Elementary Science Resource Specialist for Paulsboro Public Schools. She is also the President of the Council of Elementary Science, New Jersey and the Vice President of Southern Region New Jersey Science Teachers. She teaches preK-6<sup>th</sup> grade science at Billingsport and Loudenslager Elementary Schools. In her previous employment experiences, she also taught 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade sciences.

I also interviewed Nicole Huppman. Nicole teaches middle school science at Ridley Middle School in Ridley Park, Pennsylvania. Additionally, I interviewed Sue Iannacci, who also teaches at Ridley Middle School in Ridley Park, Pennsylvania.

The five questions I pose to the middle school teachers will allow me to gather information about middle school science teachers' practices and beliefs about writing in the seventh grade public school science classroom. The interview instrument is available for review in the Appendix.

#### College Composition Professors' Interviews

I interviewed 4 composition professors from Rowan University, located in Glassboro, New Jersey. Amy Kudelka, Lisa Shannon, Jennifer Courtney, and Deb Martin teach Composition I and/or Composition II. These professors have varying levels of experience in the field of teaching college writing, which will allow for a wider understanding of college professors' beliefs about teaching writing. Their experience with teaching writers in a college atmosphere will help to demonstrate what professors might look for in writing at the college level.

Answers to these questions should reveal college writing professors' methods and practices, problems and strategies, and expectations and frustrations in reference to

teaching writing at the college level. These questions should also reveal the professors' opinions and thoughts in reference to genre writing. The responses should reveal college writing professors' expectations as well. The interview instrument is available for review in the Appendix.

### College Biology Professors' Interviews

I interviewed 2 college biology professors from Rowan University in Glassboro, New Jersey: Patricia Mosto and Maria Tahamont. Answers to these questions will reveal college biology professors' view of the role of writing in the college biology classroom. These questions will also show college biology professors' view of and expectations for college biology students' writing. I will compare the college biology professors' views of writing and experience with teaching writing to college writing professors' views and experiences. This will allow me to pinpoint consistencies and inconsistencies between college biology professors' expectations and college writing professors' expectations. The interview instrument is available for review in the Appendix.

### What Can Be Gained By Surveying Seventh Grade Science Students?

Studying students who have experience with using alternatives to expository writing in seventh grade biological sciences allows for authentic results. These particular students have composed in traditional methods, such as expository writing in science class. They have also composed using various genres in science class. These experiences in writing in the science classroom will allow them to answer the survey questions confidently.

They have formed opinions about science class. Writing in science class has been presented to them in a way that is new and different compared to the traditionally used methods. They have been asked to compose both in the traditionally used expository writing form in science class and in genre writing form in science class. Students have been asked to evaluate their own thoughts, attitudes, ideas, and opinions by indicating how much or how little they agree or disagree with the statements on the survey. Because they have been immersed in writing in the science classroom since the beginning of the year, they are ideal subjects for the survey.

#### What Can Be Gained By Interviewing Middle School Science Teachers?

The middle school science teachers I interviewed have extensive experiences with writing in the science classroom. These teachers have encountered writing obstacles; they have overcome some, and they have not overcome others with their students. As a result, these middle school science teachers have seen what kind of writing works in the science classroom. They have also seen what kind of writing fails in the science classroom.

Additionally, these teachers know that there are many issues to consider when it comes to assigning writing in the middle school science classroom. For example, time management, ease of grading, and rationale are important aspects of middle school science that should be considered. Middle school teachers often have very tight schedules. Many middle school teachers do not have adequate preparatory time. This inadequate prep time creates insufficient opportunity for teachers to prepare and implement valuable writing exercises.

Teachers want to teach lessons that can be carried out in a realistic amount of time. Middle school teachers have to work with the 40-45 minute class time that they have. Also, middle school teachers spend much of their time dealing with classroom management issues. These classroom management concerns can take away from grading as well. These middle school teachers realize that there is not enough time for a teacher in any given day. This is why teachers need lessons that do not take too long to grade. Also, middle school teachers need to be able to understand the rationale behind the lessons they will teach.

These are only some of the many issues that middle school science teachers must consider when deciding upon their teaching practices. Therefore, the middle school science teachers' interview responses should provide me with several ideas about writing in the middle school science classroom. Their input is invaluable, as it allows for genuine insight into real middle school science classrooms.

#### What Can Be Gained By Interviewing College Writing Professors?

College writing professors' interview responses also provide useful information for my thesis project. College writing professors expect incoming students to perform at a certain level of ability. This research will help to reveal those expectations and how preparation can begin in the middle school years to help students meet professors' expectations.

A major reason that I am carrying out this thesis project is to help students become more competent writers. It is crucial that middle school teachers know what will be expected of students when they reach the college level. Many of the foundations of writing skills are developed in middle school. If students do not build that foundation in

sixth grade, their writing skills fall short when they reach seventh grade. In turn, they do not learn the appropriate writing skills in seventh grade and fall behind when they reach eighth grade. This pattern continues, becomes worse with each passing academic year, and continues into high school and college.

Additionally, lacking certain writing skills will also affect science majors' abilities. In order to communicate scientific ideas, science majors need the appropriate writing skills. Hence, middle school teachers have a great responsibility. Middle school teachers will be able to better equip students with the tools necessary for writing if they understand future educators' expectations. The biology professors interviewed expressed their dismay at science majors' lack of writing ability and discussed the fact that their lack of writing ability hindered their ability to communicate scientific ideas.

Knowing what tools students need and knowing what college writing professors expect will allow middle school teachers to prepare students for their future educations and their future careers. Middle school educators will be more aware of what future educators and future employers will look for in writers. Interviewing college writing professors will help to identify and explain their expectations for writing students.

#### What Can Be Gained By Interviewing College Biology Professors?

Gaining input from college biology professors provide this thesis with valuable information in regard to what college science faculty members expect from their students in terms of writing. Knowing what college science faculty members expect is crucial to students' education prior to college, and can help middle school science teachers shape their curriculum.

The college biology professors' insights help me to examine writing methods used in the middle school science classroom. Their responses will allow for a reevaluation of currently used middle school science writing methods. These college biology professors' responses to the interview questions about writing in the life sciences will shed light on their thoughts and ideas about connecting writing and biology.

After speaking with a member of the biology teaching staff at Rowan University, it was brought to my attention that many college biology professors have expressed their disappointment and frustration with their biology majors' writing skills. Professors expect that their biology students have reached a certain level of writing competence when they have entered into college. Unfortunately, many biology students have not spent much time on writing; so many make mistakes and a good number of students often have limited writing ability. Since scientists need to be able to communicate their findings and research to the public and professional discourse communities, their lack of writing skills can often present a problem. Some college biology professors find themselves teaching writing skills that students are expected to have already learned.

Interviewing college biology professors will reveal their frustrations, their student expectations, and their ideas about writing in the sciences. Their input is crucial to understanding what is important for students to know in regard to writing and writing in the sciences. College biology professors' beliefs about the place of writing in the sciences is an important aspect of my thesis project, as middle school is often the pivotal years for students' future academic success, as they are becoming young adults and preparing for their high school and college years.

## Pulling It All Together

I have presented the benefits of collecting research from each particular group in separate sections. I have indicated benefits of surveying seventh grade science students, middle school science teachers, college composition professors, and college biology professors. Certainly each of these groups provides different information. Yet the research gathered from each group can be pulled together in terms of this thesis project.

The surveys' results and the interviews' responses will supply information and data that will help to answer the questions that have been posed by this thesis. Writing and the sciences are related. Middle school education can help to provide a basis for students' future educational experiences. This is a major reason why I chose to interview middle school science students and teachers, college writing professors, and college biology professors.

My hope is that my research will help to show the connection between writing and the sciences and the link between middle school experiences and future educational experiences. Recognizing these relationships will help to demonstrate the importance of using alternatives to expository writing in seventh grade biological sciences.



## Chapter Three

### Interview Responses

In chapter three, I discuss the responses to questions from the interviews I conducted as part of my research. I interviewed middle school science teachers, college composition professors, and college biology professors. The three groups of interviewees received questions that pertain to writing and teaching in writing. These questions allow interviewees to relate their professional experiences with writing and teaching writing in their fields.

Interviewing professionals in the field of writing and writing in the sciences is important because these professionals are the leaders who shape students into successful writers. Middle school science teachers, college composition professors, and college biology professors play crucial roles in the lives of young writers.

My thesis contends that genre writing must be practiced in the seventh grade life science classroom. Without genre writing, children will continue to feel bored and uninspired by the practice of writing. With the implementation of genre writing, students become actively engaged in the act and process of writing in science. As a result, students' enjoyment of writing filters into other subject areas. Thus confident, capable writers are born.

Not only seventh grade life science students, but also middle school science teachers, college composition professors, and college biology professors, benefits from the positive effects of practicing genre writing in the seventh grade life science classroom. Since all educators leave their imprints on their students, it is necessary to explore their points of view and discover the experiences they have had with writing and teaching writing.

### What Do Middle School Science Teachers Have To Say?

Middle school teachers constantly feel the pressure of time constraints. Their responsibilities are endless. Middle school teachers have to worry about classroom management issues, standardized tests, No Child Left Behind (NCLB), administrative demands, parental concerns, student welfare, and many other demands of teaching. The general perception is that with all of these issues hanging over middle school teachers' heads, there is not enough quality time to teach children to write. Writing that takes place in middle school classrooms often involves a quick brainstorm, a rough draft, and a final draft that is completed at home. The process of writing is pushed to the side because middle school teachers simply do not have the time to teach it.

In my thesis I argue that genre writing is a valuable and educationally worthwhile practice for middle school science students to engage in. Yet middle school science teachers barely have the time for expository writing in their science classrooms, let alone genre writing in their science classrooms. Many times, writing in the middle school science classroom involves writing on a basic level.

Sue Iannacci, who teaches sixth, seventh, and eighth grade science Adapted courses for students with Individual Educational Plans (IEPs) in Pennsylvania explains

the typical writing done in her classrooms. Iannacci states, “We record quantitative and qualitative data, make predictions, inferences, and conclusions, all of which are written.” This middle school science teacher not only must face challenges that are inherent in many school systems but also she must deal with several IEPs in her science classrooms. Very little room is left for genre writing in a classroom environment such as Iannacci’s classroom.

Additionally, Iannacci feels the pressure of standardized tests, specifically, the Pennsylvania System of School Assessment (PSSA). Similar to many other schools in the nation, Iannacci finds herself teaching to the test. Teaching middle school science students the grade level standards can be a daunting task for any middle school science teacher, especially one who has students at variations of lower level achievement. It becomes very difficult to include writing when so many standards must be met.

Iannacci explains that, “We, here in Pennsylvania are feeling the pressure to teach/cover all of the vast Pennsylvania Science Standards as well as Reading standards. We are also under pressure due to NCLB to show that our students have grown each year via increased PSSA test results.” Though Iannacci’s experience as a Pennsylvania middle school science teacher is individual to her situation, many middle school science teachers feel the pressure of helping students to increase their standardized test scores. Unfortunately, this is when important writing skills are not learned.

Linda Smith, middle school science teacher of grades first through sixth, explains that she too has limited time to work with students on their writing in the science classroom. She works with her students 40 minutes every other week. This is hardly sufficient for writing instruction in the science classroom. Smith explains that the

majority of her writing instruction includes expository writing. She does not use genre writing in the science classroom. Smith has her students write up a lab sheet each time she sees them and before they conduct experiments. She also has them write a hypothesis before letting the students conduct their experiments.

When I asked Smith what methods for editing she uses, she explained that, “students use Microsoft Word to write their lab sheets.” She went on to say, “All red squiggles and green squiggles need to be fixed before the student can do the experiment” (2006). Although this editing tool may correct many of the mistakes that middle school science students may be making in science classes, it is certainly not teaching them writing revision techniques. Superficially, the students are correcting only what the computer’s word processing program deems incorrect.

Yet Smith cannot be blamed for the inadequate writing instruction because she is given little to no time to work with students on their writing in the middle school science classroom. Therefore, these students, and many others like them, are not receiving the proper tools and education to allow them to become competent writers now or in the future. The middle school science teachers’ responses are available for review in the Appendix.

### What Do College Composition Professors Have to Say?

A wide range of opinion and experience emerged from the college composition professors’ interview responses. In order to address the multitude of ideas, I will reflect on the professors’ interview responses question by question. This method will allow me to address important issues in college writing and highlight the differences between college writing methods and middle school writing methods.

## Forms of Writing Taught in the College Composition Classroom

The college writing professors who I interviewed teach courses that include Composition I and II, Developmental Writing, Writer's Mind, Evaluating Writing, and graduate level Assessing Writing. Writing forms taught in the college composition classrooms, varying in level and type, included summary, analysis, persuasion, expository essay, problem-solution proposal, article summary, essay exam, five paragraph essay, journal writing, rhetorical précis, formal research paper, multi-genre project, critique of scholarly works, and more.

Though the courses taught vary in level and type, these professors' responses can be analyzed in terms of issues in writing that are related to issues in writing done in seventh grade life science courses. An important aspect of my thesis is to illustrate the importance of teaching certain writing skills in the middle school grades to ensure students' future successes. Examining college composition professors' writing methods and writing expectations, helps to show the importance of middle school science writing reform.

## Methods of Revision Taught in the College Composition Classroom

Several methods of revision are used in the various college level composition courses. Peer-editing, peer-revision (including rubrics, letter writing, Elbow influenced writers' workshops) are some techniques that are taught by college writing professors. Additionally, different professors have different views about the purpose of writing revision.

One such view expresses the importance of a balance between *the* content of writing and attention to grammar. "I strongly believe that writing cannot and should not

be broken into grammar vs. content. As I explain it to my students, I want the entire package – the interesting gift inside (content) and the bow (grammar)” (Lisa Shannon, 2006). Shannon emphasizes the need to have the ideas that make good writing, but with the appropriate skills that make good writing as well. Good writing cannot be good writing without the revision process.

This view of writing revision also exists in my seventh grade life science writing classroom. I try to explain to my students that they are ultimately in charge of the revision. They need to learn how to communicate their scientific ideas successfully. I can only give them the tools and guidance to get started. Yet it occurs to me that they are never really taught that revision is an integral part of the writing process.

Many of my students feel that they can use the spell check, the grammar check, and the thesaurus on their word processor and be done with their piece of writing forever. Because students are not taught the purpose and importance of revision in regard to the writing process, it is unfair to expect them to understand this concept in their later academic years.

Another college composition professor’s view incorporated the idea of global concerns and local concerns. Essentially this process involves teaching revision in terms of higher-order concerns: rhetorical fitness, genre/purpose appropriateness, organizational effectiveness, and lower order concerns: sentence level effectiveness (Jennifer Courtney, 2006). Courtney’s revision process is similar to the aforementioned revision process of content combined with grammar, which again is often used in the middle school years.

Yet as mentioned before, middle school students are not always taught to view writing and revision in terms of a balance between content and mechanics. So again students, upon entering college, do not always have the knowledge, skills, and experience to understand writing as a process and revision as a critical component of writing.

#### Advantages and/or Disadvantages of Teaching Writing

Several college writing professors expressed that they love teaching writing and that one of its greatest advantages is its ability to open students' minds. Genre writing gives teachers the opportunity to allow students to play and experiment with their own writing. And the middle school science teachers enjoyed that they were able to show students the wide range of possibilities and teach them that written expression is a crucial element of success in "communicating who we are" (Shannon, 2006).

Communicating who we are is not only important in the writing classroom but also outside of the classroom in the real world. Without this ability to communicate through writing, students struggle in the post-college world. Written communication is a necessity in most endeavors, including undergraduate school, graduate school, and the career world as well. For all of the talents and innovative ideas a student might have, they mean nothing if that student cannot communicate them to others.

So it is not surprising that several college writing professors explained that a disadvantage of teaching writing is students' fear of and anxiety about writing. Yet students are asked frequently to perform through writing. Many students not only do not know techniques of writing or understand writing, but also they are insecure about it and often shut down during the writing process.

#### Common Problems that Students Encounter in the Writing Classroom

Many college writing professors listed grammatical mistakes and mechanical mistakes as some common problems that students encounter in the college writing classroom. I was not at all surprised by this response because grammar has been and continues to be a major issue, especially in the college writing classroom, where students are expected to have mastered a certain degree of writing by this point. Yet grammar constantly comes up as a point of contention among educators.

There is much debate about how to teach grammar, if it should be taught at all. If students were able to spend more time revising and editing, they would learn how to do so more successfully. They would eventually learn grammar rules and mechanical rules of writing. But again, there never seems to be enough time in the classroom for writing exercises that teach students the process, such as continuous revision workshops, rather than the product of writing.

Genre writing helps students to learn more about writing as a process in that writing in various genres allows for more variety *and* expression in writing. Variety teaches students to express themselves in more than one way, thus teaching them that one genre may not be the most appropriate genre all the time. Eventually, students become more skilled at choosing appropriate genres, revising the writing they've done in that genre, and successfully communicating their ideas through writing in that genre.

#### The Most Important Aspect of Writing that a Student Needs to Learn

Several college writing professors mentioned grammar and mechanics as one of the most important aspects of writing that a student needs to learn. However many teachers also mentioned critical analysis of their own writing as one of the most important aspects of writing that a students needs to learn. "Most students have limited



ability to look at their own work with a critical eye and know how to improve the piece through revision” (Amy Kudelka, 2006). Kudelka is not alone in this idea. While writing skills such as creativity, voice, and tone are important aspects of writing, several college writing professors responded that revision skills are the most important writing skill that a students needs to learn.

Other writing skills that college writing professors feel are the most important that a students needs to learn are the ability to “understand writing as a combination of content and correctness” (Shannon, 2006), the ability to recognize writing in terms of “context and audience dependent” (Courtney, 2006), and the ability to “internalize the concept of writing as meaning making” (Deb Martin, 2006).

The college writing professors’ responses illuminate the need for more revision strategies in writing classrooms at an earlier level of students’ educational experiences, such as middle school. Additionally, students need to be exposed to writing as a process in as many subjects as possible. This allows them to practice writing more frequently and in more varied ways, which will help students to become more confident and articulate writers.

The overwhelming responses given by the writing professors that revision is the most important aspect of writing that a students needs to learn did not surprise me, since revision is a major component of writing yet it is often forgotten in the teaching of writing. Or not enough time is spent revising because teachers do not feel that they have sufficient time to teach revision of writing effectively. Again, genre writing in the seventh grade life science classroom allows for more writing and revising of writing

because writing and revision is done not only in the writing classroom but also in the science classroom.

#### Problems that the Writing Professor Encounters in the Writing Classroom

Many of the college writing professors who I interviewed felt that one of the most difficult aspects of teaching writing is lack of writing skills. Specifically, some teachers find that students come into a college writing course at a variety of skill levels. Courtney states that, "Often students come into composition classes with very different levels of preparation and/or interest. It's tricky to balance course content: challenging fairly accomplished writers while providing more extensive support to more novice writers in one, large classroom". Courtney addresses a key problem with the teaching of writing. It is very difficult to teach writing to students with a multitude of different backgrounds, experiences, and ability levels.

Level of skill in writing can become an issue for the writing teacher in terms of his/her expectations for writing students. Teaching students that writing is a process and requires revision and more revision should take place in middle school. Otherwise, students are expected *to* know writing skills in college that they were never taught in their formative years.

An additional problem college writing professors face in the writing classroom is a lack of grammar and mechanical skills in students' writing. Most of the college writing professors listed revision strategies as one of the most important aspects of writing that a student needs to learn. It is not surprising then that these same professors feel that grammar and mechanics are a problem for writing teachers in the writing classroom. Teachers spend much of their time revising students' papers because students lack the

appropriate knowledge and skill to do so themselves. Or students have given up on writing by then and expect the writing teacher to do most of the revision work.

Many students have become so fed up with writing and revising by the time that they reach college writing courses they shut down when they're asked to write and/or revise. They become frustrated and feel inadequate because of their lack of preparation. Students' lack of preparation is not their own fault if they have not been given the tools and they have not been taught the strategies to create and revise good writing. The college writing professors' responses are available for review in the Appendix.

#### What Do College Biology Professors Have to Say?

The college writing professors responses will be addressed question by question. This method will allow me to discuss important issues in college biology courses and emphasize the differences between college biology writing methods and middle school science writing methods.

#### Forms of Writing in the College Biology Classroom

College biology professor Maria Tahamont uses lab journals in her college biology classroom. Tahamont explains that, "Most of these assignments are on the order of the 'one minute' paper idea. The students are not graded for the quality of their writing in these assignments although I do correct grammar in what ever I read" (2006). Tahamont explains that she also uses various types of writing assignments and assessments depending on the course level and type. Patricia Mosto, another college biology professors, says that she uses "lab reports, opinion papers, research papers, and literature searches" (2006).

Both Tahamont and Mosto utilize writing assignments and grading methods that are fairly typical for a science classroom. However, in seventh grade life science, unlike in Tahamont and Mosto's classrooms, students are asked to use almost all exposition in their writing. They are often asked to respond to essay questions or short answer questions. Sometimes they are asked to complete lab assignments that have them create charts and/or graphs and then respond to questions that follow the chart or graph.

And when these students reach college, teachers hope that they are able to write with few errors and coherently enough to communicate complicated scientific ideas in many different forms. This goal is unrealistic if students are not taught how to write in science during the middle school years.

Using genre writing in the seventh grade science classroom allows students to write in many forms so that they feel confident composing and revising in several ways. Students are able to choose the best genre for a particular audience. Rather than regurgitating facts, students are asked to put their own ideas into their writing as well, which often leads to the discovery of more ideas and more in depth thought.

#### Advantages and/or Disadvantages of Using Certain Forms of Writing in the College Biology Classroom

Many students dislike writing and would do anything to avoid it. Numerous middle school children express their strong dislike of writing openly. Apparently, college science majors are no exception. Based on my previous experience as an undergraduate student and conversing with other undergraduate students, the attitudes and opinions of college biology students sound similar to the complaints of students in almost any college major. Tahamont says that some of her biology students claim that the reason they chose

science is so they would not have to write. Even at the college level, students feel that writing is disconnected from science.

Genre writing in the seventh grade life science classroom allows the teacher to teach the inherent link between writing and science. Without writing in science, many brilliant peoples' work would be lost. Genre writing in science at the middle school level helps children to understand the importance of writing in science. Additionally, genre writing in the seventh grade life science classroom presents students with another opportunity to learn revision and writing as a process.

Unfortunately, writing takes time to teach and it takes time to grade. Tahamont states that, "A disadvantage is the additional workload reading writing assignments requires" (2006). There is no denying that guiding students through the revision process is a tiring and tedious task. However, the benefits are rewarding for both the teacher and the students. As students improve through practice, everyone's job becomes easier and more manageable.

Mosto explains that taking the time for writing in the biology classroom allows the professor to, "teach students the form of scientific writing and improve their writing skills" (2006). Likewise, students in the seventh grade life science classroom have much to gain from the practice of genre writing in the science classroom.

#### Skills That Biology Majors Lack in Terms of Writing

Tahamont expresses that many students lack the grammar and sentence construction skills in terms of writing. However, Tahamont explains that it is not only biology majors that lack these skills, but also undergraduate students in most majors that lack these skills as well. Tahamont mentions an important concept. College biology

majors are not the only students who struggle with their writing. Students of many different majors and students of many different ages have difficulties when they attempt to write.

Common problems exist across the board: Students have trouble forming meaning out of their words in order to communicate their ideas clearly and effectively and they are further hindered by their lack of grammar and mechanic abilities. This commonality that exists among students of all majors and ages in terms of writing is yet another reason that genre writing should be introduced in the middle school years. The more exposure in the more subjects that students receive in their formative years, the better the chance that they will learn more and be more prepared for their future educations.

#### Forms of Writing that Students Use in the College Biology Classroom

Tahamont uses various forms of writing depending on the type and level of the course she is teaching. Tahamont explains that in her introductory class, she has the students do a considerable amount of informal writing (2006). They write a formal lab report and they also post to WebCT. For their final writing assignment, the students receive an essay question in advance of the test. Tahamont explains that though she gives the students the essay question in advance, “few students take advantage of this by practicing the essay” (2006). I have found that my middle school students often do not practice essays either. This fact helps to demonstrate the idea that age is not always a factor in students’ dislike and avoidance of writing even when writing would be advantageous.

In her senior seminar biology course, Tahamont explains that, “writing is the focus of the class as it is writing intensive” (2006). She uses a combination of weekly formal and informal writing done in journals and WebCT postings. “The final formal writing assignment is a term paper which critically analyzes a major topic in biology” (2006).

Students are asked to use different forms of writing in college biology, but they are infrequently asked to do the same in middle school science courses. Yet again there are inconsistencies that exist in the educations of students at different levels of schooling. These inconsistencies are often what create anxiety and lack of certain writing skills when it comes to writing in not only writing courses, but also all college courses.

#### Problems that College Biology Professors Encounter in the College Biology Classroom in Terms of Students' Writing Limitations

A significant problem that college biology professors encounter in their classrooms is that students avoid writing. Tahamont states that, “students avoid writing and as a consequence remain unskilled” (2006). With the continued avoidance of writing comes more and more frustration and difficulty with writing. Tahamont continues explaining that many of her students can only communicate their ideas in simple terms. “This could be due to difficulty with writing or lack of comprehension and imagination” (2006). The issue of lack of ability or lack of creativity is a problem in terms of writing in the biology classroom. Students have a very difficult time clearly explaining their scientific ideas to others in written form. Yet being able to communicate your scientific findings to an audience is a crucial component of becoming a scientist.

Mosto explains that a significant related problem that she encounters in the college biology classroom is students' difficulty with expressing their scientific findings in writing as well. "Their inability to write their findings (either lab or research data) in a way that expresses clearly what they want to say" (2006) is a problem among her college biology students. Without the ability to communicate their results and findings to an audience in writing, college biology students will be incapable of fully relaying their discoveries to others. It is difficult to become a scientist if one's brilliant solutions cannot be understood or utilized by the rest of the world.

#### Writing as an Important Aspect of Biology

Tahamont explains to her students the importance of writing in science when they complain about it to her.

"There is no other way to effectively communicate your ideas, hypotheses, theories, and conjectures to your colleagues, contemporaries, and critics. Written communication is the foundation of the pursuance of scientific knowledge. If Mendel hadn't written his paper on his ideas about inheritance and published that paper, we would have never known of his incredible contribution and insights because his notes and work were destroyed after his death. Writing is a skill one must develop and the only way to do that is to keep writing, have others read your writing, and then re-write" (2006).

Tahamont reveals an integral part of writing at the close of her speech to her students. Writing, having others read your writing, and rewriting are essential pieces of the writing process and they help to create good writing that effectively forms meanings and coherent, well-structured concepts.



Tahamont also reveals the importance of scientists communicating with others. Her example of Mendel is just one of many appropriate examples of potentially tragic losses of knowledge, experimentation, and solutions. For the same reason that writers make many copies of their writing, so scientists should make many copies of their work, so that their ideas may go out into the world. But if those ideas are confusing and illogical, those ideas will not be useful in the world and the discoveries made and the advancements found will be nothing more than wasted energy.

#### Recognizing the Relevance to Genre Writing in Seventh Grade Life Science

The middle school science teachers' responses, the college composition professors' responses, and the college biology professors' responses help to explain why genre writing should be taught in seventh grade life science. Many teachers feel that their students dislike writing. Many teachers also feel that students lack the tools to create good writing that conveys meaningful thoughts and ideas.

These problems do not exist in only one particular subject or major. These problems do not exist in only one particular age bracket. Teachers of all subject areas of all ages recognize the problems that students have with writing. Yet schools continue to institute curriculum that allows inadequate time for teaching students the process of learning. And then educators wonder why students are incapable of certain writing skills that they have never truly been taught.

We expect that by a certain age or level, in any subject or major, students will have mastered certain writing skills even though they feel no more an expert than when they were first asked to write years and years ago. Then teachers wonder why students dislike writing and avoid it whenever they can do so. It is not surprising to me that

students dislike writing when it is presented to them as something that just happens. When writing is presented as a product rather than a process, students become overwhelmed and unsettled. After all, they are not shown how to write, but they are expected to figure it out and produce a final masterpiece.

A consequence of disliking writing is avoidance of writing. Avoidance of writing helps students to alleviate the stress that often comes along with being asked to do something that one is uncomfortable doing because s/he does not know how to do it, like writing. It is problematic for teachers to expect students to perform tasks that they have not been prepared to perform. It is even more unreasonable to expect students to enjoy the task of writing if they feel negatively about it.

As a teacher of middle school, I already see students exhibit negative feelings toward writing. They would prefer to do as little writing as possible or none at all if they had their way. Very few of my students enjoy writing on their own. Even fewer enjoy writing expository pieces about a particular concept or idea, especially in the area of science. The negative view of writing that I observe in many of my seventh grade life science students will probably follow them into high school and college. And the negative feelings toward writing will probably deepen with each writing assignment that makes the students feel unintelligent and inadequate.

Genre writing in seventh grade life science allows students to gain a sense of accomplishment. They are taught to be creative and put themselves into their writing. Meanwhile they are learning, comprehending, and explaining important scientific concepts through written communication. Allowing students to use various genres gives them the opportunity to discover their talents in various genres. Instead of trying to fit

very different students into one predetermined mold, teachers can let students discover for themselves what molds fit them best.

Genre writing in seventh grade life science also allows teachers to show students how to write by explaining and demonstrating writing as a process. Revision is a major part of the writing process that often gets skimmed over. Yet revision should take as long, if not longer, than the initial writing itself. Writing is not something that just happens. It happens with intense practice and effort.

Genre writing in seventh grade life science allows teachers to expose the big writing secrets to students: Writing is hard. Writing takes practice. Writing takes time. Once students understand the writing secrets, they will move forward and try to conquer writing obstacles by using the tools teachers give them along the way. And if they gain some insight about writing, they will become more critical thinkers and better writers. As a middle school teacher of science and writing and writing in the sciences for four years, guiding students toward becoming successful writers and thinkers is a goal worth trying to attain.

## Chapter Four

### Seventh Grade Student Survey Results

In the following chapter, I discuss the results of a life science survey administered to 44 seventh grade private school students. To reflect upon the results of the survey, I address separately the student's responses to each statement. Further, I identify trends within the results of the survey that will help me further examine students' beliefs and ideas about writing in middle school science.

Additionally, I discuss the effects that students' attitudes toward writing in middle school science could have for their future educational experiences. I also discuss how students' responses affect teachers' expectations of science writers in middle school science classes, college biology classes, and college composition classes. Analyzing the data collected from the seventh grade life science middle school students' survey responses allows me to identify patterns between writing in middle school life science and future science writing experiences.

There were certain trends that I expected to find when I initially formed the statements for the seventh grade life science student survey. I entered into my research with some preconceived notions. For example, I was quite sure I would discover that many students, if not all students, dislike all writing. I also believed I would find that almost all students

dislike writing in science. There are several other predictions I had made before I administered the seventh grade life science student surveys:

- No students enjoy writing for pleasure.
- Students like expository writing, such as finding answers to questions in a textbook.
- Students dislike genre writing because it requires more thought than expository writing.
- Students remember scientific concepts better when they write about them, using either expository writing or genre writing.
- Students do not feel that expository writing or genre writing is worthwhile to their learning.
- Students prefer genre writing in science class to expository writing in science class.

As the study unfolded, many of these predictions proved correct, other predictions were slightly incorrect, and other predictions were completely incorrect.

Fortunately, the data I collected from the student surveys helped me to change my thinking about what middle school science students think about writing in science. The data allowed me to approach the seventh grade life science student survey statements with a fresh viewpoint. Because many of my preconceived notions in this area were inaccurate, I was able to recognize that many of my beliefs about students' attitudes toward writing were not based on observation but upon speculation.

Much of what I believed about students' attitudes toward writing was a direct reflection of what I thought was true about students' attitudes toward writing in general.

Once I was able to distance myself somewhat from the classroom experience, I was able to notice and understand actual seventh grade life science students' attitudes and beliefs about writing, specifically in science classes.<sup>1</sup>

#### Most Seventh Grade Students Enjoy Writing in Science Class

When I surveyed 44 seventh grade life science students, one of the statements I prompted them to respond to was "I enjoy writing in science class." Twenty-seven of the students, or sixty-one percent, agreed that they enjoy writing in science class. Based on my four years of classroom experience, I was shocked that the number of students who agreed with the above statement was that strong.

Frequently, students complain that they hate writing in any class, including science class. Yet more than half of the seventh grade life science students surveyed said that they actually enjoy writing in science class. There are many possible explanations for why more than half of the students agree that they enjoy writing in science class. Let me address four significant areas that may contribute to students' enjoyment in writing about life science.

One possible explanation is that many students enjoy the content of science classes, especially seventh grade life science content. The seventh grade life science curriculum at Our Lady of Mt. Carmel Regional School (O.L.M.C.) in Berlin, New Jersey, includes a significant amount of introductory biology. This biology curriculum includes the study of the five kingdoms of classification: Monerans, Protists, Fungi, Plants, and Animals.

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<sup>1</sup> The Our Lady of Mt. Carmel, Berlin, New Jersey seventh grade life science students' responses are available for review in the Appendix.

Specifically, much of the curriculum is based on the animal kingdom. The seventh grade students learn about everything from simple sponges to complex apes. Learning about animals seems to be a rather popular academic task among not only seventh grade students but also among students of other grade levels.

Students view animals as almost human. They enjoy learning about animals' antics and activities. Students also find the variation that exists among animals fascinating. They learn about everything from harmless snakes that mimic the colors of poisonous snakes to the social lives of bees. Students appreciate the large number of species that exist all over the world. Some animals students have seen before; therefore, they have a frame of reference which makes the curriculum relevant to their real lives. Other animals students are seeing for the first time ever; therefore, they are intrigued by the unfamiliarity of the animals. In both situations, students are engaged in the learning process.

Another possible reason as to why so many students agree that they enjoy writing in science is that many students prefer to write in any class other than English. Many students at O.L.M.C often express their dislike of English class. I believe their dislike of English stems from the English curriculum is often constructed so that much of students' time in English class is spent on very focused writing.

Writing is difficult and time consuming and students often become bored or frustrated when they are asked to write. Writing requires a great deal of thought, planning, and effort. Writing can be daunting for adults, let alone seventh grade middle school students. Additionally, much of the time the students spend writing in English class is centered on assigned writing tasks. Students are often given topics to write about

and genres to use to write about those topics. These rigid writing assignments sometimes result in student boredom because of the lack of variation.

A final possibility as to why 27 of the 44 students enjoy writing in science class is that having students practice genre writing in the science classroom has helped to alter these attitudes toward writing. Unlike the rigid English curriculum, seventh grade life science students at O.L.M.C. are given ample opportunity to explore writing in various genres. They are given the freedom to exercise their very vivid imaginations through several outlets using genre writing. Students become excited about writing because they are eager for others to see their personalities and their creativity through the writing they do in the science classroom.

The students may choose scientific topics out of several brief journals completed by them in science class. Then, they can write about that scientific topic in any genre they see fit. Rather than being told to write about Swedish botanist and inventor of nomenclature Carolus Linnaeus in an expository essay, the students may create a baseball card about Carolus Linnaeus. Or if the students do not want to write about Carolus Linnaeus that day, they can choose another scientific topic from their journals to write about.

Choice becomes a part of writing for the seventh grade life science students. Since writers need to make many choices when writing, students need to learn to make choices so they can become good writers. The fact that more than half of the students agree that they enjoy writing in science class may indicate the students are accepting their responsibilities as young science writers, and are thriving in a genuine science writing environment.



But not every student agrees with the statement “I enjoy writing in science class.” Actually one student strongly agreed that s/he enjoys writing in science class. Although from my perspective it is promising that any student feels that way about writing, that response was not the norm. Several students disagreed with the statement.

Of the 44 seventh grade life science students whom I surveyed, 14 of them, or thirty-two percent, disagreed with the statement “I enjoy writing in science class.” Two students responded that they strongly disagreed with the statement. So even though more than half of the seventh grade students responded that they agreed with the statement, 16 students disagreed. There are various possibilities for the students’ responses.

A probable reason is that many students dislike writing altogether. Many students do not enjoy writing regardless of what subject they are asked to write in. It may not matter that the students are in seventh grade. Very often, students in elementary, middle, high school, and college dislike writing. Writing is often seen as a “get it over with” activity in students’ minds.

Frequently, not enough emphasis is placed on writing as a creative process. Writing is often viewed as something that needs to be done to arrive at a final product as quickly as possible. Yet successful writing, particularly successful science writing, often comes from years of writing, research, experimentation, rewrites, more writing, then more rewrites, and so on. Science writing is a specifically, painstaking, detailed process, filled with trial and error. It can’t be hurried. But unless students understand writing as a process at a young age, such as middle school, it is unlikely that they will ever view writing in that way.

Some Seventh Grade Life Science Students Enjoy Writing for Pleasure

When I created this statement for the seventh grade life science survey, I knew I was taking a risk in asking students to respond because I might not have liked the responses to the statement, "I enjoy writing for pleasure." But the student responses to the statement actually proved to be intriguing.

Ten students strongly agreed with the statement; 11 students agreed with the statement. Ten students disagreed with the statement, and 13 students strongly disagreed with the statement. In other words, 21 seventh grade life science students from O.L.M.C. enjoy writing for pleasure, while 23 seventh grade life science students from O.L.M.C. do not enjoy writing for pleasure. So nearly half of the students enjoy writing for pleasure, while slightly more than half of the students do not enjoy writing for pleasure.

Perhaps a reason for the split results may be that students have past experiences that have influenced their outlook on writing for pleasure. What is even more striking than this almost even split of student opinion is the number of children who strongly disagreed with the statement. Thirteen students strongly disagreed that they enjoy writing for pleasure. However, there may be some plausible reasons for the students' responses.

One possible reason for this strong dislike of writing is that students are confined to focusing on certain genres of writing at an early age. These writing tasks are often completed along a fixed time frame and there is little to no focus on revision. Students come to view writing as something to hurry up and finish rather than something that has to be learned and practiced for many years.

Another possible reason for students' dislike of writing is that many students are not given the necessary tools for writing. Students are not always taught that writing is a

task that must be practiced. Many students feel insecure about writing. They often feel that if they make any mistakes, they will be labeled as incapable of writing. They view writing as a task that will undoubtedly result in failure and humiliation.

#### Most Seventh Grade Life Science Students Do Not Enjoy Expository Writing

When students were asked to respond to the statement “I enjoy expository writing,” 25 of them disagreed with the statement. More than half of the students do not enjoy expository writing even though most seventh grade students tend to enjoy the content of seventh grade life science. They ask many questions, often tell stories that relate to the subject matter, and verbally express their enjoyment of the science lessons being taught. Yet they do not enjoy writing about that content using exposition.

Expository writing in science often requires seventh grade life science students to complete essays and short answer questions. These writing tasks often require less effort than other forms of writing, like genre writing. But many students do not enjoy expository writing. Nine students even strongly disagreed with the statement “I enjoy expository writing.” A possible explanation for this result is that seventh grade science students have become bored with expository writing.

However there were numerous students who agreed with the statement also. Six students agreed with the statement and 4 students strongly agreed with the statement. In total, only 10 students stated that they enjoy expository writing.

A possible explanation for this result is that these seventh grade life science students may find expository writing to be easy or of average difficulty. There is little to no challenge for these students, or perhaps too much challenge. Frequently students become frustrated with questions that require little more than just recall or reiteration,

which are skills that expository writing often involves. Genre writing in the middle school science classroom asks students to go beyond simple recall or reiteration, which at times may be more difficult than traditionally used expository writing in the science classroom.

#### Some Seventh Grade Life Science Students Enjoy Expository Writing in Life Science

Fourteen seventh grade life science students agreed with the statement “I enjoy expository writing in science.” Three students strongly agreed with the statement. Twenty-three students disagreed with the statement and 4 students strongly disagreed with the statement.

Students often become bored with the tediousness of expository writing in the seventh grade life science classroom. Expository writing tasks done in the science classroom are often very similar to other expository assignments in their classes. The monotony of the writing tasks makes the science assignments seem unimportant or irrelevant in the minds of middle school students. The students often express their belief that certain expository writing assignments are simply meant to keep them busy or to fill class time.

The students sometimes feel as if they are being punished for something when they are asked to perform certain writing tasks. When the idea that certain writing tasks are useless enters the students’ minds, they have lost any connection to the writing they are doing. Students are sometimes incapable of seeing the value of the writing. Many students do not comprehend the purpose behind the writing they do in science classes. Thus the lesson objectives set forth by the teacher have not been achieved.

#### Many Seventh Grade Life Science Students Enjoy Genre Writing in Science

When I asked 44 seventh grade life science students to respond to the statement “I enjoy genre writing in science,” 19 students agreed with the statement and 16 students strongly agreed with the statement. A total of 35 students agreed that they enjoy genre writing in science. Eight students disagreed with the statement and 1 student strongly disagreed with the statement. The students’ responses to this statement were notable for a few reasons.

Almost 80 percent of seventh grade life science students at O.L.M.C. agreed that they enjoy genre writing in science. Conversely, about only 20 percent of seventh grade life science students at O.L.M.C. responded that they do not enjoy genre writing in science. While these percentages are based on a limited number of student responses, the pattern revealed is worth exploring in some depth.

One of the possible reasons that such a large number of students agree with the statement is that the students experience the freedom of choosing a writing topic, unlike in other classes. Also, the students have the opportunity to explore their creativity through the written form in the science classroom. An additional reason for the students’ positive reaction may be that the students enjoy working collaboratively to revise their writing. Although this is often done in English class, it is rarely done in Science class. Students at the middle school age level usually enjoy working cooperatively as it allows them to interact both academically and socially.

A possible reason that such a small number of students disagree with the statement is that the students may become frustrated with the openness of the writing activity. Too many choices can be as challenging or as frustrating to some writers as having too few or no choice in the topic. Resistant writers, for instance, may have

difficulty understanding writing as a process if they have not been taught to view writing as a series of choices. Additionally, as mentioned before, some students may prefer writing activities that require simple recall or recognition to genre writing activities.

### Most Seventh Grade Life Science Students Remember Scientific Concepts Better When They Write About Them

When presented with the statement “I remember scientific concepts better when I write about them”, seven seventh grade life science students disagreed and 0 students strongly disagreed. Conversely, 24 students agreed with the statement and 13 students strongly agreed with the statement. Thirty-seven students in total agreed that they remember scientific concepts better when they write about them.

Given the results of this survey question, writing about science is a crucial component of learning in the science classroom. Eighty-four percent of the seventh grade life science students at O.L.M.C. feel they remember scientific concepts better when they write about them. This figure confirms the general write to learn principle that writing in science is vital to the students’ learning in the science classroom, just as writing in any discipline helps students retain information.

Remembering scientific concepts, facts, dates, and people is a key element of seventh grade life science. A frequently ineffective method that teachers and students sometimes utilize is having the students drill and memorize facts for hours, attempting to cram their brains full of scientific information. All too often, the drill method results in a student memory dump after an exam or at the end of the school year.

Because there is so much information to retain in science class, students need a way to make the information relevant to their own lives; otherwise, very few students are

able to retain the information over a long term. And even students who can memorize the information often forget it after they have spilled it out onto a test paper. Writing that is made relevant to the students' lives, like genre writing, can help ease this frustration with content learning. Students need to be shown that writing can help them in science class to retain class material for later recall.

An aspect of the survey results that is especially worth mentioning is even though several students dislike writing, they still feel it is very important in helping them to remember scientific concepts. Therefore, most students surveyed understand that writing is a necessary element of their learning in the middle school science classroom. Yet, so many students are so disillusioned with writing that they still do not like it even though they are aware of its importance in the science classroom.

#### **Some Seventh Grade Life Science Students Remember Scientific Concepts Better When They Write About Them Using Expository Writing**

The results of this particular survey question are nearly split down the middle. Eighteen seventh grade life science students agreed with the statement "I remember scientific concepts better when I write about them using expository writing." Five students strongly agreed with the statement. Likewise, 19 students disagreed with the statement and 2 students strongly disagreed with the statement.

So 23 students reported that they remember scientific concepts better when they write about them using expository writing. Twenty-one students reported that they do not remember scientific concepts better when they write about them using expository writing. There are numerous possible explanations for why slightly more than half of the students

agree with the statement while just under half of the students disagreed with the statement.

- Because there are many different kinds of learners, there are also many different kinds of learning. Some students may benefit from memorization and repetition, while other students may not.
- Some students often do not complete science class expository writing assignments; therefore, they will obviously not remember the concepts.
- Many students memorize concepts through expository writing and then erase them from their memories as soon as they have taken the exam or completed the school year. Therefore, they may not view expository writing as beneficial to their remembering scientific concepts.

Yet a more notable observation with regard to seventh grade life science may be that many students see writing as important to learning.

The student responses illustrate that although many students may dislike expository writing, a little more than half of the students feel that they remember scientific concepts better when they write about them. Thus, the importance of writing in the middle school science classroom is again recognized by numerous students, regardless of their feelings about the type of writing being practiced.

#### **Many Seventh Grade Life Science Students Remember Scientific Concepts Better When They Write About Them Using Genre Writing**

A significant number of seventh grade life science students agree with the statement “I remember scientific concepts better when I write about them using genre



writing.” Twenty-one students agree with the statement and 10 students strongly agree with the statement.

A total of 31 students agree that they remember scientific concepts better when they write about them using genre writing. Whereas only 23 students report that they remember scientific concepts better when they write about them using expository writing. More seventh grade life science students feel that genre writing, rather than expository writing is more effective in helping them learn and remember scientific concepts.

However, 11 students disagree with the statement and 2 students strongly disagree with the statement. A total of 13 students feel that genre writing did not help them to remember scientific concepts. There is a possibility that these students feel that writing is difficult and only contributes to their frustration.

Also these students may feel that genre writing requires too much time and effort, so they prefer to use expository writing. But it is crucial that students begin to understand the importance of writing in various forms, especially in middle school, to learning science. Not only is it imperative that students begin to value writing in their middle school years, but also it is critical that students realize the important role that writing plays in their future educational experiences.

#### Some Seventh Grade Life Science Students Feel That Expository Writing in Science is Worthwhile To Their Learning; Some Do Not

When I presented 44 seventh grade life science students with the statement “Expository writing in science is worthwhile to my learning” half of them agreed and half of them disagreed. Sixteen students agreed with the statement and 16 students disagreed

with the statement. Five students strongly disagreed with the statement and seven students strongly agreed with this statement.

Again this data most likely demonstrates that many students recognize the importance of writing in middle school science, yet many students dislike expository writing in middle school science and in other classes. Although numerous students dislike writing and specifically dislike expository writing, half of them still value the importance of writing in the science classroom. These students recognize the benefits of using writing in middle school science classes as a learning tool.

Yet it is my hope that all students appreciate the role of writing in their educations, especially in their science educations. Unfortunately, many seventh grade life science students see writing as a completely separate entity from science. Students need to be shown that all great men and women of science communicate their research, findings, and discoveries in a written form. With genre writing practice in the classroom, it is my goal to show students that writing is an integral part of science.

#### Most Students Feel That Genre Writing in Science is Worthwhile to Their Learning

Twenty-one seventh grade life science students agree that genre writing in science is worthwhile to their learning experience. Fourteen students strongly agree with the statement. A total of 35 students feel that genre writing in science is worthwhile to their learning. The data are very significant as the response rate demonstrates students' positive attitudes toward genre writing in the science classroom.

The students value genre writing because they feel that it contributes to their overall learning in science. Not only do the students understand that genre writing has

helped them to succeed in science class, but also the students appreciate writing in science as a valuable tool that greatly contributes to their learning in general.

However, seven students disagreed with the statement and 2 students strongly disagreed. Again, this response is most likely because some students find genre writing to be more challenging than expository writing. Occasionally, students would rather utilize expository writing forms rather than genre writing forms because expository writing tends to require less time and effort and fits an expected format.

Also, students may feel that genre writing, or any writing for that matter, is unnecessary for a middle school science classroom. As I mentioned before, helping students to change their way of thinking toward writing is an important goal for middle school science educators.

#### Most Seventh Grade Life Science Students Prefer Genre Writing in Science Class to Expository Writing in Science Class

Many more seventh grade life science students prefer genre writing in science class to expository writing in science class. Ten students agree with the statement “I prefer genre writing in science class to expository writing in science class.” Twenty-six students strongly agree that they prefer genre writing to expository writing in science class. This data is extremely significant because it helps to demonstrate students enjoy genre writing in seventh grade life science class.

It is particularly important to notice that 26 students don't just agree that they prefer genre writing, rather they *strongly* agree that they prefer genre writing in the science classroom. Only 3 students disagree with the statement and 5 students strongly disagree with the statement. In total, only 8 students do not prefer genre writing in

science class to expository writing in science class. While 8 students only represents 18 percent of the total seventh grade life science class, it is still important to take notice of these students' opinions and attitudes toward writing in the science classroom.

If the students' beliefs about genre writing in the science classroom stem from their dislike of genre writing, then it is essential that the students find a form of writing that they do value. If their beliefs about genre writing stem from their overall dislike of writing in general, the problem is not so easily solved. In my experience; however, genre writing can help to alter students' negative attitudes toward writing.

I have seen seventh grade life science students who do not adjust immediately to using genre writing in the science classroom. However, with teachers' direction and patience, the majority of students eventually comprehend the value and relevance of writing in the science classroom.

Most students enjoy the variation that genre writing in the science classroom provides during writing tasks. Students often view variation positively as it gives them the opportunity to engage themselves more fully because they remain interested. In my teaching experience in middle school science classrooms, students may be resistant at first which is to be expected, but they eventually not only accept and excel in genre writing but all forms of writing in the science classroom.

What the Data Reveal About Seventh Grade Life Science Students and Their Attitudes

#### Toward Writing in Science

Many teachers are familiar with the groans and complaints from their middle school science students when writing is mentioned. And many teachers know that writing can be very difficult to teach in a discipline other than English. Often times

teachers also groan and complain, akin to their students, about teaching writing because it so difficult to do. Unfortunately, the complaints that students and teachers have regarding writing do not diminish in future years.

Students continue to dislike writing in science and other subjects after they leave middle school and enter high school. Then these students advance to college and continue to dislike writing. Similarly, teachers at all grade levels continue to become frustrated with teaching writing, because teaching writing is one of the most challenging tasks a teacher can attempt. Because writing involves so many choices and because it requires perseverance and persistence, it can be difficult to teach. Writing is a practice that a teacher can only guide a student through.

The cycle of students' disdain for writing and teachers' aggravation with the teaching of writing continues and grows. This is where genre writing in science can help to make a difference in not only the middle school science classroom but also in high school and college classrooms.

Genre writing in the middle school science classroom helps students to experience a different kind of writing in science class. The students practice writing in a manner that pushes them to become visionary writers. While there is often a little student resistance at first, this is understandable and expected given the newness of the task, eventually the students embrace the concept of genre writing. They excel in their ability to write scientific genre pieces and they embrace their problem solving skills in science because they tap into creative thinking in their writing.

The students are able to achieve more because they become proficient in writing scientific pieces through practicing genre writing in the middle school science classroom.

Students feel confident about the work that they produce and they develop strong feelings connected to the work. As a result, students come to develop a passion for the writing they do in seventh grade life science class.

Based on survey data, many students responded to choices about writing that indicated a strong degree of emotion. For example, 26 seventh grade students said they strongly agreed to the statement “I prefer genre writing in science class to expository writing in science class.” In a matter of months, students have learned to feel strongly about genre writing.

If students are happier, more comfortable, and more confident about writing in science class, they will be more open to teacher instruction about writing. Students can begin to see writing in the science classroom as a process rather than a product. Teachers will be more able to explain the journeys writers take when they compose in various fields. When students begin to internalize what their teachers present to them, they begin to develop important writing skills. The fact that students can become better writers should have a direct positive effect on secondary and post-secondary institution educators as well.

High school and college science and writing educators expect their incoming students to have already mastered certain writing skills. Unfortunately, many students lack the skills that are expected. As a result, the high school or college educator spends an inordinate amount of time teaching students writing skills that should already be familiar to the students.

When educators have to spend their limited time teaching basic writing skills, valuable teaching time is lost. This results in teacher frustration and loss of teaching time

that should be devoted to more “on level” skills. The vicious cycle of unhappy student and unhappy teacher rears its ugly head again. The more discontented the writing student becomes, the more difficult the teaching becomes for the educator. When writing in science classes, these problems become intensified because the content that must be communicated in writing is more difficult to convey.

Genre writing in the seventh grade life science classroom, while it requires practice and time, can help to alleviate some of the difficulties that both teachers and students encounter when writing in the science classroom. Teachers may not have to work so hard to reveal to students that writing is a process. The students can discover that writing is a process on their own. When middle school students discover the writing process for themselves, they feel more confident and able to explore writing in the science classroom and accept that writing as a process in other academic areas.

As a result of genre writing in seventh grade life science class, a new cycle emerges: Contented students learn how to write in the science classroom, while feeling positively about the writing they do. Contented teachers feel assured that they are teaching their students about writing as a process, while helping to shape successful writers in the science classroom. The confidence and abilities of both teacher and students grow and flourish in an authentic writing situation.

## Chapter Five

### Findings and Discoveries

I have discovered several things while conducting this project. Surveying seventh grade life science students and interviewing middle school teachers, college composition professors, and college biology professors has allowed me to collect data regarding writing in the sciences. My discoveries include the following:

- Middle school science teachers face many challenges in their classrooms. These challenges include managing time constraints, handling students' individual education plans (IEPs), coping with pressure from standardized tests, and following state standards for science.
- These challenges leave little to no room for writing instruction in the middle school science classroom.
- College composition professors teach various methods of writing forms, such as summary, analysis, persuasion, expository essay, journal writing, formal research paper, multi-genre project, article summary, and more.
- College composition professors use various methods of revision in their classrooms, such as peer-editing, peer-revision, and more.
- Several college composition professors feel that a great advantage of teaching writing is its ability to open students' minds.
- Many college composition professors believe that a problematic area of teaching writing is students' fear of and anxiety about writing.



- According to college composition professors, grammatical mistakes and mechanical mistakes are common problems in the college writing classroom.
- Several college composition professors listed grammar and mechanics as one of the most important aspects of writing that students need to learn.
- Many college writing professors felt that one of the most difficult aspects of teaching writing is students' lack of writing skills.
- College biology professors use various forms of writing in their classrooms, such as lab journals, lab reports, opinion papers, research papers, literature searches, essay questions, short answer questions, and more.
- Many college biology professors report that their students express their dislike of writing.
- College biology professors claim that many students lack writing skills such as grammar and mechanical skills.
- A common problem that college biology professors face in their classrooms is students avoidance of writing.
- Another problem that college biology professors face in their classroom is students' difficulty with expressing their scientific findings in writing.
- Many college biology professors feel that writing is important in science because scientists need to be able to communicate their ideas to one another.
- Of the 44 seventh grade life science students surveyed:
  - most of them enjoy writing in science class
  - almost half of the students enjoy writing for pleasure
  - most students do not enjoy expository writing

- more than half of the students do not enjoy expository writing in science
- most students enjoy genre writing in science class
- most students feel that they remember scientific concepts better when they write about them
- slightly more than half of the students feel that they remember scientific concepts better when they write about them using expository writing
- most students feel that they remember scientific concepts better when they write about them using genre writing
- slightly more than half of the students feel that expository writing is worthwhile to their learning
- most students feel that genre writing in science is worthwhile to their learning
- most students prefer genre writing in science class to expository writing in science class

#### Affects of Findings and Discoveries on My Teaching and Others' Teaching

Educators in middle school science, college composition, and college biology face similar problems in the classroom. Many students dislike writing whether they are writing in science classes or writing classes. Because of students' dislike of writing, they often avoid writing.

Written communication is a crucial aspect of students' academic experiences and their career experiences. Since writing is such an important skill for students to learn, it is imperative that they learn the appropriate writing skills at an early age. Practicing genre writing in middle school science can help students to learn those appropriate skills.

Although a common complaint of educators is that there is not enough time for genre writing in the science classroom, it is important to make time for genre writing. Even though genre writing can be time consuming, the benefits of practicing genre writing are worth the time. Genre writing can help lead to more positive student attitudes toward writing in the sciences and writing in general. Students that practice genre writing in the middle school science classroom feel in control of their topic choices which helps to increase their confidence and enjoyment in regard to writing.

Additionally, because practicing genre writing in the science classroom allows students to learn revision skills, writing skills are learned throughout the process of genre writing. Grammatical and mechanical skills are improved through the practice of peer-editing and peer-revision. Also, students learn to revise their own writing by studying aspects of writing such as attention to audience, appropriate genre, voice, tone, and style.

#### Future Plans for My Thesis Project

Although my thesis project research has revealed much information and data about writing and writing in science, there is still much to be discovered on the subject. The issue of writing and writing in the sciences is an important educational topic that can be overwhelming to explore. There are various theories, opinions, and beliefs on the issue of students and writing. Therefore, there is still much research that needs to be conducted regarding this issue.

My student research was limited to 44 seventh grade life science students from a private Catholic school, Our Lady of Mt. Carmel, in Berlin, New Jersey. In the future, I would like to further my research by surveying students from public schools in other areas of southern New Jersey. Also, I would like to survey students from other parts of

New Jersey, as well as students from other states in the country. Additionally, I would like to survey students in elementary grades, secondary grades, and post-secondary grades in order to determine the attitudes and beliefs of those students in reference to writing and writing in the sciences.

I would also like to interview more middle school science teachers. I would like to interview middle school science teachers from private and public schools from various districts in the southern New Jersey area. Furthermore, I would like to interview middle school science teachers from other areas of New Jersey and other states in the country. Also, I would like to interview middle school teachers of other subject areas from New Jersey and other states in the country. Finally, I would interview elementary and secondary teachers of science and other subject areas from New Jersey and other states in the country.

Finally, interviewing more college composition and college biology professors would allow me to collect more information regarding writing and writing in the sciences. I would interview college composition professors and college biology professors from other institutions in the southern New Jersey area, other areas of New Jersey, and other states in the country. Also, I would like to interview professors of graduate courses that involved writing. Interviewing various professors would give me a broader view of the professors' opinions and beliefs regarding writing.

I would also like to investigate other theorists' ideas about writing and writing in the sciences. There is much research that I still need to examine regarding teacher and student attitudes and beliefs about writing. More specifically, there is much research to

consider in regard to writing in the sciences and teaching students writing as a process at a young age.

Given the results of my research, it can be postulated that students are capable of enjoying writing and writing in the sciences. Additionally, students are able, through the use of genre writing, to learn writing skills by viewing writing as a process. Investigating the idea of practicing genre writing in the middle school science classroom will allow for expansion of the idea to other grade levels and other subjects.

Gathering and interpreting research and data regarding writing can educators and administrators find more efficient ways to teach students to write. Finding ways to help get students excited about writing and to teach them writing skills will help students to understand the importance of writing. Students can learn to see that writing is an essential element of communication that is interconnected with many aspects of their lives.

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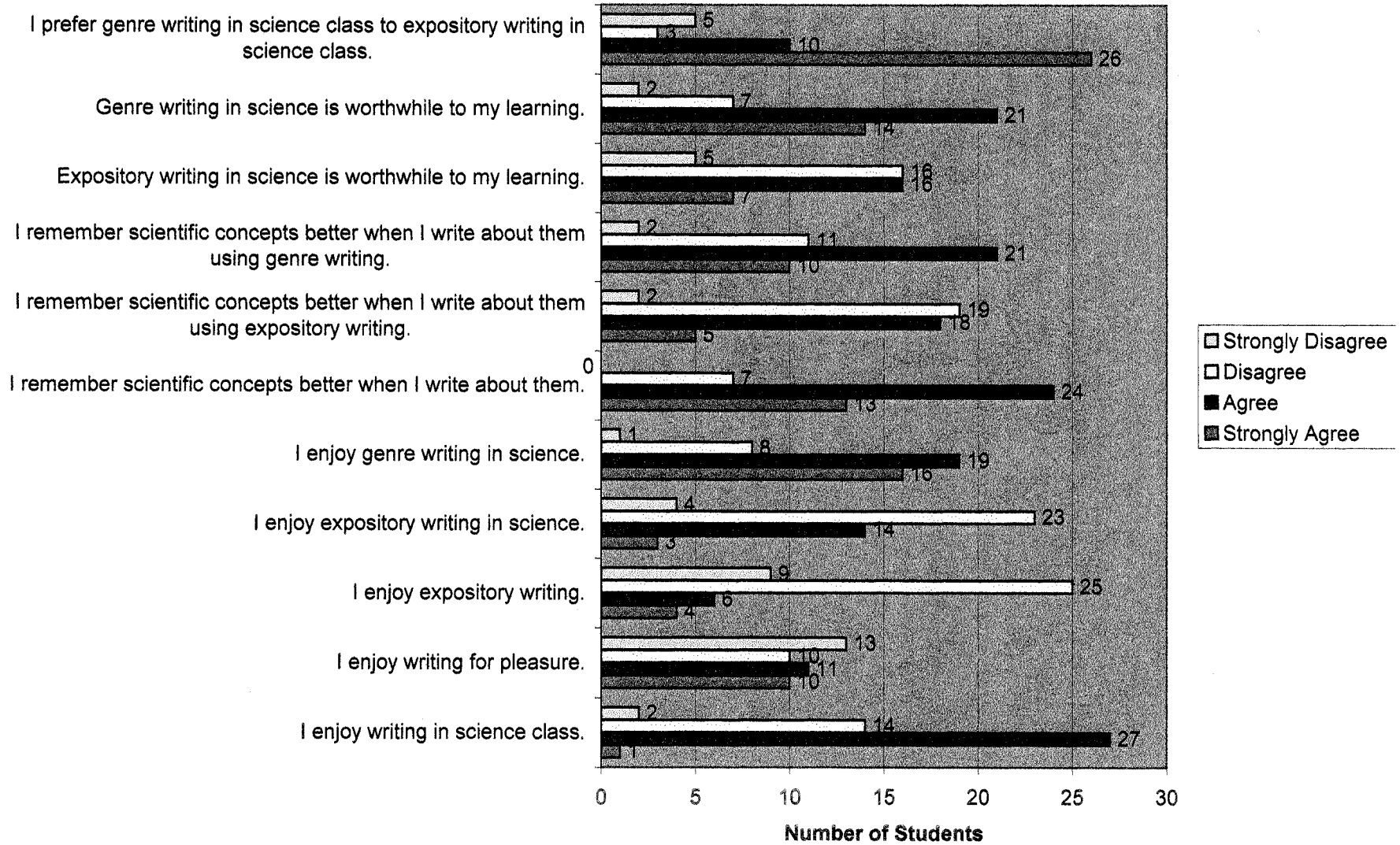
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## Appendices



## Seventh Grade Life Science Student Survey Results



**Rowan University**  
**INSTITUTIONAL REVIEW BOARD**  
**HUMAN RESEARCH REVIEW APPLICATION**

RECEIVED FEB 01 2008

INSTRUCTIONS: Check all appropriate boxes, answer all questions completely, include attachments, and obtain appropriate signatures. Submit an **original and two copies** of the completed application to the Office of the Associate Provost for Research Expediter(s). Be sure to make a copy for your files.

FOR IRB USE ONLY:  
Protocol Number: IRB- 2006-030  
Received: \_\_\_\_\_ Reviewed: \_\_\_\_\_  
Exemption:  Yes  No  
Category(ies): \_\_\_\_\_  
Approved J. Guale (date) 2/17/06

**Step 1: Is the proposed research subject to IRB review?**

All research involving human participants conducted by Rowan University faculty and staff is subject to IRB review. Some, but not all, student-conducted studies that involve human participants are considered research and are subject to IRB review. Check the accompanying instructions for more information. Then check with your class instructor for guidance as to whether you must submit your research protocol for IRB review. If you determine that your research meets the above criteria and is not subject to IRB review, **STOP**. You do not need to apply. If you or your instructor have any doubts, apply for an IRB review.

**Step 2: If you have determined that the proposed research is subject to IRB review, complete the identifying information below.**

Project Title: Genre Exploration: Alternatives to Expository Writing in Seventh Grade Life Science

Researcher: Christen Haigh	
Department: Masters of Arts in Writing Graduate Program	Location: Rowan University
Mailing Address: 60 Meetinghouse Lane Turnersville, NJ 08012	
E-Mail: christenhaigh@gmail.com	Telephone: 856-228-1893
Co-Investigator/s: Not Applicable	
Faculty Sponsor (if student)*: Diane Penrod	
Department: Writing Arts	Location: Hawthorn
E-Mail: penrod@rowan.edu	Telephone: xt. 4330

Approved For Use by Rowan IRB: 7/04

To Whom It May Concern:

I agree to participate in a study entitled “Genre Exploration: Alternatives to Expository Writing in Seventh Grade Life Science”, which is being conducted by Christen Haigh, Master of Arts in Writing at Rowan University candidate, under the supervision of Dr. Diane Penrod.

The purpose of this study is to gather information about teachers’/professors’ beliefs, attitudes, and experiences with regards to writing and science. The data collected in this study will be used in Mrs. Haigh’s thesis project.

I understand that I will be asked to answer open-ended questions about writing, science, and writing in science via email.

I understand that there are no physical or psychological risks involved in this study, and that I am free to withdraw my participation at any time without penalty.

I understand that my participation does not imply employment with the state of New Jersey, Rowan University, the principal investigator, or any other project facilitator.

If I have any questions or problems concerning my participation in this study, I may contact Dr. Diane Penrod at 856-256-4330.

\_\_\_\_\_  
(Signature of Participant)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Signature of Investigator)

\_\_\_\_\_  
(Date)

*Our Lady of Mt. Carmel Regional School*

CEDAR AVENUE  
BERLIN, NEW JERSEY 08009  
(856) 767-1751

To Whom It May Concern:

As administrator of Our Lady of Mt. Carmel School in Berlin, NJ, I hereby authorize Christen Haigh to conduct research in the form of student surveys at this educational institution. I am aware that Mrs. Haigh will be administering student surveys to approximately 44 seventh grade science students in her classroom. The students will be kept anonymous. The survey consists of questions about writing and science. Students' participation in this study will have absolutely no effect on their standing in Mrs. Haigh's class. I am aware that the data collected from these student surveys will be used in Mrs. Haigh's thesis project in the Master of Arts in Writing at Rowan University, Glassboro, NJ.

If you have any questions or concerns, please contact me at 856-767-1751.

Sincerely,

Sr. Carmel Buckley

*Sister Carmel Buckley*

Date: *Jan. 18<sup>th</sup> 2006*

Dear Parent/Guardian:

I am a graduate student in the Master of Arts in Writing program at Rowan University. I will be conducting a research project under the supervision of Dr. Diane Penrod as part of my master's thesis concerning writing in the science classroom. I am requesting permission for your child to participate in this research. The goal of the study is to determine students' beliefs, attitudes, and learning tendencies with regards to writing in the sciences.

Each child will receive a survey containing statements about writing, science, and writing in the sciences to be completed in the classroom. Students are asked to choose the response that best reflects their opinion about each statement. The response choices range from Strongly Agree to Strongly Disagree. All data will be reported in terms of group results; individual results will not be reported.

Your decision whether or not to allow your child to participate in this study will have absolutely no effect on your child's standing in his/her class. At the conclusion of the study a summary of the group results will be made available to all interested parents. If you have any questions or concerns please contact me at 856-767-1751 or you may contact Diane Penrod at 856-256-4330. Thank you.

Sincerely,

Mrs. Christen Haigh

-----  
*Please cut along the dotted line and return the bottom portion of this letter.*

Please indicate whether or not you wish to have your child participate in this study by checking the appropriate statement below and returning this letter to your child's teacher by February 28, 2006.

\_\_\_\_\_ I grant permission for my child \_\_\_\_\_ to participate in this study.

\_\_\_\_\_ I do not grant permission for my child \_\_\_\_\_ to participate in this study.

\_\_\_\_\_  
(Parent/Guardian signature)

\_\_\_\_\_  
(Date)

Dear Parent/Guardian:

As part of the completion of the Master of Arts in Writing Program at Rowan University, my thesis project will be archived in the Rowan University Library. I am requesting permission for your child's journal work to appear in the Appendix of my thesis project. Your child's name will not appear anywhere on the journal work or anywhere in my thesis project. The purpose of including your child's journal work is to display an example of journal writing in the middle school science classroom.

Your decision whether or not to allow your child's journal work to appear in my thesis project will have absolutely no effect on your child's standing in his/her class. If you have any questions or concerns please contact me at 856-767-1751. Thank you.

Sincerely,

Mrs. Christen Haigh

Please indicate whether or not you wish to have your child's journal work appear in my thesis project by filling in your child's name, checking the appropriate statement below, signing, and returning this letter to me by June 6<sup>th</sup>, 2006.

\_\_\_\_\_ I grant permission for \_\_\_\_\_'s journal work to appear in Mrs. Haigh's thesis project.

\_\_\_\_\_ I do not grant permission for \_\_\_\_\_'s journal work to appear in Mrs. Haigh's thesis project.

\_\_\_\_\_  
(Parent/Guardian signature)

\_\_\_\_\_  
(Date)

## Student Survey Tool

The student survey consists of the following statements and response choices:

Strongly Agree      Agree      Disagree      Strongly Disagree

1. I enjoy writing in science class.
2. I enjoy writing for pleasure.
3. I enjoy expository writing.
4. I enjoy expository writing in science.
5. I enjoy genre writing in science.
6. I remember scientific concepts better when I write about them.
7. I remember scientific concepts better when I write about them using expository writing.
8. I remember scientific concepts better when I write about them using genre writing.
9. Expository writing in science is worthwhile to my learning.
10. Genre writing in science is worthwhile to my learning.
11. I prefer genre writing in science class to expository writing in science class.

## Middle School Teacher Interview Questions

The middle school science teacher interview consists of the following questions:

1. What kind of writing do your students do in your science classroom?
2. How often, if at all, do you vary the type of writing your students do in your classroom?
3. Do you ever use genre writing in your science classroom? If so, what do you feel are the benefits and/or drawbacks of using genre writing in the science classroom?
4. What methods, if any, for editing do you teach your students in your middle school science classroom?
5. What are some advantages and/or disadvantages of using expository writing in your middle school science classroom?



## College Writing Professor Interview Questions

The college writing professor interview consists of the following questions:

1. What forms of writing do you teach in your writing classroom?
2. What methods of revision do you teach in your writing classroom?
3. What are some advantages and/or disadvantages of teaching writing?
4. What are some common problems that your students encounter while learning writing in your classroom?
5. What is the most important aspect of writing that a student needs to learn?
6. What are some problems that you, as a writing professor, encounter in your writing classroom with reference to students' writing limitations?

## College Biology Professor Interview Questions

The college biology professor interview consists of the following questions:

1. What is the most commonly used form of writing in your biology classroom?
2. What are some advantages and/or disadvantages of using this form of writing in your biology classroom?
3. What skills are biology majors lacking when it comes to writing?
4. Do you vary the forms of writing that your students use in your biology classroom?
5. What are some problems that you, as a biology professor, encounter in your biology classroom with reference to students' writing limitations?
6. Is writing an important aspect of biology? Why or why not?



## Moneran Quiz

Name- Michelle



Directions- Circle the correct word or number for each statement. Write them on the lines provided.

- 1.) All (fungi bacteria) is placed in moneran. bacteria
- 2.) Monerans are (unicellular/multicellular) organisms. unicellular
- 3.) Monerans have (3/1) cells. 1
- 4.) Monerans can be placed in (3/2) categories. 2
- 5.) Monerans are (heterotrophs/autotrophs) autotrophs
- 6.) Monerans were the (first/last) life forms to appear. first
- 7.) All members of moneran are (visible/microscopic) microscopic

Directions- Answer the questions below.

- 8.) Name and give examples for all of the five kingdoms in order. Monerans - bacteria, protists - amoeba, starburst, fungi - mushroom, plants - rose, animals - dog.
- 9.) What are autotrophs and heterotrophs? Give examples. Autotrophs make their own food and heterotrophs don't. Autotrophs - monerans, heterotroph - animals.
- 10.) What would we (humans) be classified as? Animals

# People Now

PN

Science

WHO'S REAKER IS THIS?  
ANS. ON P. 5

3047th Edition  
SEPT. 15, 2008  
FRIDAY

$$E=mc^2$$



## Uranium Split Up!

BOY BAND FANS PHOT!

Are Hydrogen

Oxygen breaking up?

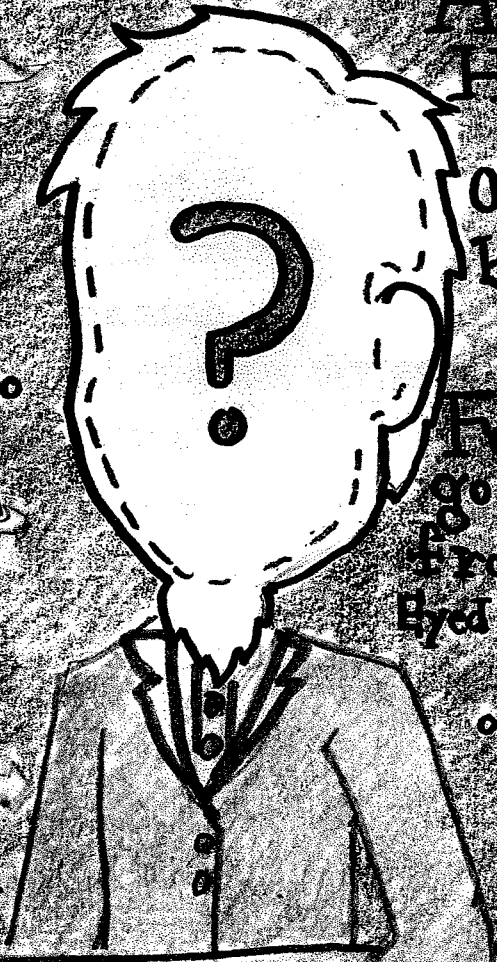
Gwen Stephanie's album, S.U.L.F.U.R  
L.A.M.B. hits #1!

Fergie goes solo from Black-Eyed Molecules

## Carolus

### Inneus...

What does he look like? How old is he? Nobody knows...



UK: if can't U.S. Lab send you!

Albert Einstein does the Macarena while discovering the formula  
REAL PICTURES!  $E=mc^2$

Alien auditions as backup dancer for Britney Spears!



(ACTUAL SIZE)  
(NOT FOR RESALE)

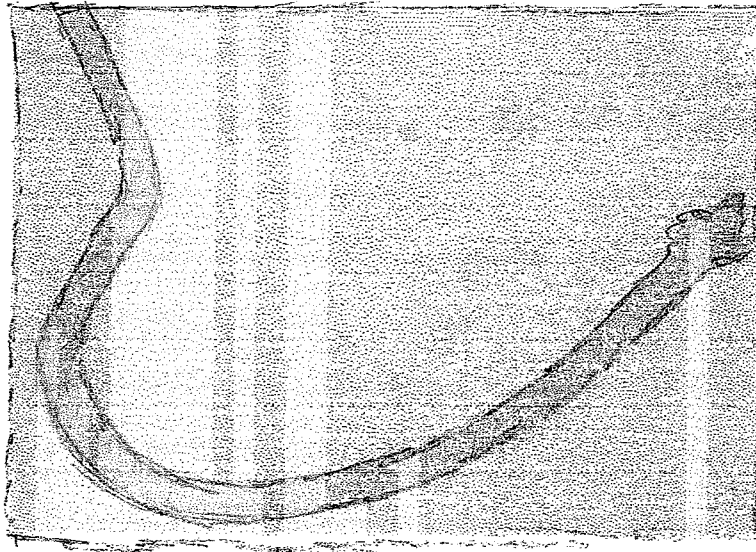
Wormy Wormster  
109 Tapeworm Avenue  
Berlin, New Jersey, 12345

Dear Wormy,

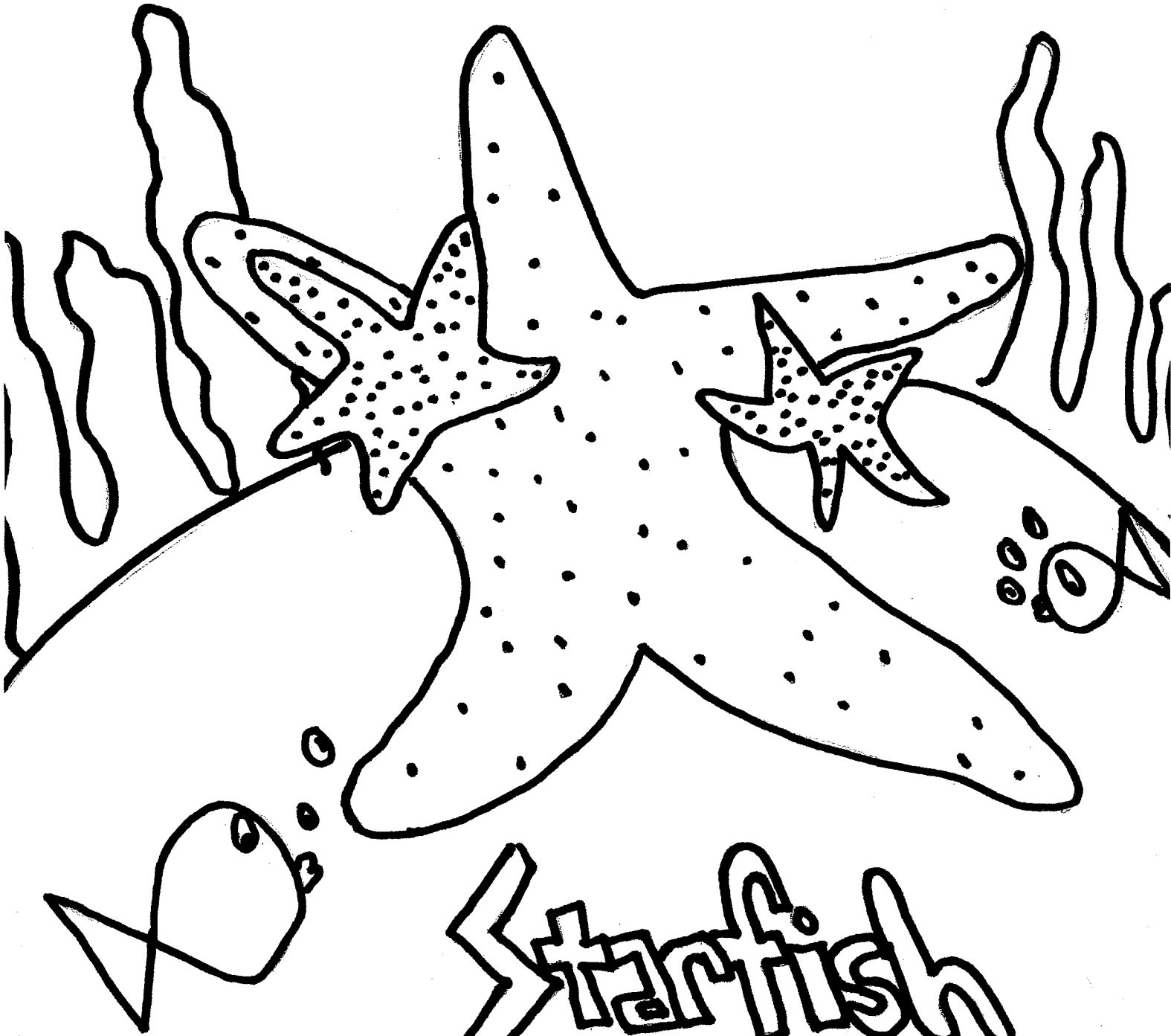
You have inflicted much pain on me and I am getting sick. I am very upset that you are eating all my food and then releasing it, and your fecal matter, back into my body. I ache all the time and I can feel you squirming though my tummy. I am always hungry and I get weaker and sick the longer that I have you in my body. I have having a parasite like you hurting me inside. It would be great if you could leave my body in peace and if you could do that very soon. If you leave my body, now or soon I will give you a super surprise. I really do not want to be sick anymore, especially for my older brother's birthday party. You can come too if you leave. Thank you for your time.

Thank you,

Tommy Ratcliff      Age: 4 ½



Color the picture below. Remember to stay in the lines.

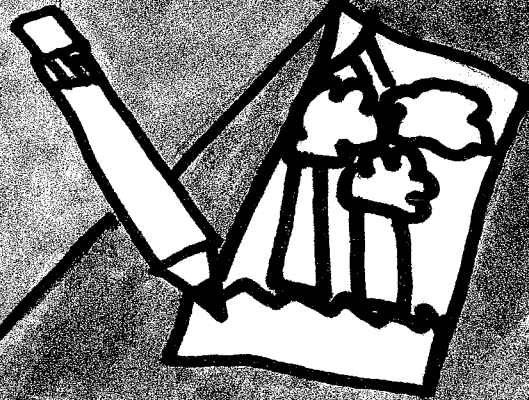


# Starfish

The starfish above is an invertebrate. An invertebrate is an animal that has no backbone. Invertebrates make up 90% of all animal species. All invertebrates come from a common ancestor.



Color

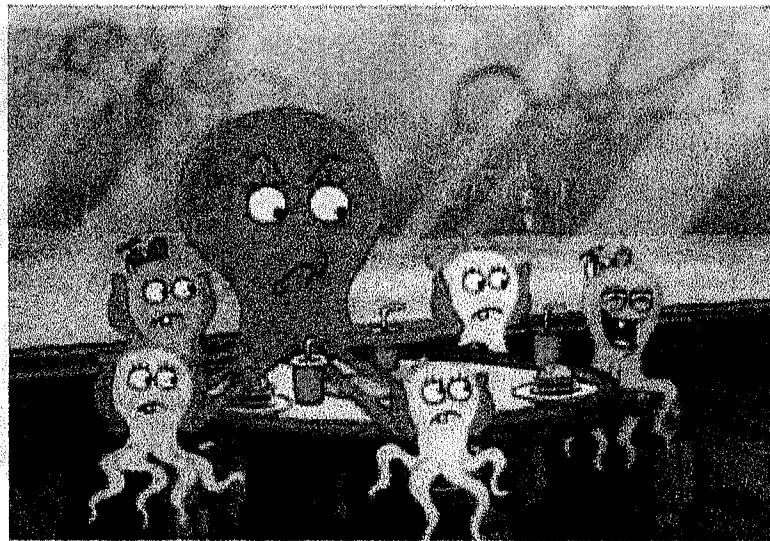


Wonders

Coloring Books

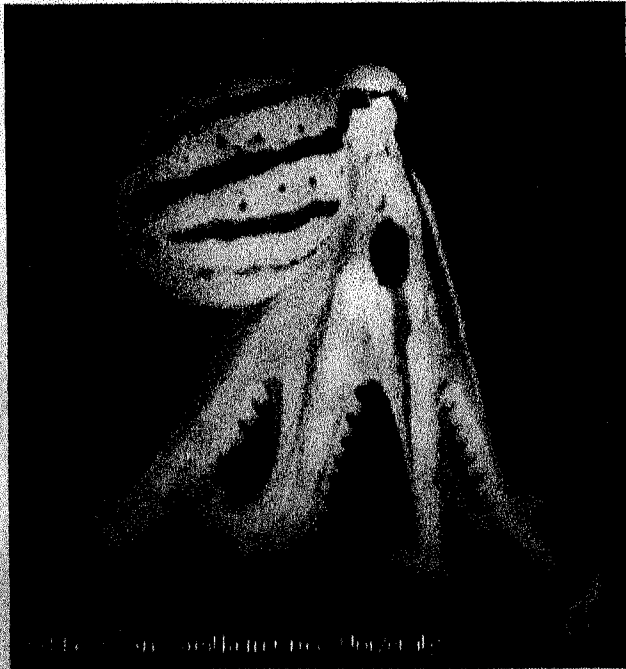


# 2006 Calendar



Complete With Full-Color Pictures and Fun Facts About One  
of the World's Most Interesting Creatures, the Octopus!

## *Did You Know...?*



Octopuses are very intelligent.

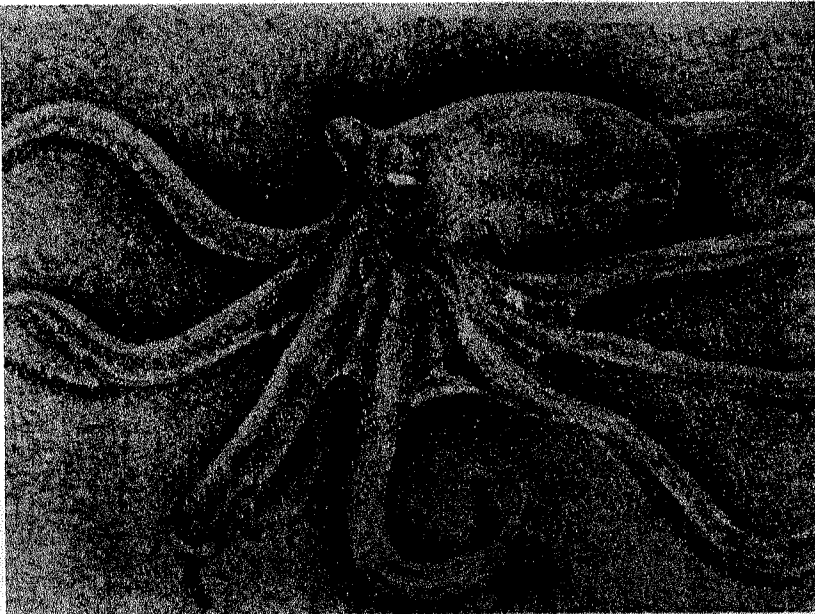
They communicate by changing the color of their skin.

When it is scared it turns completely white.

It releases ink to distract enemies while it swims away.



## *Did You Know...?*



Octopuses can change the color of their skin to match their surroundings or to express anger or excitement.

That is how they communicate!

It has eyes on each side of its head.

It is also completely deaf.

It has a soft body with a well-developed brain.

# February 2006

January 2006

March 2006

S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7	5	6	7	8	9	10	11
8	9	10	11	12	13	14	12	13	14	15	16	17	18
15	16	17	18	19	20	21	19	20	21	22	23	24	25
22	23	24	25	26	27	28	26	27	28	29	30	31	

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				





## *Did You Know...?*

An octopus has eight arms called tentacles.

Each tentacle has 240 suction cups to grasp its prey,

That's 1920 total suction cups!

It releases ink to distract enemies while it swims away.

# March 2006

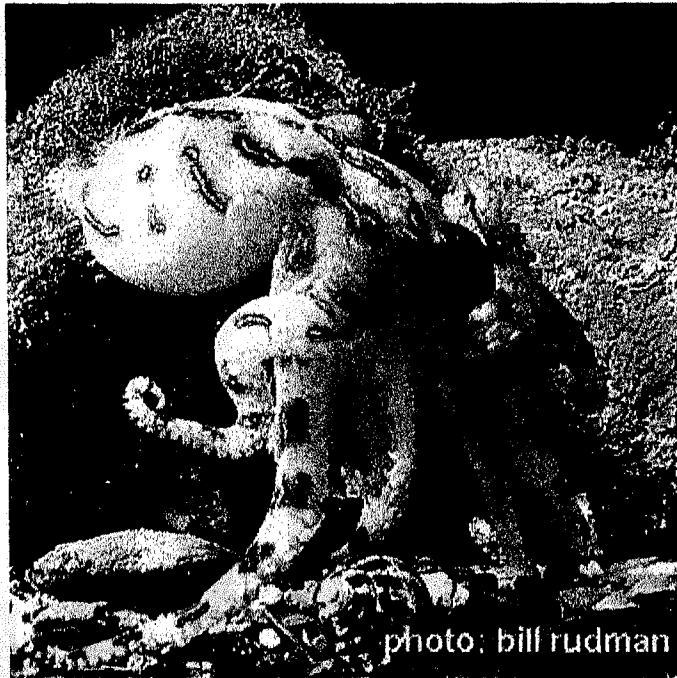
February 2006

April 2006

S	M	T	W	T	F	S	S	M	T	W	T	F	S
5	6	7	8	9	10	11	2	3	4	5	6	7	8
12	13	14	15	16	17	18	9	10	11	12	13	14	15
19	20	21	22	23	24	25	16	17	18	19	20	21	22
26	27	28					23	24	25	26	27	28	29
							30						

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	
2	3	4	5	6	7	8

## *Did You Know...?*



Largest octopus is the Giant Pacific Octopus which can grow up to 30 feet.

The smallest octopus is the Californian which reaches  $\frac{3}{8}$  of an inch to 1 inch.

Its mouth is located under its head between its tentacles.

It has a beak, like a bird beak. This is used to eat things with shells.



# April 2006

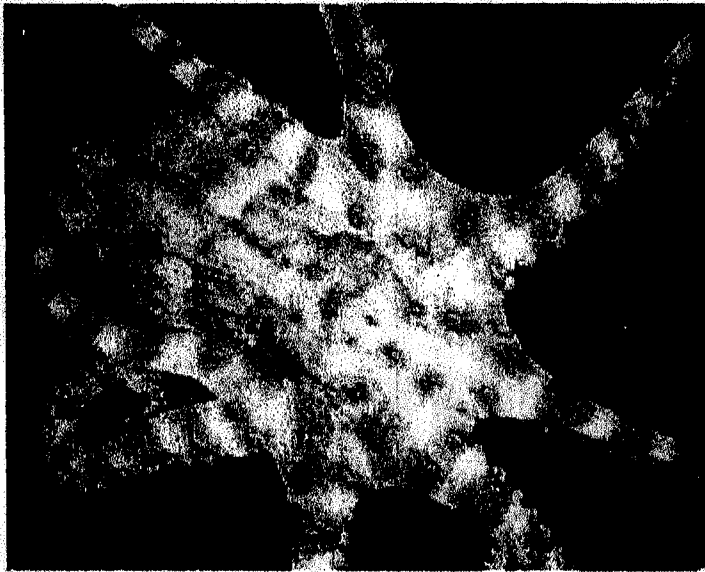
March 2006

May 2006

S	M	T	W	T	F	S	S	M	T	W	T	F	S
5	6	7	8	9	10	11	7	8	9	10	11	12	13
12	13	14	15	16	17	18	14	15	16	17	18	19	20
19	20	21	22	23	24	25	21	22	23	24	25	26	27
26	27	28	29	30	31		28	29	30	31			

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

## *Did You Know...?*



The octopus poisons its prey to paralyze it.

The female octopus lays up to 150,000 eggs in two weeks.

It takes two months for the babies to hatch, and the female watches them the entire time.

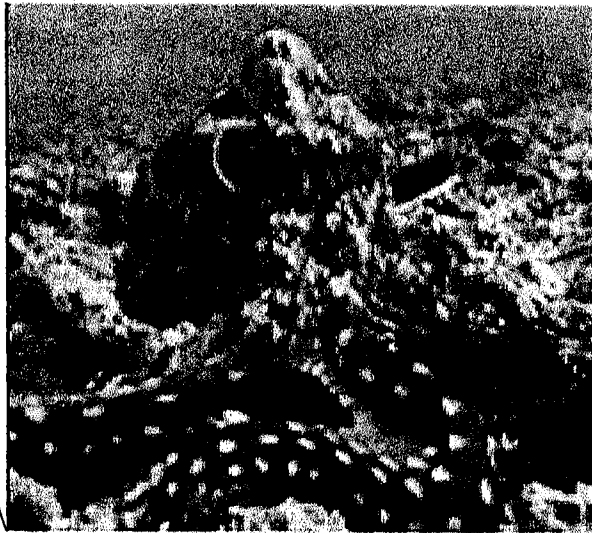
As a result she becomes very weak and usually dies from starvation.

# May 2006

April 2006							Size 1000						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
2	3	4	5	6	7	8	4	5	6	7	8	9	10
9	10	11	12	13	14	15	11	12	13	14	15	16	17
16	17	18	19	20	21	22	18	19	20	21	22	23	24
23	24	25	26	27	28	29	25	26	27	28	29	30	
30													

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						





## *Did You Know...?*

There are more than 150 species of octopus, living in all seas from polar waters to tropical ocean, and from deep water to shallow coasts.

The octopus's mouth is at the center of all its arms.

Octopuses and their squid cousins are a big part of the diet of toothed whales.

The pupil of an octopus' eye is rectangular.

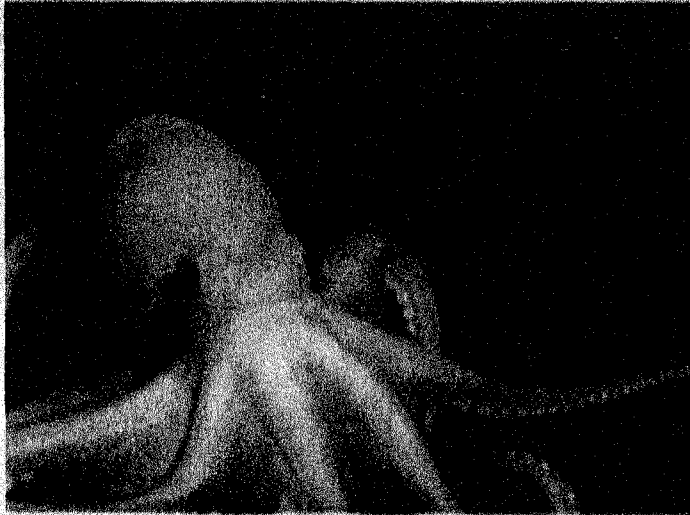
# June 2006

May 2006							July 2006						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
7	8	9	10	11	12	13	2	3	4	5	6	7	8
14	15	16	17	18	19	20	9	10	11	12	13	14	15
21	22	23	24	25	26	27	16	17	18	19	20	21	22
28	29	30	31				23	24	25	26	27	28	29
							30	31					

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	1	2	3	4	5	6



## *Did You Know...?*



The octopus brain has about 300 million neurons.

The octopuses belong to the phylum Mollusca.

Its closest relatives are the various species of squid and cuttlefish.

The squid and the octopus each have 2 gills, 2 kidneys, and 3 hearts.

# July 2006

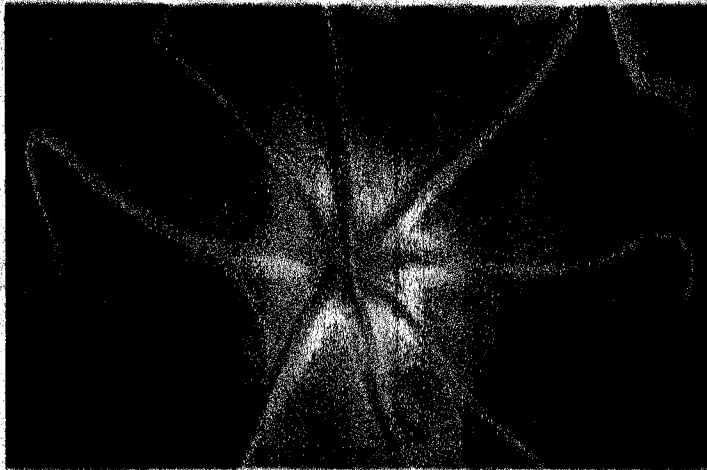
June 2006

August 2006

S	M	T	W	T	F	S	S	M	T	W	T	F	S
4	5	6	7	8	9	10	6	7	8	9	10	11	12
11	12	13	14	15	16	17	13	14	15	16	17	18	19
18	19	20	21	22	23	24	20	21	22	23	24	25	26
25	26	27	28	29	30		27	28	29	30	31		

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

## *Did You Know...?*



A 70 pound octopus can squeeze through a hole no bigger than a silver dollar because it has no backbone.

It has a soft body with a well-developed brain.

If arm is cut off it can regenerate it.

The prefix octo means eight.



# August 2006

July 2006							August 2006						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
2	3	4	5	6	7	8	9	10	11	12	13	14	15
9	10	11	12	13	14	15	16	17	18	19	20	21	22
16	17	18	19	20	21	22	23	24	25	26	27	28	29
23	24	25	26	27	28	29	30	31					
30	31												

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2
3	4	5	6	7	8	9





## *Did You Know...?*

The octopus eats shellfish such as crabs.

It mainly hunts at night.

Octopuses like to be left alone.

The octopus is an invertebrate animal.

# September 2006

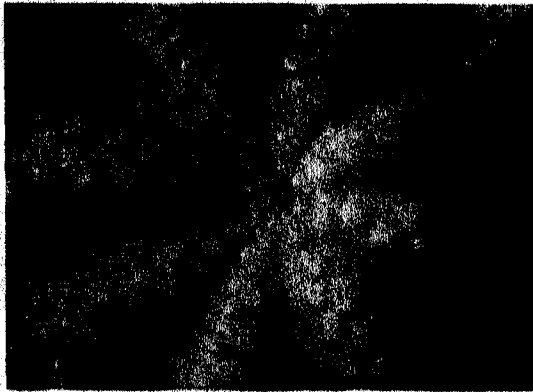
August 2006

October 2006

S	M	T	W	T	F	S	S	M	T	W	T	F	S
		1	2	3	4	5	1	2	3	4	5	6	7
6	7	8	9	10	11	12	8	9	10	11	12	13	14
13	14	15	16	17	18	19	15	16	17	18	19	20	21
20	21	22	23	24	25	26	22	23	24	25	26	27	28
27	28	29	30	31			29	30	31				

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
27	28	29	30	31		
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7

## *Did You Know...?*



Despite its great strength, the octopus tires easily.

The octopus, ~~which~~ is also called devilfish.

The common octopus is edible and in some areas so many have been caught that the species has become very rare.

An octopus doesn't like to live in a messy home. It uses its siphon to squirt all the shells and debris out of its home after it is finished eating.





## *Did You Know...?*

When octopuses are born, they are the size of a flea!

When an octopus does change its color, it takes less than a second.

Octopuses like crawling on the sea floor.

Octopuses have a tube shaped muscle called a funnel. They use their funnel to swim.

# November 2006

October 2006

December 2006

S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7	3	4	5	6	7	8	9
8	9	10	11	12	13	14	10	11	12	13	14	15	16
15	16	17	18	19	20	21	17	18	19	20	21	22	23
22	23	24	25	26	27	28	24	25	26	27	28	29	30
29	30	31					31						

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

(

## *Did You Know...?*



Octopuses have amazing eyesight.

They are some of the most curious animals that ever lived.

If you are talking about more than one octopus, you could say either octopi or octopuses.

Octopuses have a hard beak to bite with, just like a bird.



# December 2006

November 2006

January 2007

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

## Diary of A Scientist

Dear Diary,

Today someone named Mary Courtney-Latimer came to me about a fish her and her crew had found while fishing. While fishing, they had apparently found a strange animal in the water, swimming. I was sure they had found something unusual, but not unheard of, and to tell you the truth I wasn't very interested. People come to me about this stuff all the time, and besides, I had just gotten back papers from my students at my university. But Mary insisted, and I look at the animal. I was shell-shocked as I quickly identified the animal as a coelacanth. I couldn't believe it! In my earlier entries, I had wanted to examine one so very badly, as scientists more brilliant than I declared it extinct for more than 60 million years! I immediately got on the phone with my friend, Dr. Roberts, another fish expert to explain what was going on. He also works at a university, so he told his assistant to take over the class, as something important had come up. We looked at the animal together for a while, then asked Mary where she had found it. She quickly said the Chalumna River. "South Africa" she muttered after that. Dr. Roberts glanced at it again and said, "I have to get back to my class. This coelacanth has large, blue scales, a strange face with a powerful jaw and short legs. It's also 1.5 meters long. You are going to need to use the Linnaeus system to give it a proper, scientific name. Then we need to contact several associations to get this in science books." I listened to him because he has been an expert longer than I have. I called it *Latimeria chalumnae*. Now I have to go call Dr. Roberts to discuss all this. We need to make charts, graphs, etc. on this animal. I will write about this later tonight when I know more.

## A Brochure of Lizard Land

### Welcome to Lizard Land!!!

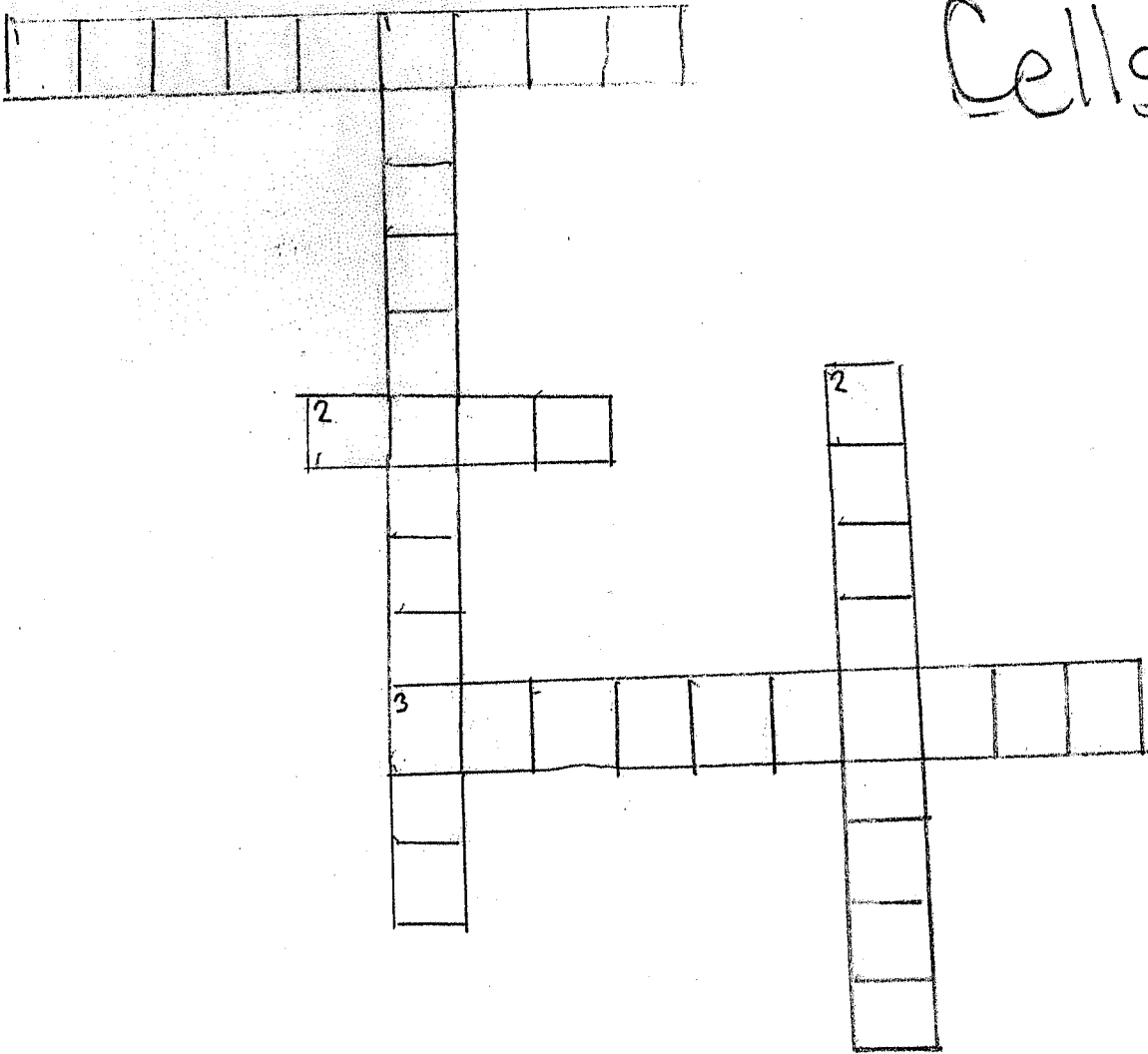


Here at Lizard Land you will learn about all different kinds of lizards. Lizards are reptiles that typically have slender bodies, moveable eyelids, long tails, four legs, and clawed toes. Some of the lizards here at Lizard Land such as the basilisk can run across the surface of small ponds and streams (**top left**). Another interesting lizard, the chameleon can blend in with its surroundings by using camouflage to avoid predators (**middle**). Our most exciting lizard of all is the Komodo dragon (**bottom left**). It is known to be the largest lizard in existence today. They have scaly brownish hides, clawed feet, powerful tails and short strong legs. You too, can see all of this by calling now to order tickets to see Lizard Land!!! 555-123-4567

## Circle of Life

Sun, water, soil,  
An autotroph's best friend.  
Photosynthesis, a way of life.  
Heterotrophs,  
The hunters of the kingdom.  
When on the hunt,  
An autotroph meets the end.  
The Circle of Life goes round & round.  
It contracts,  
It expands,  
No matter what you do,  
You'll always be apart of it.  
Its all planned out,  
Don't worry,  
You're a pawn.  
The Circle of Life has already begun.

Get crossed up in  
Cells!



## Across

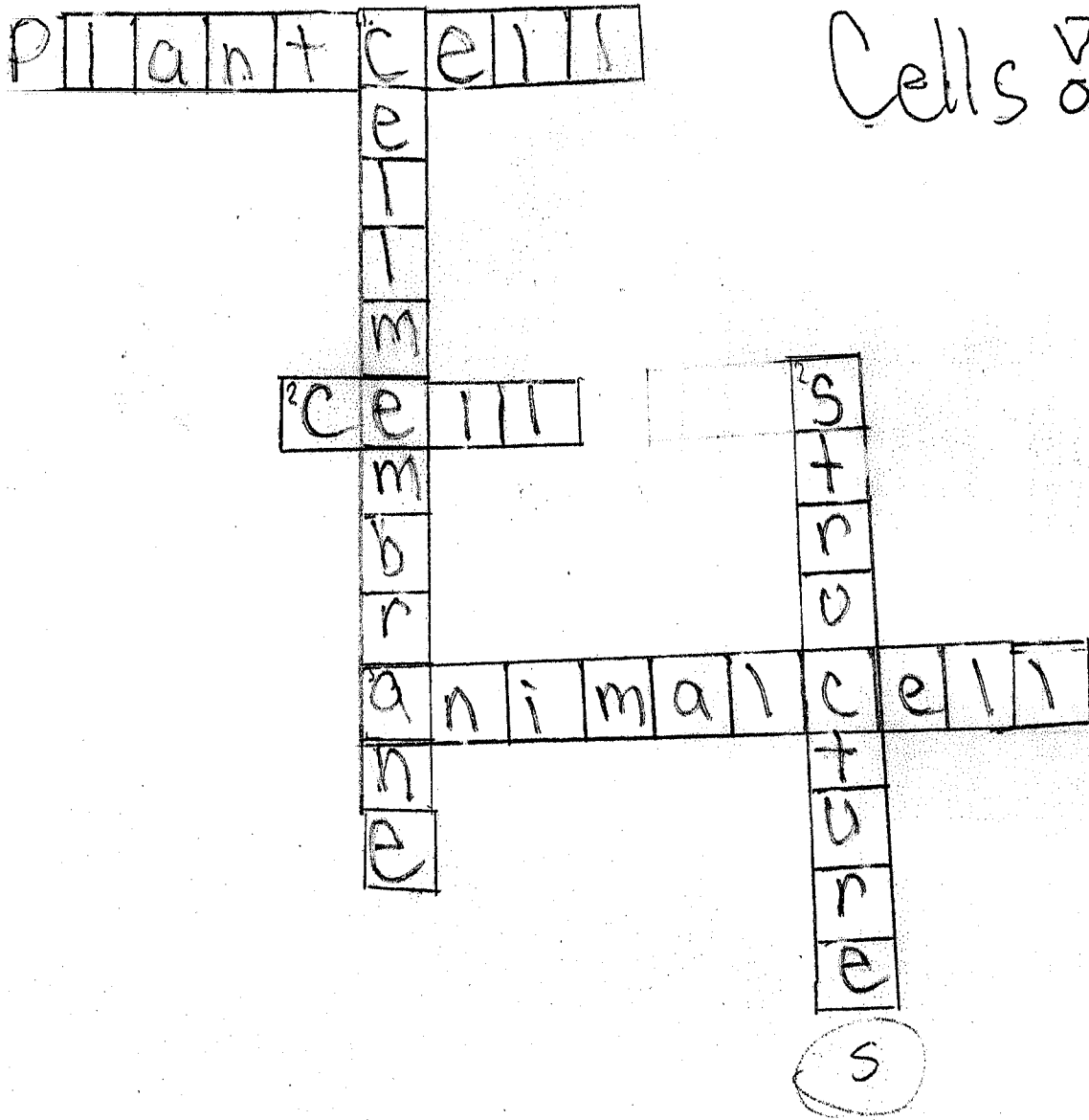
- ① Has a cell wall and a cell membrane
- ② The basic structure of living things.
- ③ Has only a cell membrane

## Down

- ① The outer covering of a cell.
- ② organelles are the ? of a cell.

Get crossed up in

Cells!



## Across

- ① Has a cell wall and a cell membrane.
- ② The basic structure of living things.
- ③ Has only a cell membrane.

## Down

- ① The outer covering of a cell.
- ② organelles are the ? of a cell.

Mrs. Cell Membrane  
37 Cells Ave.  
Plant Cell P.A. 08888



Mr. Cell Wall  
38 Cells Ave.  
Plant Cell P.A. 08888



**Dear Mr. Cell Wall,**

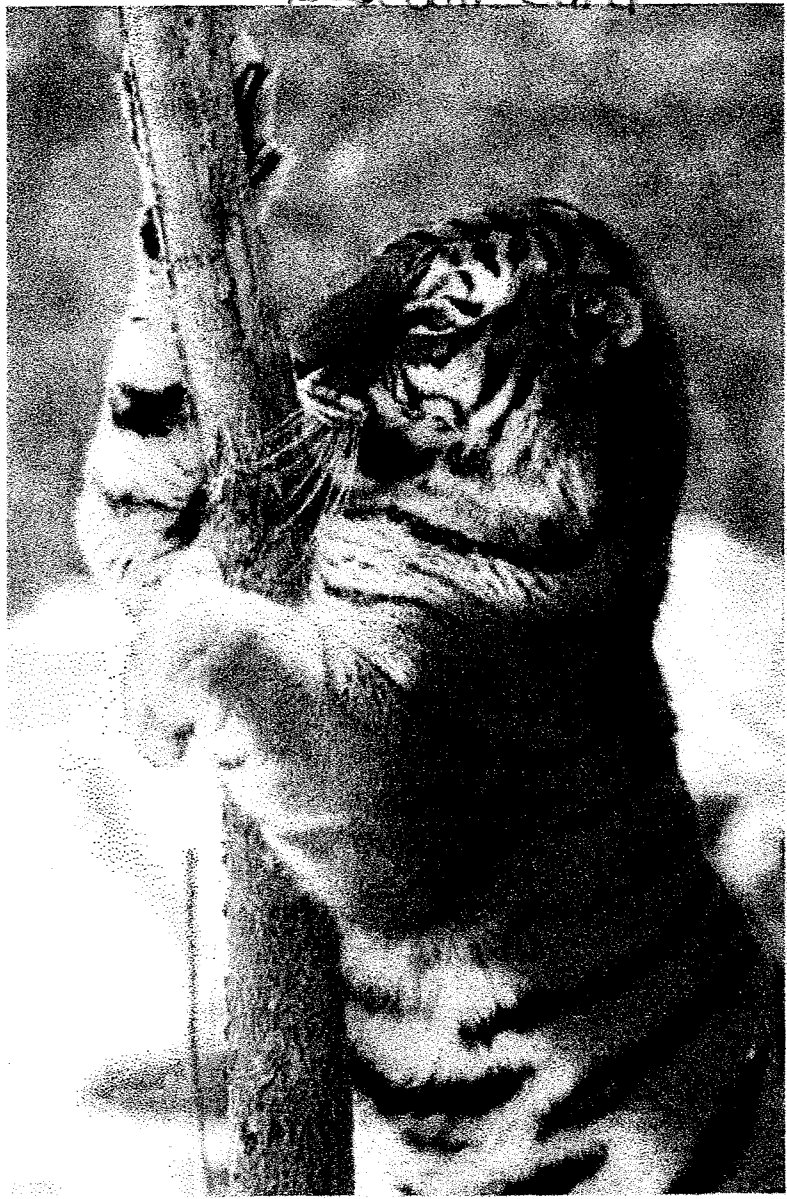
**I have admired you for quite sometime. I love your strong, stiff wall made of cellulose. You are amazing at protecting and supporting the plant so that it can grow tall. Thanks to you, grasses, trees, and flowers, grow and develop. Although you are stiff, you allow water, oxygen, carbon dioxide, and other materials to go in and out of the cell. This is why I admire you. You are my support and protection. I hope that we both can meet someday!**

**Love,**

**Ms. Cell Membrane**



Baseball Card



**Siberian Tiger**

**Gender: Female**

**Measurements: 1.4 to 2.8m (4.6 to 9.2 ft.) long**

**Weight: 180 to 306 kg (400 to 675 lb.)**

**Family: Flesh-eating placental mammals**

**Identification: Thick yellow fur with dark black strips, sharp claws and very muscular**

**Type of eater: carnivore**

**Talents: climbing trees, running fast, catching its prey and jumping high**

## Cooking with Casey

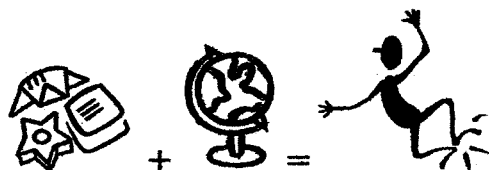
### Planet Cookies

#### You will need:

- 1/2 black hole of gravity
- 2 1/2 solar systems of Stardust\*
- 1/2 planetful of water and clouds
- 10,000 mountains of Lava\*
- 170 asteroids worth of rock

#### Directions:

Preheat area to 10,000,000,000 degrees Fahrenheit and set gravity the weather on your new planet livable, and watch history (uin) the very large space. Add Stardust\* and rock, wait 1 million years, and add your Lava\*. Once the mass has cooled down and the Lava\* has solidified, unleash the clouds! (Tip: before you unleash the clouds, *make sure you fill them with your water.*) Let rain for about 2,000 years. When you are finished raining, there should be 7 continents. If not, wait 64 million years, or until the little mini-dinosaurs die out. By now, You should see little hairy people running around. Keep the climate on your new planet livable, and watch history unfold!



## Carolus Linnaeus

Classification

Animals

Really complex

Old.....now

Learner

Underestimated

Studied it for like.....ever

Liked to make thing easier for us.

Into science, I guess

Nomenclature, yaaaay!

Nomial=naming

Annoying, yes

Every organism has a genus and a species name

Uber important

Stunnin' ain't it?

**Christen Haigh**  
60 Meetinghouse Lane  
Turnersville, NJ 08012  
856-228-1893  
christenhaigh@gmail.com

## **Education**

### **Graduate School of Communication**

**Rowan University, Glassboro, NJ**

M.A., Writing, magna cum laude

2006

Thesis: "Genre Exploration: Alternatives to Expository Writing in Seventh Grade Life Science"

Thesis Advisors: Dr. Diane Penrod, Dr. Deb Martin

### **College of Education**

**Rowan University, Glassboro, NJ**

B.A., Elementary Education, magna cum laude

2002

## **Teaching Experience**

### **Our Lady of Mount Carmel School, Berlin, NJ**

Grade Six Teacher of Language Arts, Religion, Science

Grades Seven and Eight Teacher of Science

current

Teach sixth, seventh, and eighth grade students at a catholic elementary school. Science fair chairperson. Associate religious events coordinator.

## **Other Qualifications**

### **Teacher Consultant**

**Rowan University's National Writing Project**

2005

Qualified to present workshops and demonstrations to educators.

## **Academic Honors**

Rowan University, Glassboro, NJ

Gold Medallion Award for Excellence in Teaching and Writing

Kappa Delta Pi International Honor Society in Education

Golden Key International Honor Society

## **Publications**

“When An Error’s Not An Error” Article co-written about Rebecca Wheeler and her workshop regarding code-switching. **The Writing Teacher’s Toolbox** (Fall 2005, Volume 3, No. 1).

“Common Fears” Poem written about teacher and student fears about writing. **The Writing Teacher’s Toolbox** (Fall 2005, Volume 3, No. 1).

“Ace Bandages”, “Closet”, “Impossible Buzz” Poems under consideration. **The Seattle Review**.

