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Making sense of nonsense

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MAKING SENSE OF NONSENSE

A Project

Presented to the

Faculty of

California State University,

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In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

in

Education:

Bilingual/Cross-Cultural Education

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ABSTRACT

The English Language Learners (ELL's) population in schools continues to rise in the United States. This represents the fastest growing segment of student population. Yet, it seems like the politicians, whom are in charge of the school system, do not take English Language Learners into consideration at all. That is, on a daily basis they have to fight an ever ending battle against the school system and prove that they are capable of performing at the level of their English Only counterparts.

For instance, every year during the Spring, English Language Learners have to undergo a long and painful period in which they are tested in their primary and secondary language. Usually, in their primary language they perform at or above grade level. However, the results of the assessments are not taken into consideration. The English "high stakes" assessments, on the other hand, are not only taken into consideration, but everyone is expected to perform at or above grade level. Unfortunately, one size does not fit all and a test that is written for middle class students should not be used to measure what every single student knows or does not know.

Further, the curriculum and materials that are adopted by the California Department of Education are not only standard based, but also lack depth and complexity. For example, in San Bernardino City Unified School District the Alternative Education programs use Houghton-Mifflin Lectura for Reading and McGraw-Hill for Science. Considering that the English Language Learners (ELL's) population is the fastest growing in schools, teachers should be provided with ways of organizing the complexity of Science Concepts so that "all" students, not just English Language Learners, are able to organize their Scientific knowledge. Thus, this project created Mediated Structures, a concept developed by Dr. Barbara Flores (2004), as supplemental curriculum that can be used in the Reading and Writing processes in the content areas.

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An accomplishment like this could have not been possible without the support of several people. First and foremost, I would like to thank the professors at California State University, San Bernardino for all their guidance and support in completion of this project. Especially, I would like to thank Dr. Barbara Flores, my first reader, for her time, patience, guidance, support, and willingness to share a wealth of knowledge with all her students. I would also like to thank Dr. Enrique Murrilo Jr., my second reader, for his contributions and assistance.

Secondly, the support and encouragement of my family has been absolute. I would like to thank my family for their love, patience, understanding, and assistance over the past ten years. They include my mom and dad, my two sisters, my brother, and my nephews.

Thirdly, I would like to thank my friend Ana Hernández, for helping me get through this long and unforgetable experience. If it wasn't for her time, dedication, and determination, I would of never finished this project.

Finally, I would like to thank all my students. If it wasn't for them, I would have never been inspired to write my project.

DEDICATION

Dedicated, to Violeta Hernández,

my mom,

my friend,

my first teacher,

my inspiration and my hero.

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CHAPTER ONE

BACKGROUND

Introduction

There are many challenges faced in today's use of expository texts both in Reading and Writing. In other words, the curriculum is not only standard based, but also lacks depth and complexity. For instance, in San Bernardino City Unified School District the Alternative Education programs use Houghton-Mifflin Lectura for Reading and McGraw-Hill for Science. These programs do not provide ways of organizing the complexity of Scientific Concepts so students are not able to organize their Scientific knowledge and write expository texts. Therefore, this project created Mediated Structures, a concept developed by Dr. Barbara Flores (2004), as supplemental curriculum that can be used in the Reading and Writing processes in the content areas. This is important because English Language Learners are capable of performing at the level of their English Only counterparts. All we need to do is make it accessible.

English Language Learners

Alternative Bilingual Program

The Alternative Bilingual Education (ABE) program is based on the district's resolution in support of bilingualism for all students and on the research findings of Wayne Thomas and Virginia Collier (1997). Therefore, the curriculum offers students the opportunity to learn Language Arts in their primary language while acquiring English language skills in a simultaneous, sequential, and sustained structure. Unlike Mainstream or Structured English Immersion classrooms the lessons in an Alternative Bilingual Education program reflect curriculum, materials, and approaches designed to promote the English Language Learner's maintenance of the skills of Listening, Speaking, Reading, and Writing in the Spanish language. In order for students to acquire English they receive intense English Language Development (ELD) instruction. Specially Designed Academic Instruction in English (SDAIE), techniques are also used to present subject matter for students. Participation, on the other hand, in this program requires a Parental Exception Waiver for each student enrolled.

Dual Immersion Program

The second Alternative Education option that is offered by the district is Dual Immersion. It is also based on the district's resolution in support of bilingualism for all students and reflects the research findings of the most effective programs for English Language Learners. Consequently, the goals of SBCUSD Dual Immersion programs include bilingualism (high levels of proficiency in English and Spanish), biliteracy (high levels of academic achievement in Spanish and English), and multicultural proficiency (understanding of different cultures and development of high self esteem). Instruction is delivered in and through the two languages with periods in which only one language at a time is used for instruction. This program is outstanding because students gain a new language and maintain their native language.

Standard Based Curriculum

The fifth-grade English-Language Arts content standards and instruction build on and extend the foundational and transitional skills begun in fourth grade. The instructional priority for both the fourth grade and fifth grade bilingual program is a continued focus on ensuring that all students are able to read fluently and accurately in two languages and are therefore

prepared to read and comprehend complex narrative and expository texts in the content areas. In addition, students in the fifth grade are introduced to new, advanced forms of evaluation, such as expository critique and literary criticism in the Reading domain.

Likewise, Science standards are set forth in terms of what students know. Therefore, mastery of an individual standard is achieved when students have actually learned the fact, skill, concept, principle, or theory specified. Mastery does not occur simply because students have received a particular activity. As a matter of fact, the elementary school Science program provides the foundation skills and knowledge students will need in middle school and high school.

Lack of Depth and Complexity

Unfortunately, in education one size does not fit all. Especially, when you work for one of the largest districts in the state that services a diverse population of students. However, the State Board of Education did not take this into consideration when they selected the standards-aligned and state-adopted or locally adopted textbooks and instructional materials. In addition, these textbooks were adopted for a cycle of seven years. This has lead to problems when a teacher has had to change

grades or a teacher has retired because most of the time the materials that teachers are given to work with are incomplete.

Additionally, as a fifth grade bilingual teacher that works with English Language Learners who span five different levels of English Language Development (ELD), I believe that it is important to teach to the potential. Easier said than done in most cases, but under the guidance of Dr. Barbara Flores, I've had the opportunity to create Mediated Structures to supplement the curriculum and materials that come with Houghton-Mifflin Lectura and McGraw-Hill Science. This was done so that my students could actively collaborate in the learning process. Otherwise, they would not learn anything. Instead they would be just memorizing information and cruising by the fifth grade. Thus, by setting high expectations for them, they learn beyond their potential.

Summary

This section outlines some of the challenges faced in today's use of expository texts both in Reading and Writing. For example, all the curriculum is standard based and it lacks depth and complexity. It is relevant because English Language Learners are capable of performing at the

level of their English Only counterparts. However, the programs do not provide ways of organizing the complexity of Scientific Concepts so students are not able to organize their Scientific knowledge and write expository texts. Consequently, this project created Mediated Structures, a concept developed by Dr. Barbara Flores, as supplemental curriculum that can be used in the Reading and Writing processes in content areas.

CHAPTER TWO

REVIEW OF THE LITERATURE

Introduction

This chapter reviews the theories and research that address the education of the growing English Language Learners population. It includes a literature review of the development of academic English, one of the most critical issues. In fact, it is essential that teachers use a number of strategies and techniques that make content comprehensible and provide opportunities for practice using academic English. As a result, I have included five effective teaching strategies and an overview of Visual Literacy. In addition, it is important to be aware that Dual Language programs that provide primary language support are effective, when students are taught to their potential.

English Language Learners Population

In the United States over the past thirty-four years bilingual/ESL education has continued to grow despite policy battles at federal, state, and local levels. The main reason has been the U.S. demographic changes. For instance, according to Thomas and Collier (2002), 70 percent of U.S. school-age children in 1988 were of

European-American, non-Hispanic background. However, U.S. demographic projections predict that by the year 2020 at least 50 percent of school-age children will be of non-Euro-American background (Berliner & Biddle, 1995). In 2030, approximately 40 percent of school-age children will be language minority students. By the year 2050, the total U.S. population will have doubled from its present levels, with approximately one-third of the increase attributed to immigration (Branigin, 1996).

The number of English Language Learners in schools has risen dramatically in the United States. This represents the fastest growing segment of the student population. For example, from the 1992-93 school year through 2002-03, the number of English Language Learners(ELL's) in public schools grew 84 percent while the total enrollment increased 11 percent (National Clearinghouse for English Language Acquisition, 2005). The 2000 U.S. Census reported that one in five school-aged children is a non-native English speaker (Jamieson, Curry, & Martinez, 2001). As of the 2002-03 school year, there were more than five million English Language Learners in U.S. preK-12 schools, approximately 10 percent of the total enrollment (NCELA, 2005).

Nevertheless, in direct opposition of the interest in promoting the teaching and learning of other languages and cultures is the attempt to designate English as the official language of the United States. For instance, voters in California passed an initiative (Proposition 227) in 1998 that was labeled 'English for the Children' by the originator, Ron Unz. Unfortunately, the initiative resulted in the replacement of many bilingual programs with English-Only programs and the modification of other programs. Likewise, the No Child Left Behind Act (NCLB) is the latest attempt to harm English Language Learners (ELL's) that are enrolled both in Dual Language programs and Mainstream classrooms. The reasons are that the law does not address the obstacles that prevent English Language Learners (ELL's) from achieving and it focuses on the short-term results. Therefore, the materials need to be tailored to meet the needs of this growing population.

Developing Academic English

In the education of English Language Learners one of the most critical issues is the development of academic English. There is a significant difference between learning English for conversational purposes and for academic purposes (Cummins, 1981a, 2000). Conversational

ability is acquired relatively quickly (one to three years) while academic proficiency (the ability to read with comprehension, analyze material, and draw conclusions in English), which is needed for success in school, takes five to nine years to develop completely (Cummins, 2003; Thomas & Collier, 2002). However, the development of this important aspect of language can be facilitated through teaching strategies known to be effective for English Language Learners.

Effective Teaching Strategies

Best practices for English Language Learners involve a number of strategies and techniques that make content comprehensible and provide opportunities for practice using academic English (Echevarria, Vogt, & Short, 2004). The strategies include the following:

- Using supplementary materials/curriculum to make the lesson clear and meaningful. The materials include Mediated Structures, technology, literature, models, and visuals. Supplementary materials bring content information to life through their application and extension of the written word. They also provide opportunities around which academic English may be practiced.

- Explicitly linking content concepts to students' background experiences. Students come to school with a wealth of experiences. These funds of knowledge (Moll, 1992) provide teachers with ways of making important links between the topic and students' own experiences.
- Providing hands-on materials or manipulatives through which students practice using new content knowledge and academic language. Maps and globes are examples of hands-on materials that assist students in understanding the lesson's concepts and provide a catalyst for practice using academic English.
- Using a variety of techniques to make the content concepts clear. These techniques include modeling, speaking at a rate commensurate with students' English proficiency, visuals, and assists students' understanding of the lesson's language and concepts.
- Providing opportunitites for frequent interactions and discussions between the students and teacher and among the students. In addition to the opportunity for practicing

academic English, interaction should encourage students to use elaborate responses about the lesson's concepts, moving beyond yes/no and single-word responses.

What is Visual Literacy?

According to Steve Moline (2006), Visual Literacy is the Reading and Writing of visual texts. That is, if you can read a map, draw a diagram or interpret symbols then you are Visually Literate. For example, a diagram uses images, while a flow chart arranges information in meaningful sequences. Visual texts range from diagrams to documentaries. A visual text makes its meaning with images, or with meaningful patterns and sequences. Visual texts, however, don't have to be without words. In fact, words and images are often combined to make the meaning. For instance, words are needed to name the places on a map, while the images are needed to show where those places are and the distances between them.

Why use Visual Literacy?

- many information texts use visual elements
- visual texts are accessible to all readers
- visual texts are complex, multilayered texts

- visual texts communicate certain information more clearly than verbal texts
- students need practice in choosing the appropriate text to use
- visual texts are widely used in the electronic media
- visual texts can help with comprehension
- visual texts can help with planning an essay
- visual literacy is a life skill (Moline, 2006)

Effective Dual Language Programs

Virginia P. Collier and Wayne P. Thomas (1997, 2002, 2004), in my opinion, have conducted the most comprehensive and detailed research on student outcomes resulting from participation in Dual Language programs. The findings of their research include five large urban and suburban school districts where large numbers of language minority students attend. That is, the records of 700, 000 students were collected from 1982-1996 focusing on the long-term student achievement.

As a result, when looking at Thomas and Collier's (2004) research findings it is important to make the distinction between enrichment and remedial programs. According to Thomas and Collier, enrichment Dual Language

schooling closes the achievement gap in L2 and in first language (L1) students initially below grade level. In fact, this is the only program for English Language Learners that fully closes the gap as opposed to remedial models. Instead the gap widens in programs such as intensive English classes, English as a Second Language (ESL) pullout, ESL content/sheltered instruction, structured English immersion, and transitional bilingual education.

Furthermore, there are two types of Dual Language programs, which are one-way and two-way. One-way programs are defined as demographic contexts where only one language group is being schooled through their two languages (Thomas & Collier, 2004). For instance, there are Hispanic-American, Franco-American, and American-Indian programs. On the other hand, two-way programs have the demographics to invite native-English-speaking students to join their bilingual and ELL peers in an integrated bilingual classroom (Thomas & Collier, 2004).

One of the largest school district research sites is Houston Independent School District, with over 210, 000 students. Out of the 210, 000, 54 percent are Hispanic, 33 percent African-American, 10 percent Euro-American, and 75

percent of the students are on free or reduced lunch. Thus, the Houston ISD Multilingual Programs Department, in 1996 chose to implement the 90:10 Dual Language program. Due to the success of two-way programs in two elementary schools, the Superintendent at that time approved the expansion of one-way and two-way language programs throughout the school district. Additional examples are two rural school districts in northern Maine, located in the border with Canada. The two districts are located in close proximity to French-speaking and English-speaking Canadian provinces. Yet, only about fifty percent of the students are enrolled in a 50:50 Dual Language program, with equal instructional time for the two languages. Needless to say, after four years students who achieved at the 40th NCE (31st percentile) reached the 62nd NCE (72nd percentile) in English reading.

Finally, the participants of Dual Language programs include the students, teachers, administrators, and parents. In other words, student outcomes are important, but if it weren't for the support that they receive from their teachers, administrators, and parents it would not be possible. The reason is that most adults connected to the program perceive school positively because they view it as a reform. For example, teachers express excitement

and that they love teaching now and would never leave their jobs.

Lev Vygotsky's Social Development Theory

Lev Vygotsky (1978) proposed that social interaction profoundly influences cognitive development. Central to Vygotsky's theory is the belief that biological and cultural development do not occur in isolation (Driscoll, 1994). That is, Vygotsky believed that this life long process of development was dependent on social interaction and that social learning actually leads to cognitive development. Vygotsky's describes the Zone of Proximal Development as "the distance between the actual development as determined by independent problem solving and the level of potential development level as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978). In other words, when students are taught to their potential they can perform tasks that could not be achieved alone.

Application of the Social Development Theory to Instructional Design

Schools have not traditionally promoted environments in which students play an active role in their own

education. However, Vygotsky's theory requires the teacher and students to play untraditional roles as they collaborate with each other, according to Riddle (1999). For instance, instead of a teacher dictating her meaning to students for future recitation, a teacher should collaborate with her students in order to create meaning in ways that students can make their own (Hausfather, 1996).

Thus, instruction should be designed to reach a developmental level that is above the student's developmental level.

Role of Mediation

Vygotsky's (1978) writings suggest two major types of mediation as the main mechanism of children's learning and development. For instance, metacognitive mediation refers to the acquisition of semiotic tools of self-regulation. That is, on a daily basis at schools students are guided by the teacher as they discover new things. Cognitive mediation, on the other hand, refers to the acquisition of Scientific Concepts representing the essence of some class of phenomena. As a current teacher/student, I can relate to cognitive mediation because at school I have learned numerous theories. Until, I had the opportunity to have my

own classroom, I did not realize that theories are important, but out there in the "real" world they are not always going to be helpful. Consequently, I believe that teaching and learning can always go hand in hand because the students learn from me and I learn from them on a daily basis. In a sense, I, the teacher, am a sociocultural mediator (Diaz & Flores, 2001). I am the link between the students' everyday cognition to the Scientific knowledge that I want them to learn.

Role of Mediated Structures

Mediated Structures, a concept developed by Dr. Barbara Flores, as already mentioned, are supplemental curriculum that can be used in the Reading and Writing processes in the content areas. For example, this project created a number of Mediated Structures that covers the material from three themes in Houghton-Mifflin Lectura and several chapters from McGraw-Hill Science. The main purpose is to link the Reading Language Arts with the Scientific Concepts that the students are expected to learn since they are tested in fifth grade. Also, due to the lack of resources that Houghton-Mifflin Lectura provides teachers with, the Mediated Structures can be used as a supplement in Language Arts and Science.

As a matter of fact, the Mediated Structures play four important roles. First, they differ from graphic organizers because the students are not just filling in information and forgetting about what they learned. Instead students are using them to organize the Scientific Concepts and learning from them. Then, once the information is written and they have illustrated the concept, students are expected to write expository texts. Second, the Mediated Structures supplement the depth and complexity that the textbooks and materials that have been adopted lack. For instance, in a Mediated Structure students are given the opportunity to organize their thoughts in writing and drawing. Third, in several parts of the Mediated Structures students are given the opportunity to use Visual Literacy. In fifth grade students are not supposed to and/or allowed to draw because it is not part of the standards. Unfortunately, a large percentage of students are visual learners because they are growing up with some of the most advance technology. On a daily basis, teachers have to compete with this and if they do not give students an opportunity to see things visually half of them look at you with a blank stare. Finally, expository writing is not easy to do unless you really know what you are talking about. For

example, in a room full of English Language Learners that have only had Science intsruction in fourth and fifth grade, what are the chances that they are going to be able to write about the different instruments that are used to measure different weather effects. Unless they have heard of it, seen it on T.V. or read about it the majority of the students are not going to have much to say. Therefore, Mediated Structures can be used to organize the students knowledge for expository writing.

Summary

This section gives a better understanding of theories and research that address the education of the growing English Language Learners population. For instance, the literature review gave historical background of the growth of Dual Language programs and it directly addressed the issue of the effectiveness of Dual Language programs. In other words, Dual Language programs that provide primary language support are closing the achievement gap in second language (L2). Thus, the role of mediation and Mediated Structures is paramount not only in linking the students everyday concepts to Scientific Concepts in the content area of Science, but also it greatly helps them visually organize the complexity of the new knowledge so that they

can write using expository texts. The next chapter describes the curricular components related to enhancing the student's acquisition of Scientific knowledge through mediation and Mediated Structures.

CHAPTER THREE

DESIGN OF CURRICULAR COMPONENTS

Introduction

This section includes the descriptions of the curricular components underlying the acquisition of Scientific Concepts across several chapters of McGraw-Hill Science that link with the first three themes of Houghton-Mifflin Lectura. Each table includes the standards, Scientific Concepts, and Mediated Structures that go with each standard, the Houghton Mifflin Lectura themes, the Houghton Mifflin Lectura selection and content links, and the McGraw-Hill correlation. The mediated structures were created for the following reasons. First, Mediated Structures enhance the complexity of the learning. Instead of just reading their Science textbooks, students are given the opportunity to analyze Scientific Concepts. Secondly, Mediated Structures organize the Scientific knowledge in order to prepare the students for their expository writing. The Houghton-Mifflin Lectura unfortunately does not provide enough resources in order to teach students the appropriate way of writing expository texts. Thirdly, Mediated Structures provide more ways to access the content knowledge. Science is not

an easy subject matter and when you have to balance it out with learning a second language English Language Learners are not learning anything.

Mediated Structures

Descriptions of Mediated Structures

The title of Houghton-Mifflin's theme one is "Nature's Fury" in fifth grade. There are three selections with the following titles: "Earthquake Terror," "Eye of the Storm: Chasing Storms with Warren Faidley," and "Volcanoes." With that in mind, the theme concept is "Nature is powerful, and people must cope with its challenges." All of the characters, in other words, in the three selections have to cope with "Nature's Fury." In fact, out of the six themes in fifth grade this is the one that lends itself the most to linking Reading Language Arts and Science. For example, in my classroom it tends to be the favorite because there are so many Science Concepts that you can learn about when reading the selections (see Table 1).

Furthermore, for the "Eye of the Storm: Chasing Storms with Warren Faidley" the McGraw-Hill Science correlation is Chapter 3 (Weather). The Science standards that are covered in this story are as follows:

4a) Students know uneven heating of the earth causes air movements (convection currents); 4b) Students know the influence that the ocean has on the weather and the role that the water cycle plays in weather patterns; 4c) Students know the causes and effects of different types of severe weather; 4d) Students know how to use weather maps and data to predict local weather and know that weather forecasts depend on many variables; and 4e) Students know that the earth's atmosphere exerts a pressure that decreases with distance above the Earth's surface and that at any point it exerts this pressure equally in all directions.

As a result, the Scientific Concepts that are covered in Chapter 3 (Weather) of McGraw-Hill are convection currents, the water cycle, causes and effects of different types of severe weather, weather forecasts depend on many variables, and earth's atmosphere. The Mediated Structures, in addition, that were created to organize the Scientific Concepts are titled: "Wind (What makes the air move?)," "The Water Cycle (Evaporation-Condensation-Precipitation)," "Thunder and Lightning (Three types of lightning)," "Measuring Weather (Instruments to Measure the different weather effects),"

"Weather (What is weather?)", and "The Weather Engine (The Atmosphere)."

In the Mediated Structure titled "Wind (What make the air move?," (see Appendix A) students have to give an explanation at the top. Then, they have to describe in detail large and small-scale winds. A drawing is also required for each type of wind. This is done so that students can visualize the winds.

"The Water Cycle" (see Appendix B) Mediated Structure includes a text box in which the students can write about evaporation, condensation, and precipitation. Again, at the bottom they are given an opportunity to draw the water cycle. Although it is unusual for fifth graders to draw during Science, it is a skill that they can use to further understand the concept. When they do they are using oral, written, and visual literacy.

Likewise, in the Mediated Structure "Thunder and Lightning (Three Types of lightning)", (see Appendix C) students have to write a short explanation of cloud-to-ground, cloud-to-cloud, and cloud-to-air, which are the three types of lightning. Then, in order for them to fully understand the Scientific Concept it is required that they draw the three types of lightning.

For "Measuring Weather (Instruments to measure the different weather effects)" (see Appendix D) the students have to do the following three things. First, like in most of the Mediated Structures they have to give a short explanation of their own weather station, anemometer, storm glass, and stevenson screen. Second, they have to draw each instrument. Third, if possible the teacher can bring in the instruments and the students can write down the readings in the last part of the Mediated Structure.

Last but not the least, the Mediated Structure "Weather (What is weather)"(see Appendix E), which happens to be my favorite one includes three parts. At the top they have to define the word weather so that they can understand the weather engine. The weather engine goes into the the atmosphere which has four layers. The four layers are troposphere, stratosphere, thermosphere, and mesosphere. Before, drawing the atmosphere they have to give a short explanation of the four layers. This is done so that when they draw it they can also explain what the function of each layer is.

Moreover, in theme one "Nature's Fury" there is also a selection titled "Hurricanes: Earths Mightiest Storms" that can be linked to McGraw-Hill Science Unit Two. Four of the standards are the same and other Mediated

Structures were not created. The Mediated Structures that can be used again are "Wind (What makes the air move?)" (see Appendix A), "The Water Cycle" (see Appendix B), "Measuring Weather (Instruments to measure the different weather effects)" (see Appendix D), and "Weather (What is weather?)" (see Appendix E). On the other hand, the three Mediated Structures that were created and added to the second matrix are titled "Severe Weather (What are severe storms?)" (see Appendix F), "Tornadoes (How and Where Do Tornadoes Happen?)" (see Appendix G), and "Hurricanes (How Do Hurricanes Form)", (see Appendix H) (see Table 2).

The standard that goes with the additional Mediated Structures is 4c) Students know the causes and effects of different types of severe weather. The Scientific Concept is causes and effects of different types of severe weather.

On "Severe Weather (What Are Severe Storms?)" (see Appendix F), students are expected to give a description of what severe storms are. A lot of times students are not aware that there are different types of severe storms. If they have not experienced a tornado or a hurricane, which most of our students have not, they are not going to understand the Scientific Concept unless it is explicitly thought to them. At the bottom then they have to describe

and draw the three stages of a thundrestorm. Some of them might have experienced this, but they have no idea that it is a Scientific Concept.

Other types of severe weather are tornadoes and hurricanes. During the second selection of the theme, students are exposed to it and they get to learn about one of the most famous storm chasers. For instance, in the Mediated Structure titled "Tornadoes (How and Where Do Tornadoes Happen)" (see Appendix G) students have to again give an explanation of tornadoes first. Building a foundation is key because if they do not understand the Scientific Concept, the chances that they are going to learn something from it are slim to none. This is relevant information because they can make connections to where they live. One might ask after completing the Mediated Structure and reading the explanation that if it is possible to have a tornado in California. Students also have to see visually the states in which tornadoes occur. I included a map so that they could locate the states and hopefully remember what I am talking about. The last part just has to do with "Tornado Alley" and sections that need to be reviewed.

"Hurricanes (How Do Hurricanes Form)" (see Appendix H), is the last Mediated Structure of the second matrix.

In order for students to fully understand the concept they have to establish a foundation. The foundation of this Mediated Structure would be the description of a hurricane. Although, we don't see this in California in other states the warm water turns into hurricanes or tropical storms. When it is classified as a hurricanne there are five categories. One is the least dangerous and five is the most dangerous. Additionally, if you want the students to understand, a video from United Streaming can be downloaded and discussed in class.

The title of Houghton-Mifflin's theme two is "Give It All You've Got" in fifth grade. There are four selections with the following titles: "Michelle Kwan: Heart of a Champion," "La Bamba," "The Fear Place," and "Mae Jemison: Space Scientist." With that in mind, the theme concept is "Giving your best requires both determination and risk." All of the characters, in other words, in the four selections have to give their best of themselves in order to accomplish their goals. For instance, in "Mae Jemison: Space Scientist," she had to overcome the disbelief of her kindergarten teacher that she was going to become an astronaut. Instead she always remembered what her grandfather used to tell her. As a matter of fact, out of the four selections in this theme, this is the one that

the students enjoy reading the most. Not only because it talks about Mae Jemison, but also because there is so much Astronomy that one can learn about from reading the selection. In elementary school this is unusual because most of the time Astronomy classes are taken at the college/university level (see Table 3).

The McGraw-Hill Science correlation is Chapter 7 (Earth, Your Home) for "Mae Jemison:Space Scientist." The Science standards that are covered in this story are as follows: 5a) Students know the Sun, an average star, is the central and largest body in the solar system and is composed primarily of hydrogen and helium; 5b) Students know the solar system includes the planet Earth, the Moon, the sun, eight other planets and their satellites, and smaller objects, such as asteroids and comets; and 5c) Students know the path around the Sun is due to the gravitational atrraction between the Sun and the planets.

Therefore, the Scientific Concepts that are covered in Chapter 7 (Earth, Your Home) of McGraw-Hill Science are the sun, solar system, and gravitational attraction. The Mediated Structures, additionally, that were created to organize the Scientific Concepts are titled: The Sun, Earth and Its Neighbors (How are earth and the sun held

together?), The Nine Planets, and Gravity (What keeps the planets in orbit).

In the Mediated Structure titled "The Sun" (see Appendix I) students have to write a brief description at the top. At the bottom then they have to draw the sun. In this Mediated Structure, however, students are given an opportunity to draw a bigger picture so that they can relate it to the relative size of the sun. Otherwise, some of the students do not make the connection between the size of the sun compared to the planets. Also, in order to analyze what the sun is composed of, an element chart can be introduced and/or used. Making connections is important because it becomes relevant to them instead of just learning it because they have to.

Similarly, the Mediated Structure "Earth and Its Neighbors (How are earth and the sun held together?)," (see Appendix J) at the top students have to write a definition of the solar system first. This is done so that they can build a foundation. Then, they are given an opportunity to also draw a large picture of the solar system. Once they have understood the Scientific Concept as a whole, it can be broken down into smaller chunks. So, a second Mediated Structure was created that is titled " The Nine Planets" (see Appendix K). In this Mediated

Structure the students have to first give a description of the nine planets. Secondly, they are given the opportunity to write about each planet and then draw it. After doing these two Mediated Structures the students should be able to write expository texts with a lot of details.

For theme two the last Mediated Structure is titled "Gravity (What keeps the planets in orbit?)" (see Appendix L). In this Mediated Structure the students have to define gravity. Gravity depends on mass and matter, which is why it it explicitly pointed out to students. Still, they are expected to define mass and matter so that they completely understand the Scientific Concept. The Scientific Concept is analyzed further by making them draw a picture of something that illustrates gravity. After reading about "Mae Jemison: Space Scientist," they should be able to make the destinction between having gravity on earth and not having it out in space.

Finally, the title of Houghton-Mifflin's theme three is "Voices of the Revolution." There are three selections with the following titles: "And Then What Happened," "Paul Revere?," "Katie's Trunk," and "James Forten." With that in mind, the theme concept is "The spirit of the American Revolution lives on." All of the characters, in other words, in the three selections lived during the American

Revolution. In fact, this theme is my second favorite because it lends itself to making Science and Social Studies links. If I continue to teach fifth grade, I would also like to create Mediated Structures that go along with the Social Studies curriculum. That way students can get more out of it, and I can continue to learn and grow as an educator (see Table 4).

Additionally, for "And Then What Happened, Paul Revere?" The McGraw-Hill Science correlation are parts of Chapter 5 and 6 (Properties of Matter & Putting It All Together). The Science standards that are covered in this story are as follows: 1a) Students know that during chemical reactions the atoms in the reactants rearrange to form products with different properties; 1b) Students know that all matter is made of atoms, which may combine to form molecules; 1c) Students know that metals have properties in common, such as high electrical and thermal conductivity. Some metals, such as aluminum, iron, nickle, copper, and gold, are pure elements; others such as steel and brass, are composed of a combination of elemental metals; 1d) Students know that each element is made of one kind of atom and that the elements are organized in the periodic table by their chemical properties.

Thus, the Scientific Concepts that are covered in Chapters 5 & 6 (Properties of Matter & Putting It All Together) of McGraw-Hill Science are chemical reactions, atoms, metals, and elements. The last group of Mediated Structures that were created to organize the Scientific Concepts are titled: "What Properties Do Elements Have? (Chemical Reactions)," "What Are Elements Made Of? (Atoms)," "Can Atoms Join? (Molecules)," "What Matter Is? (Which Is More?)," "What Matter is Made Of? (How Do We Know What's "Inside" Matter?)," "What Properties Do Elements Have? (Melting and Boiling Temperature & Metal Versus Nonmetal)," and "How Can Elements Be Grouped? (Chemical Properties)."

In the first Mediated Structure titled "What Are Elements Made of? (Atoms),"(see Appendix M) students have to define what an atom is. An atom is then illustrated and labeled so that they can see the particles. In this section students have to define protons, neutrons, electrons, and the nucleus. Then, in a text box they have to explain the relationship between protons, neutrons, and electrons.

The second Mediated Structure is titled "What Properties Do Elements Have?" (see Appendix N). Although the first two Mediated Structures are separate, they can

be used together. Most students in fifth grade lack Scienctifc Concept knowledge because they are not exposed to the Science content until fourth grade, which is unfair to them when they are tested by the state in fifth grade. As a fourth and fifth grade teacher, I have to make sure that I cover the key Scientific Concepts so that they can understand what they are reading about and hopefully build a foundation and background knowledge. The elements are a big part of the fifth grade Science test, which is why an additional mediated structure was created. At the top students have to write in how many elements they know. It, then, goes into the properties of elements that are chemical reactivity, melting and boiling temperatures, and metal versus nonmetal. Besides writing a short explanation of each one, students are expected to draw examples of the three properties. This Mediated Structure is different from the others because each property is represented by a symbol. Symbols are another tool that can be used to mediate the learning process. Just think about all the symbols that are used to communicate a message without saying anything.

The third Mediated Structure is titled "Can Atoms Join? (molecules)" (see Appendix O). This one like most of the Mediated Structures for theme three builds on what

they have already learned or are learning about. As a result, at the top they have to define what molecules are in order for them to fully understand the Scientific Concept. The second and third part of this Mediated Structure follows the same pattern, which is give an example and then draw it. When the students get used to the Mediated Structures they look forward to doing them because they are not just doing worksheets. Worksheets are not a good idea to use when you want students to learn something. Mediated Structures, in contrast, help the students to visually see the complexity and the interconnectedness of the Scientific concepts.

The fourth Mediated Structure is titled "What Matter Is (Which Is More?)" (see Appendix P). This one is really brief and only requires for them to describe matter. Matter has two properties, which are mass and volume. After reading about matter from their Science textbook and completing the Mediated Structure, students can look around the room for things that have matter. This leads them to use oral, written, and visual literacy again. The more times they do this the more they anjoy doing it because the concept does not go over their heads.

The fifth Mediated Structure is titled "What Matter Is Made Of (How Do We Know What's "Inside" Matter?)" (see

Appendix Q). Students at the top have to once again describe what elements are. When they have explained elements in general, three examples can be chosen from the periodic table to analyze. This can be done as a class or individually. So for this part they have to identify, explain and draw a picture of three elements.

The sixth and final Mediated Structure in theme three is titled "How Can the Elements Be Grouped?" (see Appendix R). Unlike most of the Mediated Structures this one makes the students identify the name of the Russian scientist that created the periodic table. Unless they are exposed to it, most of them are not likely to know who created it and why it is important. Other than being part of their fifth grade Science test the periodic table is not relevant to them because they can't make a personal connection with it. If and when they make that connection, students tend to remember things for longer periods of time. In high school the periodic table is going to come back and haunt them, so why not build their Scientific background knowledge in elementary school.

Summary

Unless you have taken a class with Dr. Barbara Flores, it is not easy and clear to see the advantages of

using Mediated Structures. However, it is a concept that continues to get stronger and bigger because teachers accross the state of California are realizing the power and role that mediation and Mediated Structures play in the learning process. Mediated Structures are not just graphic organizers that students fill in and shove in their desks and forget about. They are a way of enhancing the complexity of the learning, organizing the Scientific knowledge, and providing more ways for students to access the content knowledge. Consequently, this section included the descriptions of the curricular components underlying the acquisition of Scientific Concepts and the corresponding Mediated Structures used to visually organize the complex Scientific knowledge so that all students can learn at their potential.

Table 1. Theme 1: Nature's Fury (Part 1)

Standards	Scientific Concepts	Mediated Structures
4a) Students know uneven heating of the earth causes air movements (convection currents).	Convection currents	Wind (What makes the air move?) (see Appendix A)
4b) Students know the influence that the ocean has on the weather and the role that the water cycle plays in weather patterns.	The Water Cycle	The Water Cycle (Evaporation-Condensation-Precipitation) (see Appendix B)
4c) Students know the causes and effects of different types of severe weather.	Causes and effects of different types of severe weather.	Thunder and Lightning (Three types of lightning) (see Appendix C)
4d) Students know how to use weather maps and data to predict local weather and know that weather forecasts depend on many variables.	Weather forecasts depend on many variables.	Measuring Weather (Instruments to measure the different weather effects) (see Appendix D)
4e) Students know that the earth's atmosphere exerts a pressure that decreases with distance above Earth's surface and that at any point it exerts this pressure equally in all directions.	Earth's atmosphere	Weather (What is weather?) The Weather Engine (The Atmosphere) (see Appendix E)
Houghton Mifflin Theme: Theme 1: Nature's Fury	Houghton Mifflin Reading Selection and Content Links: The Eye of the Storm TE p.56 Science Content Link El Niño TE p.48-51 (How to read a science Article)	McGraw-Hill Science Correlation: Unit 2 pgs.97-102 California Topics Section of TE pgs. CA 6-CA9

Table 2. Theme 1: Nature's Fury (Part 2)

Standards	Scientific Concepts	Mediated Structures
4a) Students know uneven heating of the earth causes air movements (convection currents).	Convection currents	Wind (What makes the air move?) (see Appendix A)
4b) Students know the influence that the ocean has on the weather and the role that the water cycle patterns.	The Water Cycle	The Water Cycle (see Appendix B)
4c) Students know the causes and effects of different types of severe weather.	Causes and effects of different types of severe weather.	Severe Weather (What are severe storms?) (see Appendix F)
4d) Students know how to use weather maps and data to predict local weather and know that weather forecasts depend on many variables.	Weather forecasts depend on many variables.	Tornadoes (How and where do Tornadoes happen?) (see Appendix G) Hurricanes (How do Hurricanes form?) (see Appendix H) Measuring Weather (Instruments to measure the different weather effects) (see Appendix D)
4e) Students know that the earth's atmosphere exerts a pressure that decreases with distance above Earth's surface and that at any point it exerts this pressure equally in all directions.	Earth's atmosphere	Weather (What is weather?) (see Appendix E)
Houghton Mifflin Theme: Theme 1: Nature's Fury	Houghton Mifflin Reading Selection and Content Links: Hurricanes: Earths Mightiest Storms Cross Curricular Activity TE p. R28 Make a barometer	McGraw-Hill Science Correlation: Unit 2 pgs.97-192

Table 3. Theme 2: Give It All You've Got

Standards	Scientific Concepts	Mediated Structures
5a) Students know the Sun, an average star, is the central and largest body in the solar system and is composed primarily of hydrogen and helium.	Sun	The Sun (see Appendix I)
5b) Students know the solar system includes the planet Earth, the Moon, the sun, eight other planets and their satellites, and smaller objects, such as asteroids and comets.	Solar System	Earth and Its Neighbors (How are earth and the sun held together?) (see Appendix J) The Nine Planets (see Appendix K)
5c) Students know the path around the Sun is due to the gravitational attraction between the Sun and the planets.	Gravitational attraction	Gravity (What keeps the planets in orbit?) (see Appendix L)
Houghton Mifflin Theme: Theme 2: Give It All You've Got!	Houghton Mifflin Reading Selection and Content Links: Mae Jemison: Space Scientist TE p. 210 TE p. 225 (Create a fact sheet) Science Content Link TE p. 226-229 (How to use the text Organization)	McGraw-Hill Science Correlation: Unit 4, Chapter 7 Topic 1 pgs. 290-303

Table 4. Theme 3: Voices of the Revolution

Standards	Scientific Concepts	Mediated Structures
1a) Students know that during chemical reactions the atoms in the reactants rearrange to form products with different properties.	Chemical reactions	What Properties Do Elements Have? (Chemical Reactions) (see Appendix M)
1b) Students know that all matter is made of atoms, which may combine to form molecules.	atoms	What Are Elements Made of? (Atoms) (see Appendix N) Can Atoms Join? (Molecules) (see Appendix O) What Matter Is (Which Is More?) (see Appendix P) What Matter Is Made Of (How Do We Know What's "Inside" Matter?) (see Appendix Q)
1c) Students know that metals have properties in common, such as high electrical and thermal conductivity. Some metals, such as aluminum, iron, nickel, copper, and gold, are pure elements; others such as steel and brass, are composed of a combination of elemental metals.	metals	What Properties Do Elements Have? (Melting and Boiling Temperature & Metal Versus Nonmetal) (see Appendix M)
1d) Students know that each element is made of one kind of atom and that the elements are organized in the periodic table by their chemical properties.	elements	How Can Elements Be Grouped? (Chemical Properties) (see Appendix R)
Houghton Mifflin Theme: Theme 3: Voices of the Revolution	Houghton Mifflin Reading Selection and Content Links: And Then What Happened, Paul Revere? TE p. 258A TE p. 281 (Compare Metals)	McGraw-Hill Science Correlation: Unit 3, Chapter 5 and 6 pgs. 193

CHAPTER FOUR

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Introduction

As an elementary fourth and fifth grade bilingual teacher of English Language Learners (ELL's), it is important for me to be aware of the theories and research that address the education of this growing population. This is relevant when you consider that there are many challenges faced in today's use of expository texts both in Reading and Writing. Not to mention, the "high stakes" testing schools and/or districts face on a daily basis in order to meet their API and AYP. These days it seems like it is more important to "teach" to the standards and/or "teach" to the test, than students learning and building on their background knowledge as they go through the school system. Yet, we wonder why their is such a huge drop out rate and gap.

This project, therefore, concludes that it is necessary to create supplemental curriculum that can be used in the Reading and Writing processes in the content areas in order for English Language Learners to be successful and recognized for being bilingual/biliterate and achieving at the level of their English Only

counterparts. Unfortunately, not all teachers are willing to put in the extra time and effort, but if I can make the difference in a couple of students lifes my hard work will pay off.

Conclusions

When all students including English Language Learners (ELL's) are taught to their potential they achieve at their grade level. This is in spite of the curriculum being standard based and it's lack of depth and complexity. If parents, teachers, administrators, and superintendents want students to read and write expository texts, for instance, at their grade level it is essential that the curriculum takes their learning modalities into consideration. As we know this is not common practice in most schools and/or districts. Teachers as well as students have to use and settle for the curriculum that is adopted every seven years. To make matters worst not all the subject areas are adopted at the same time. In most cases, in other words, every other year teachers have to relearn the curriculum and reinvent the wheel. As a matter of fact, it goes along with the new requirements that the California Commission on Teacher Credentialing continues

to implement for teachers, which is sometimes discouraging to current and aspiring teachers.

Someday hopefully everyone that is involved in the education system will value the hard work that students as well as teachers put in on a daily basis. Unless the laws and regulations that are passed by politicians, whom sometimes have no idea what is happening out in the "real" world change and/or are adjusted, it is not going to be easy to close the achievement gap. English Language Learners for the most part are blamed for not meeting the API and AYP when they are not the only ones that take the tests. The unfortunate part of this is that a test that is geared towards middle class English Only students, does not measure what every single student knows.

Implications

Pursuing a higher education at California State University, San Bernardino has been in my long term plans ever since, I started attending in 2000. After earning a Bachelor's Degree in Liberal Studies, a Bachelor's Degree in Spanish with a minor in Latin American Studies, Single Subject Teaching Credential, and Multiple Subjects Teaching Credential over the past six years it was easy making the decision to earn a Master's Degree in

Bilingual/Cross-Cultural Education. Earning the degrees mentioned above have not only enabled me to grow as a professional, but I feel that it has led me to be a better elementary bilingual teacher. As a matter of fact, during my first year of teaching, I was recognized at the annual Bilingual Pre-Service that the San Bernardino City Unified hosts at the beginning of each school year. Now I am looking forward to continuining my higher education and if everything goes as planned, I hope to be a Superintendent.

Nevertheless, with the guidance of Dr. Barbara Flores and the knowledge that I now posses, my students are being taught to their potential. Setting high expectations for them and assisting them through the Zone of Proximal Development also makes their learning experience a positive one. Teaching as well as learning as already stated go hand in hand. The students in my class learn from me and I learn from them. Knowing where they are coming from is also important because when I was in elementary school, I was also an English Language Learner that was placed in a bilingual classroom. It's just a matter of making them aware that if I was able to pursue a higher education, they are capable of doing the same thing.

Recommendations

Finally, it is necessary that more teachers continue to grow as professionals. The growing population of English Language Learners that is taking over schools is only going to get bigger and bigger. Instead of ignoring them and teaching them just the basics, it is necessary that changes start to occur at the government level. Otherwise, the only thing that teachers can do is continue to use the curriculum and materials that are given to them year after year. That is, if they are not given the opportunity to use supplemental curriculum like Mediated Structures, then we basically teach mediocrity. In my classroom, for example, Mediated Structures are used as much as possible because I believe in teaching to the upper threshold, the potential, and not down to the students. If possible in the near future it would be a great idea to publish a book with Mediated Structures that can be used in different subject areas and/or grades. Both students and teachers would benefit from it because they are being provided with tools that are going to enhance the learning process.

APPENDIX A

WIND

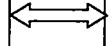
Wind

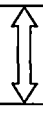
What makes the air move?

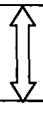
Types of Winds

1. Large-scale Winds:

Drawing

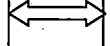






2. Small-scale Winds:

Drawing



APPENDIX B

THE WATER CYCLE

The Water Cycle

Evaporation-Condensation-Precipitation

DRAWING

APPENDIX C

THUNDER AND LIGHTNING

Thunder and Lightning

Three types of lightning

1. Cloud-to-ground:

Drawing

2. Cloud-to-cloud:

Drawing

3. Cloud-to-air:

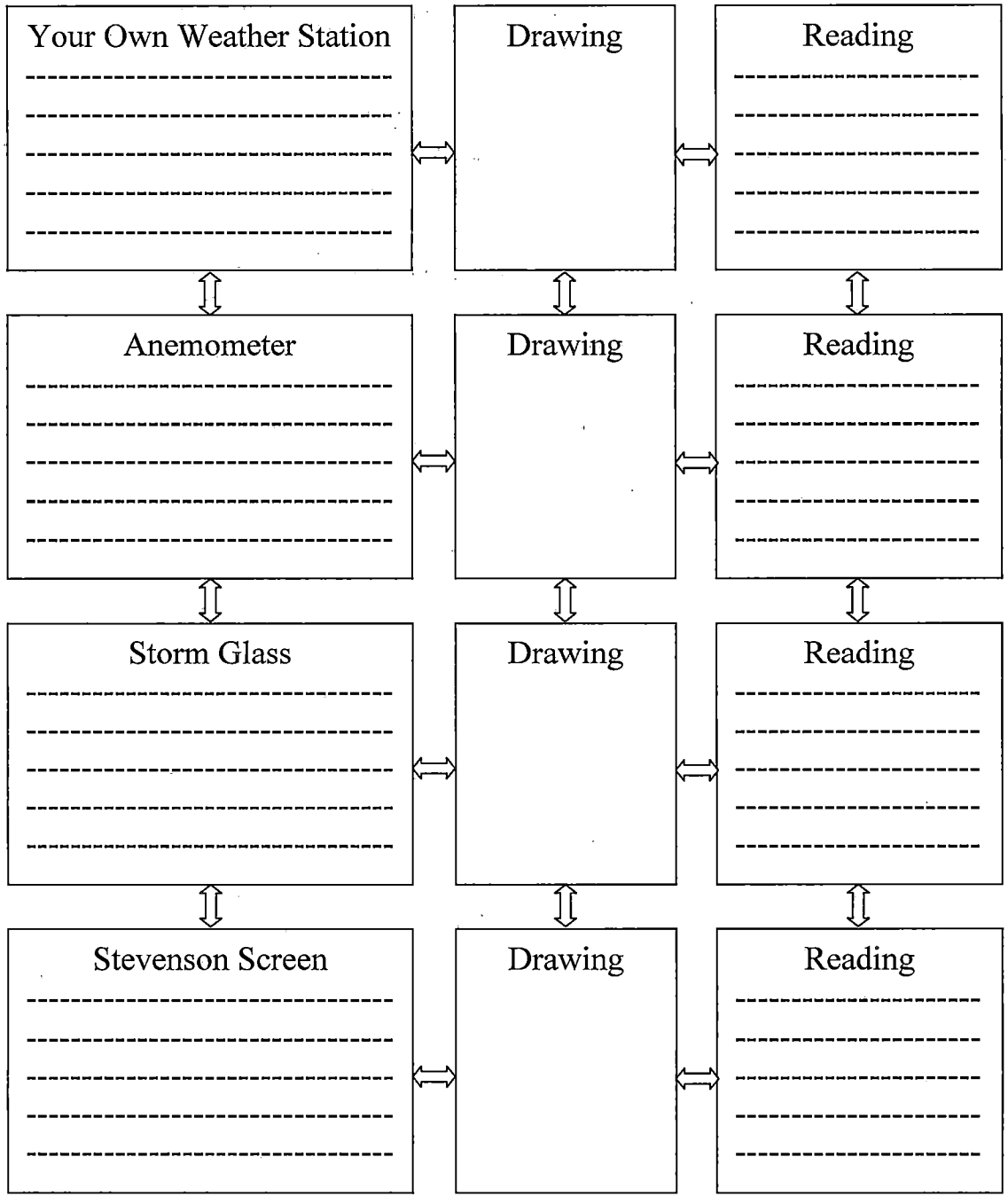
Drawing

APPENDIX D

MEASURING WEATHER

Measuring Weather

Instruments to measure the different weather effects



APPENDIX E

WEATHER - THE WEATHER ENGINE

Weather

What is weather?

Definition:

The Weather Engine

The Atmosphere

Four Layers

1. Troposphere:

---

2. Stratosphere:

---

3. Thermosphere:

---

4. Mesosphere:

Drawing

APPENDIX F

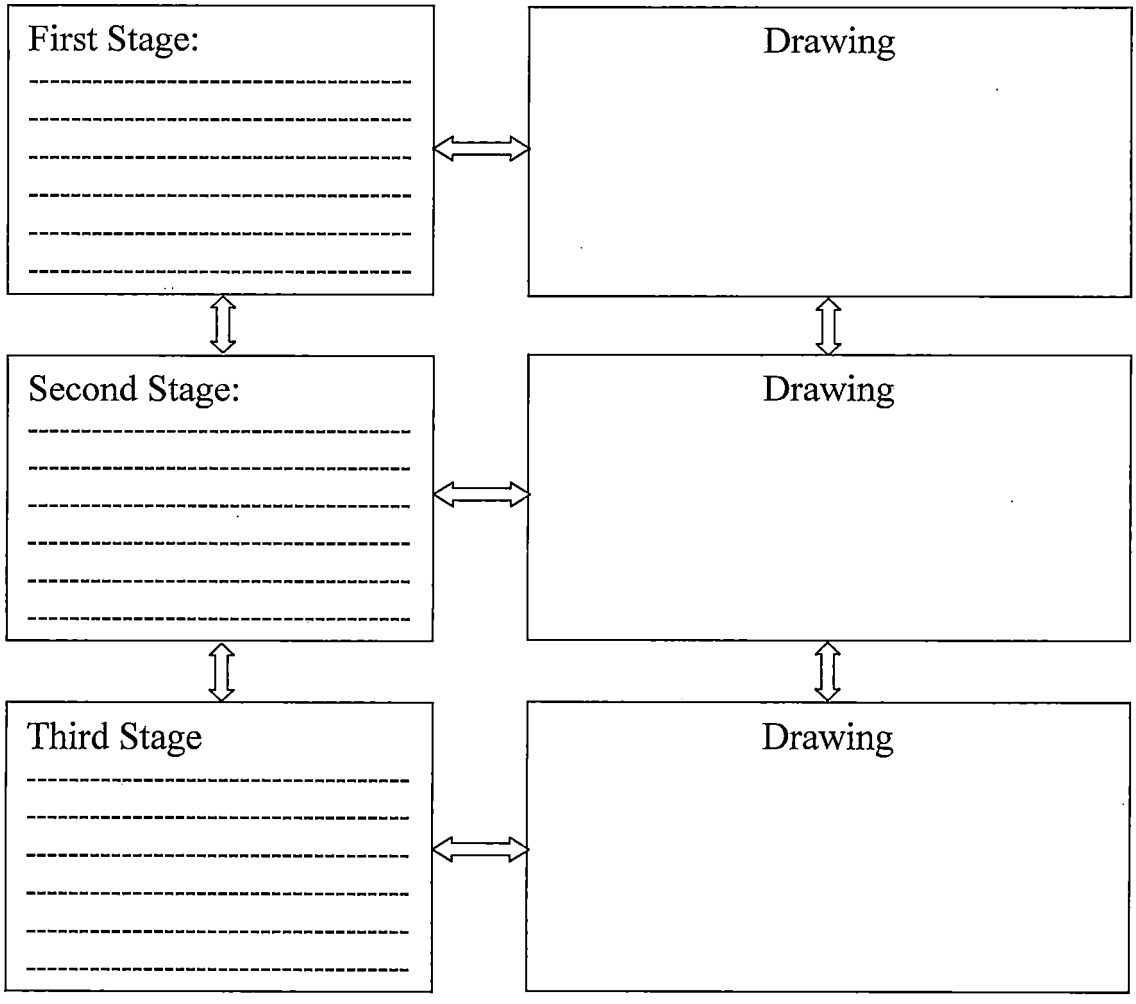
SEVERE WEATHER

Severe Weather

What Are Severe Storms?

Definition:

Stages of a thunderstorm



APPENDIX G

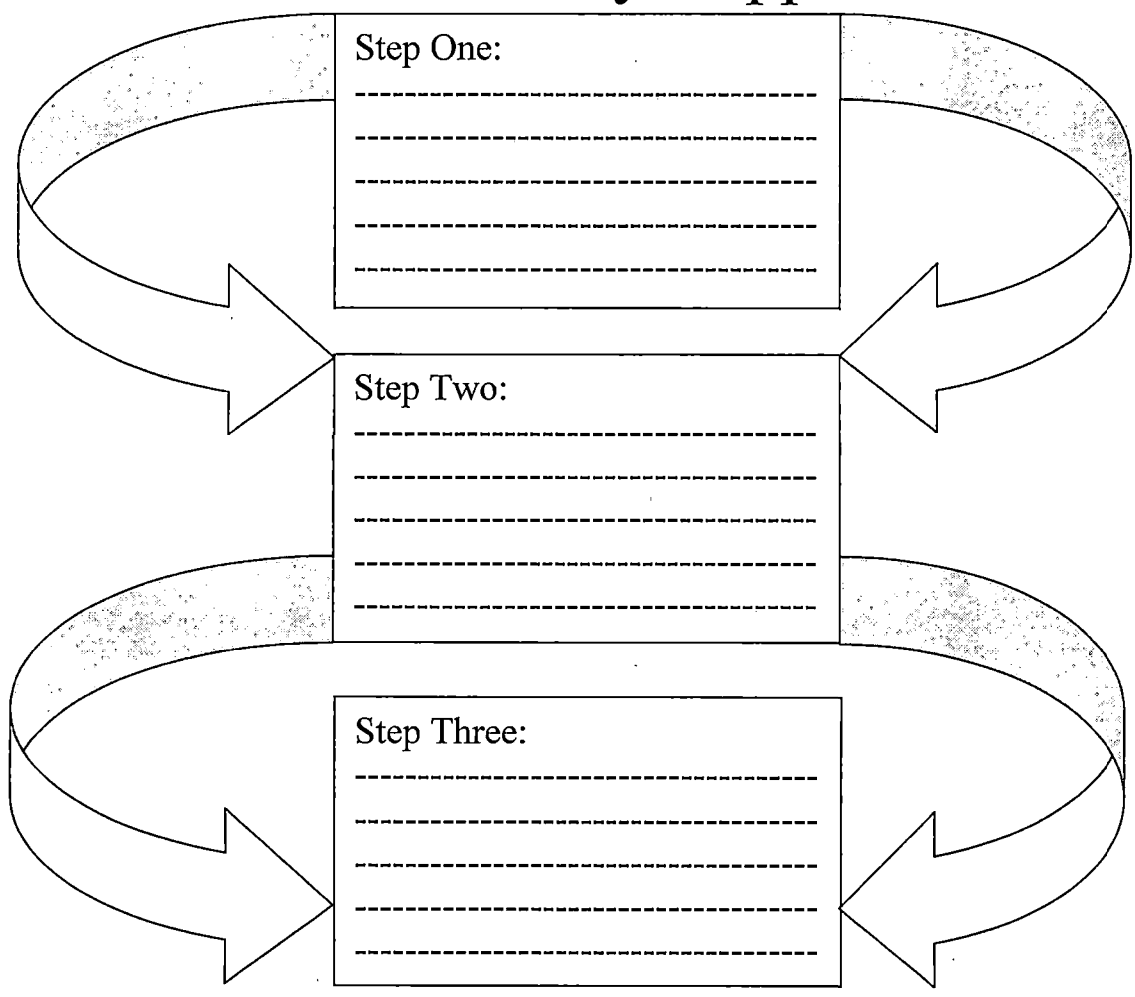
TORNADOES

Tornadoes

How and Where Do Tornadoes Happen?

Definition:

How They Happen



Where They Happen

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Definition:

Tornado Alley
What is it?

Definition:

Drawing

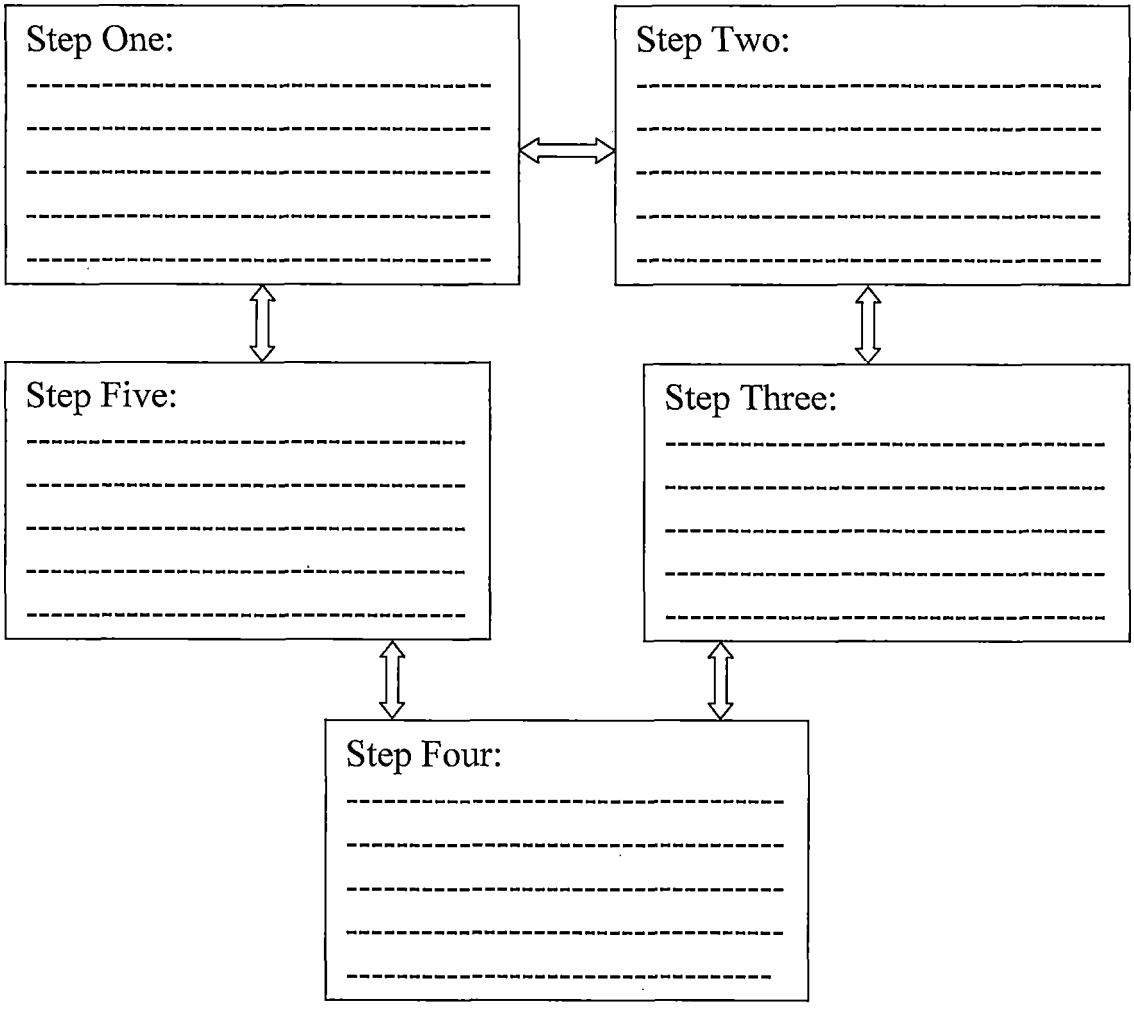
APPENDIX H

HURRICANES

Hurricanes

How Do Hurricanes Form?

Definition:



Drawing

APPENDIX I

THE SUN

The Sun

Definition:

Drawing

APPENDIX J

EARTH AND ITS NEIGHBORS

Earth and Its Neighbors

How Are Earth and the Sun Held Together?

The Solar System

Definition:

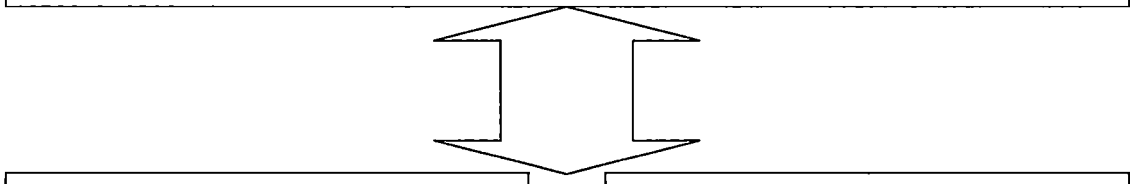
Drawing

APPENDIX K

THE NINE PLANETS

The Nine Planets

Definition:



Mercury

Drawing

Venus

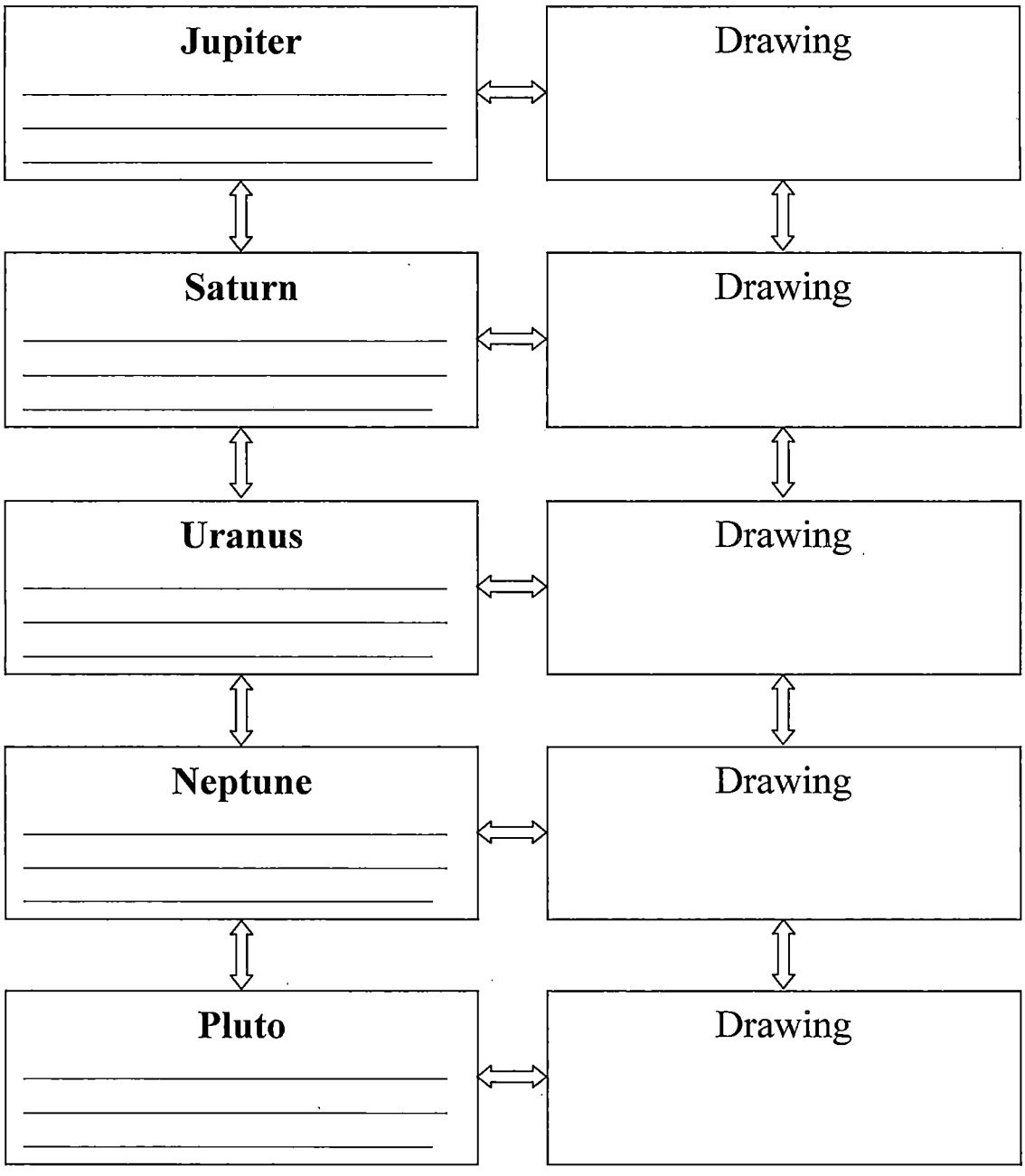
Drawing

Earth

Drawing

Mars

Drawing


Jupiter
Drawing
Saturn
Drawing
Uranus
Drawing
Neptune
Drawing
Pluto
Drawing

APPENDIX L

GRAVITY

What Keeps the Planets in Orbit?

Gravity

Definition:

It depends on…

Mass

Matter

Drawing

APPENDIX M

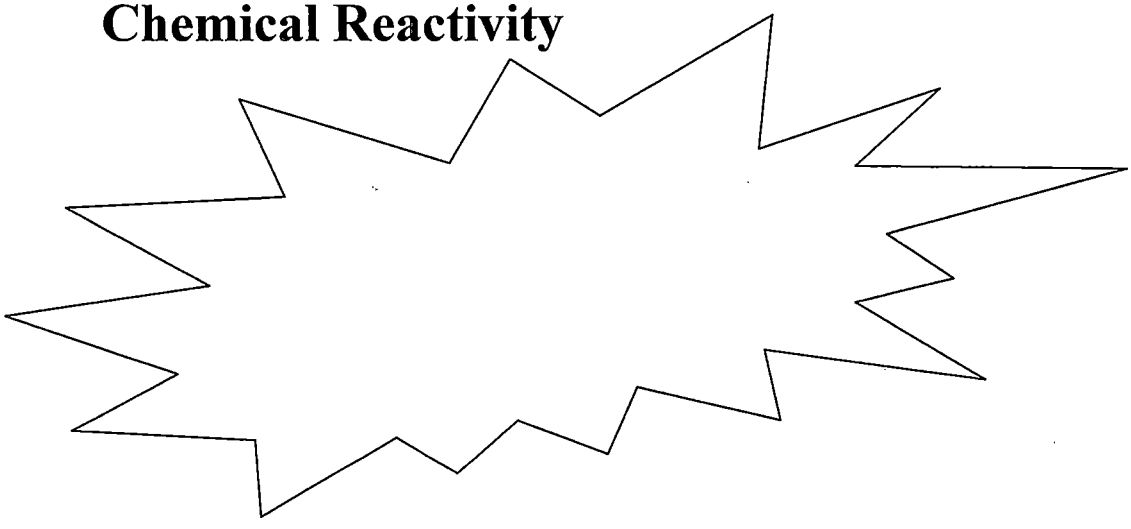
WHAT PROPERTIES DO ELEMENTS HAVE?

What Properties Do Elements Have?

We know of _____ elements.

Properties of the elements

Chemical Reactivity



APPENDIX N

WHAT ARE ELEMENTS MADE OF?

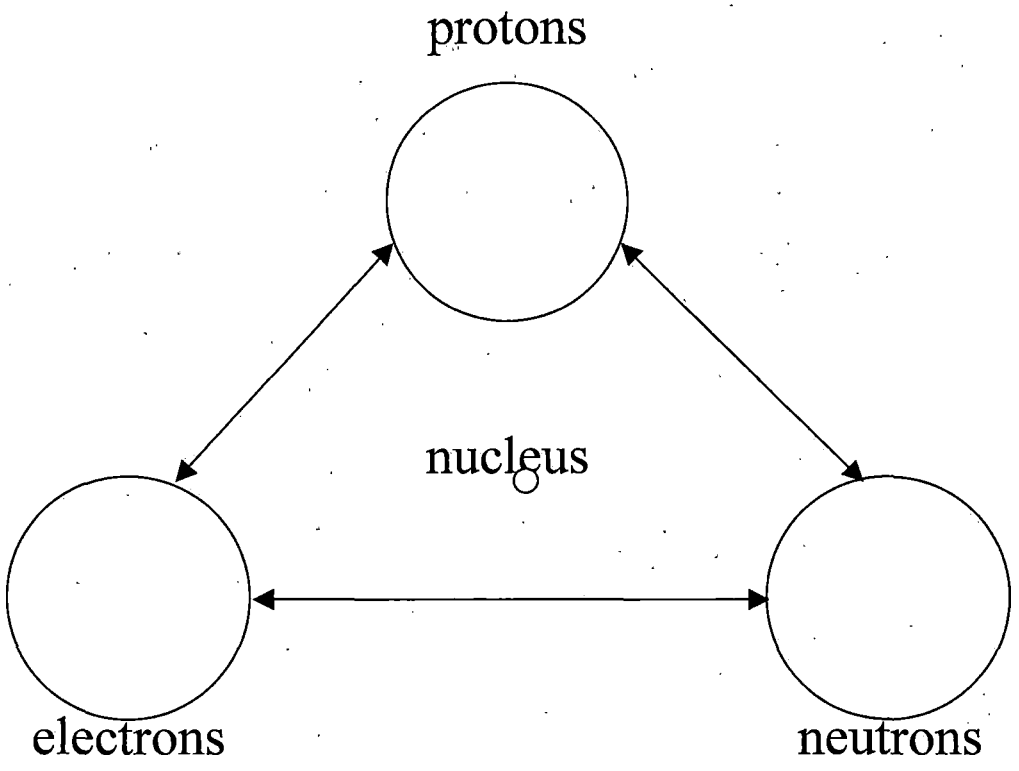
What Are Elements Made of?

atoms

Definition:

What's Inside Atoms?

particles



Protons-Neutrons-Electrons

APPENDIX O

CAN ATOMS JOIN?

Can Atoms Join?

molecules

Definition:

Example	Drawing

Example	Drawing

Example	Drawing

APPENDIX P

WHAT MATTER IS

What Matter Is

Which Is More?

Definition:

Mass (Property)

Definition:

____

____

____

Volume (Property)

Definition:

____

____

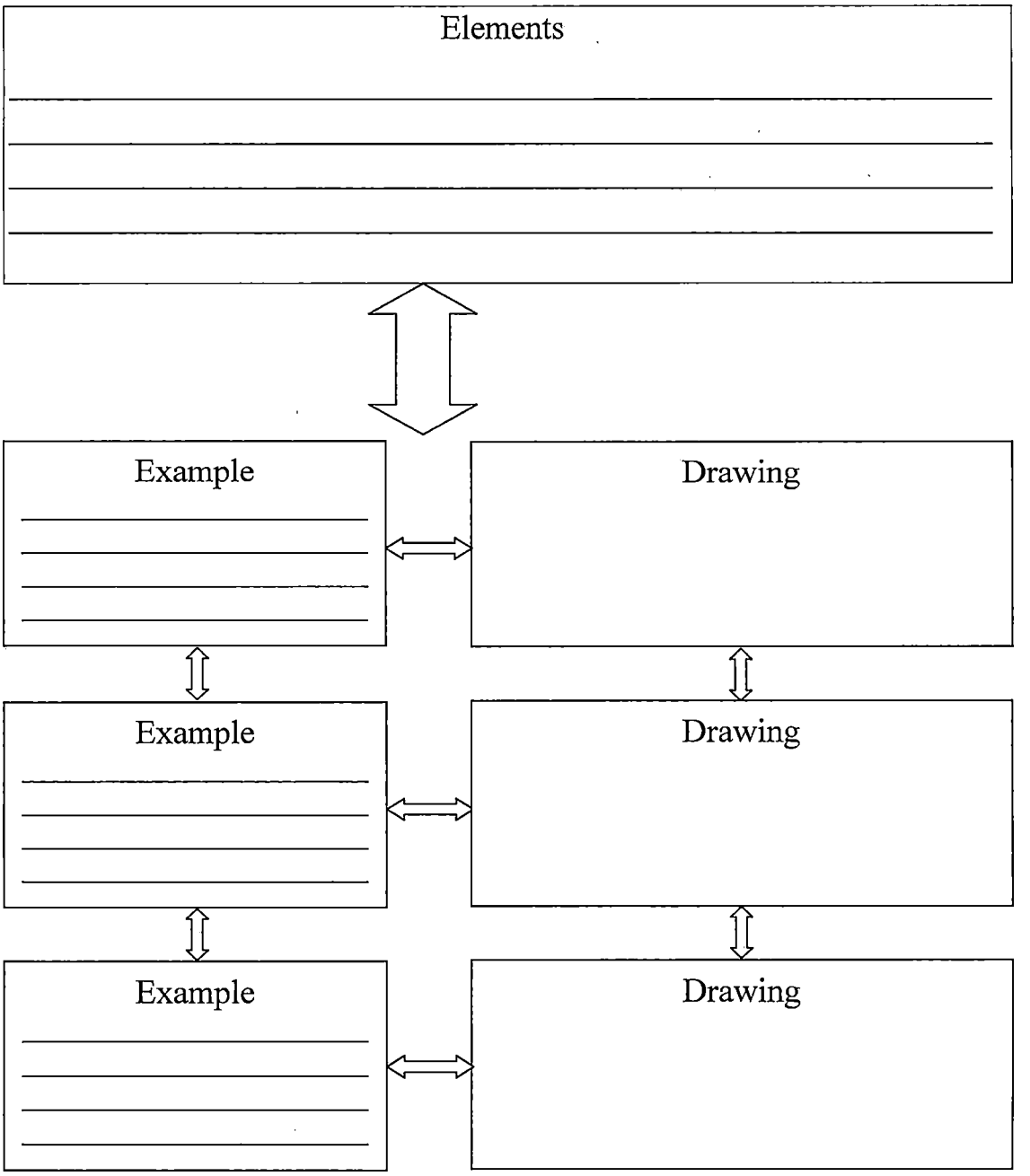
____

APPENDIX Q

WHAT MATTER IS MADE OF

What Matter Is Made Of

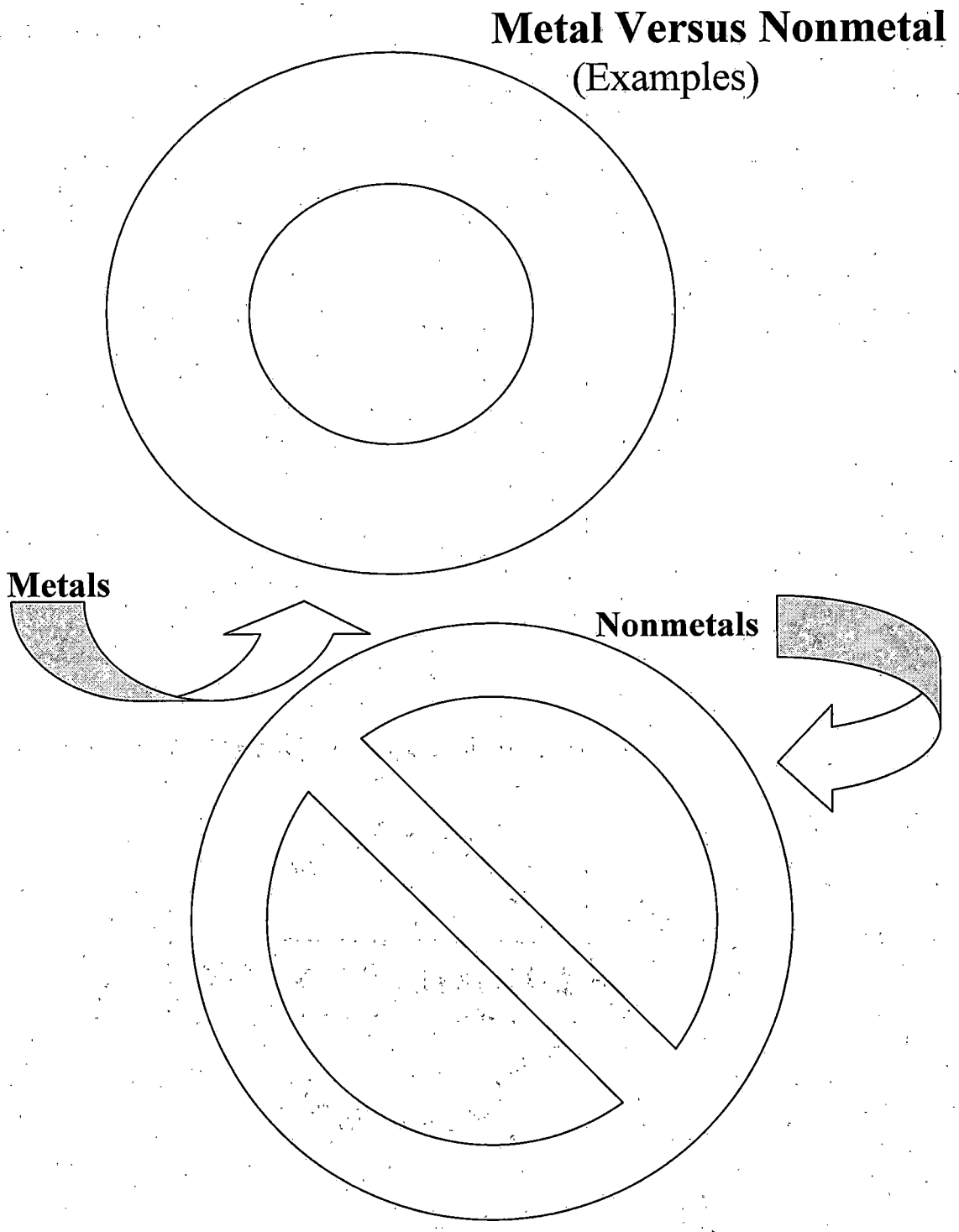
How Do We Know What's "Inside" Matter?



APPENDIX R

WHAT PROPERTIES DO ELEMENTS HAVE?

Melting and Boiling Temperatures

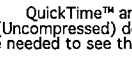


APPENDIX S

HOW CAN ELEMENTS BE GROUPED?

How Can the Elements Be Grouped?

In 1869 a Russian scientist named Dmitri Mendeleyev created a _____.



Chemical properties

1. _____
   _____
   _____
2. _____
   _____
   _____
3. _____
   _____
   _____

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