How can a science teacher and non-science teacher effectively collaborate?

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By

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St John Fisher College
Rochester, New York
Fall 2001
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Abstract

Team teaching in an earth science classroom between a special education and a regular teacher can prove to be challenging, especially when the special education teacher is new to the teaching profession and does not have a background in science. Couple this with a regular education teacher that has never co-taught a class and classroom situations that are neither efficient nor productive are created. This creates frustration, resentment, and low self esteem. An accurate record of our daily education lives would reveal that there existed high levels of frustration toward one another, the curriculum, and the students. Our roles were very well defined, as the regular education teacher I did most of the educating, while the special education teacher was more like a highly paid secretary. These roles continued for many months until we each took the Gately and Gately survey of co-teaching environments. This survey served as a starting point for the development of strategies and techniques that would redefine our roles and create an environment more conducive to learning. As a result we have developed into a more effective partnership in education.
Chapter One

Entering into my fourth year as a high school regents earth science teacher I am faced with a new challenge. The challenge presents itself in the form of a “push-in” or special education teacher. This is the first year in which I have had the pleasure of co-teaching a science curriculum with a special education teacher. I was very excited upon seeing the master schedule of faculty members, knowing I was assigned a co-teacher. The excitement was altered when I realized that I know little, if anything, about how to fully and effectively utilize this individual, not that I did not have any ideas. I did. My vision was a classroom where we split the duties, he taught half of the time and I taught the other half. This vision was shattered when I discovered that this individual was a first time teacher and had never been in a science classroom in a professional manner.

The inclusion laws are very clear about the “least restrictive environment” in a public school system. This individual was assigned to satisfy the legislation. The student population in the classroom is very diverse. Ranging from freshmen on up to seniors with a range of abilities and confidences. The literature reviews that follows will demonstrate the abundance of information available on theories and perceptions of co-teaching environments. As well as indicating the strategies and methods to be effective in a co-teaching environment. With this as a foundation I seek to pursue the following:

(1) How can co-teachers transform from an environment of utilizing one another to an environment of collaboration?

(2) How can I, a science teacher, co-teach with a non-science teacher?

(3) What strategies can be implemented to collaborate effectively with this individual?
(4) What ideas, strategies and concepts, can I apply to future co-teaching experiences to promote collaboration?

The information obtained during this study will prove to be of the highest value. This study will aide my professional growth and development as an educator. This study will also provide techniques and strategies for use in the coming years with different special educators. In the end, this study will further develop my knowledge, which will make me a better professional and educator.

Chapter Two – Literature Review

Historical View of Special Education

The education of disabled children has undergone a great deal of change within the last thirty years. New laws have sought that special education children have access to education opportunities that regular education children have. Historically there has been a great division between the classes of special education and regular education. The division was physical in that there were separate facilities where the disabled children were educated, and mental in that the expectations were lower for the special education children (Thomas, 1997). The first monumental legislation was the “Education for All Handicapped Children Act” passed in 1975 that guaranteed a free, appropriate education for all students with disabilities. Thus, the term mainstreaming was coined. Disabled students were placed into classrooms with regular education students. This law has since been changed and is now known as the “Individuals with Disabilities Education Act, amended as recently as 1997. The second monumental legislation was “The American with Disabilities Act” passed in 1990 that bars all forms of discrimination against the disabled (Sack 1997). Mainstreaming and the legislation that promoted
mainstreaming was designed to get the special education student into the classroom and adjusting that student to fit the classroom environment.

The Change to Inclusion

A philosophical change has begun to develop within the education ranks. The move from a mainstream classroom to an inclusion classroom. Instead of fitting the student to the environment; inclusion serves to adapt the environment to meet the needs of all students (Phillips, 1995). This system of inclusion attempts to create better outcomes for each and every student. This push toward inclusion can be traced to the “Individuals with Disabilities Act (I.D.E.A.) amended in 1997. The new amended legislation called for educators to provide special education students with the least restrictive environment toward education. This promoted a push or trend toward the development of new content delivery models as well as support services to provide the student with the best opportunity for success (Downing, Ryndak, Clark, 2000). The placement of special education students into the least restrictive environment further prompted educators not only to change developed models but also to be an integral part of the development of the child’s “Individual Education Plan” or I.E.P.. This I.E.P. fully describes the child’s aides and services provided by the school to the child for the best opportunity for success in education (Stahl, 2000).

Inclusion Classroom

The term inclusion does not appear in any federal laws or amendments, but it has unified efforts to broaden educational opportunities for the special education student. Inclusion in its fullest sense means creating learning environments capable of meeting the needs of all the students within the classroom. (Phillips, 1995). Historically, special education programs were utilized to protect and teach children from being a burden on the regular classroom teachers.
This model of special education did not work. It failed to serve the students and meet their needs (Johnson, 1999). This has prompted the new level of professional development and growth within the education field (Phillips, 1995). Inclusion is driven by the need for integration of the best that special education has to offer with the best that regular education has to offer. This integration can provide benefits to all students within the inclusive environment (Vaidya, 1997). The effectiveness of inclusion depends entirely upon the educator. To be an effective educator in an inclusive classroom one must be very flexible and competent. The educator must be capable of developing and implementing various instructional approaches to benefit and meet the needs of all students within the inclusive environment. It takes a great deal of effort from the classroom teacher to be an inclusive teacher along with some fundamental instructional strategies and instructional considerations. These include: multilevel instruction, hands-on learning, cooperative learning, collaboration, heterogeneous groupings, adaptive instruction, and reduced class size (Johnson, 1999). The greatest challenge facing inclusion teachers is the ability to be flexible and adapt to specific situations. Many educators find this difficult and as a result resist the movement toward complete integration.

**Successful Inclusion**

Those educators that have and do utilize complete integration and inclusive settings can provide an abundance of information for new teachers with little or no background in inclusion. A survey of some veteran educators revealed some keys for success in the inclusion environment. (1) The development of clear and consistent rules and consequences is crucial in this environment. (2) The development of structure and routine will greatly assist special needs students in the inclusion classroom. Concrete daily routines in place can assist them. (3) Teach each and every student how to learn in the classroom. Students often do not know how to study
or what material to study to have success in the classroom. (4) Collaboration with specialists on adapting curriculum to the inclusion classroom is arguably the greatest asset in education. Talk with teachers that have the experience of changing their curriculum. Use the special education teacher to work with all the students in the classroom. Develop activities that require two teachers to facilitate. Ask the special education teacher for help and assistance in every part of the classroom. (5) Make your expectations clear to all students. Tell them exactly what is expected in the classroom, in the laboratory, and in the homework assignments. (6) Know when to change course. Flexibility is the key to success in the inclusion classroom. The educators must be aware of the students and know when a technique is working and when to try another technique (Pearce, 1996).

Collaboration and Co-Teaching

Perhaps the most effective technique for success in the inclusive classroom is collaboration. Collaboration involves general education teachers, parents, family members, special education teachers, principals, service providers, and students with and without disabilities. Effective collaboration requires commitment and intentionality. Collaboration is a combination of professional and personal relationships of the co-teachers. Partnerships that do not recognize the personal and professional aspects of collaboration and co-teaching often find it challenging to resolve problems and conflicts (Baillargeon, 1999). One method by which many schools meet the I.E.P. requirements of students is utilizing the team-teaching or co-teaching approach. This approach is one that utilizes a special education teacher and a regular education teaching within the same classroom teaching the same subject matter. The method of instruction involves two educators each possessing unique skills working coactively and cooperatively to teach academic and behavior groups of students in integrated settings (Rainforth, England, 1997).
Benefits of Co-Teaching

Collaboration or co-teaching has tremendous value to it. Professionals have the ability to share goals concerning student achievement and engagement within the classroom. There is also a shared responsibility for the class successes and failures. There is responsibility shared within the planning and execution of instruction. Collaboration also provides a greater means by which instructional experimentation can occur. New ideas, techniques or strategies can be attempted with the added confidence and reassurance of a colleague (Phillips, 1995). When co-teaching is effectively administered there are numerous benefits to this type of environment. With two teachers in the room they can provide greater assistance and encouragement to students and one another. The ability to monitor and facilitate work and behavior increases exponentially. Two teachers have the opportunity to split the class and provide review for some and new challenges for others. Two role models in the classroom are better than one. Addressing difficult or confusing content is also made easier. One teacher can pull the confused group or student aside and spend some one on one time to further develop learning (Idol, 1997). Tichenor, Heins, and Couture provide a brief description of a co-teaching model as one where the regular and special education teachers jointly plan each and every day of content that is to be delivered. They each take specific roles within the delivery of the curriculum. In the idealistic co-teaching model an observer walking around the room would have great difficulty distinguishing between the regular and special education teacher (Tichenor, Heins, Couture, 2000). That is not to say that there is universal model for co-teaching, every situation is different depending upon the resources, student demographics, and educational expertise that governs each co-teaching situation (Rainforth, England, 1997). Some other models include grazing. Grazing is where one teacher stands in front of the room and the other teacher moves
from student to student to check on progress and focus. Grazing is not the most effective model because often the other teacher is not sure of what to do while grazing around the room. Another model that is also in need of some refinement is the tag-team-teaching. In this model teachers take turns being at the front of the classroom. One teacher is in the back working on another activity and the other is in the front delivering the instruction. These roles then switch after a period of time. This model is often used because teachers do not know how else to use the special education teacher. Or they are unsure of how else to deliver instruction (Vaughn, Schumm, Arguelles, 1997).

**Difficulties in Co-Teaching Comfort Levels**

The greatest difficulty in co-teaching stems from the comfort levels of the regular and special education teachers. Often teachers are not comfortable having another teacher present in the room. There is the fear that they are being judged by the other teacher (Phillips, 1995). Often there is a conflict of personalities, lack of planning and limited time for the special educator to participate within the classroom. The special educator and regular education teacher often do not feel comfortable collaborating with one another due to the uniqueness of their backgrounds (Daane, Smith, Latham, 2000). The subject matter is also important in comfort levels. It is found that the special education teachers feel more comfortable collaborating in an English classroom than any of the other disciplines. It is also agreed upon that it is the regular education teacher that does more than the special education teacher in a co-teaching environment (Austin, 2001). Resentment also becomes an issue. The regular education teacher has historically been in complete control of the classroom, and now he/she is being asked to relinquish control of their room to someone that might not even be certified in their particular content area (Vaughn, Schumm, Arguelles, 1997). The belief by both regular education and
administration is that any child included in a general education classroom is the responsibility of the general or regular education teacher (Daane, Smith, Latham, 2000). This leads to "turf" wars. That is to say the discussions over "Whose students are these", "Who gives the grades", "Whose classroom rules do we use", "Where is my classroom space" (Vaughn, Schumm, Arguelles, 1997).

Caseloads and Teacher Training

Another major obstacle in the inclusion classroom with co-teaching environments is the teacher training. Often is the case where the regular education teacher does not know how to utilize the special education teacher effectively nor does the special education teacher know how to function in this type of environment. In this particular case school districts should serve to offer professional development opportunities in the essential areas of collaboration and co-teaching. These areas include program development and implementation, collaboration and communication skills and intrapersonal attitudes or beliefs about co-teaching (Idol, 1997). Caseloads of the special education teacher also play an important role in the co-teaching process. Often the teacher has many other "push-in" classroom assignments. Perhaps one period of English, one of science, and one of social studies outlines the teacher "push-in" responsibilities (Thomas, 1997). Does this mean twice the teaching assignments twice the work? This impacts the planning and curriculum development time. The more preparations that the special education teacher has to make the less time available to spend and focus in each of the particular areas. These teachers are often spread out over the entire building attempting to serve the needs of the administration and the students (Phillips, Sapona, Regina, 1995). With the large case loads often it proves very difficult for the special education teacher to meet the planning times or meet for co-teaching strategy development (Thomas, 1997).
Finding Time

Perhaps the greatest challenge toward co-teaching is finding the necessary planning time with the special education and regular education teachers. Often teachers do not have the same planning period and should not be required to plan after or outside school. As a result the regular education teacher has taken on the major portion of the teaching and developing of lessons simply because he/she knows what needs to be taught and how he/she is comfortable doing it. This leaves the special education teacher to sit, watch and listen (Daane, Smith, Latham, 2000).

Some possible approaches to alleviate the lack of planning time has been researched by Lorna Idol (1997). Possible alternatives include: (1) when students are doing projects or studies, arrange them in larger groups thus lower the supervision needed. (2) There could be a permanent floating substitute teacher that rotates around various classrooms to allow time off for planning. (3) Utilization and implementation of community volunteers to supervise a class to allow time for planning. (4) Teachers could also ask the principal to assign a specific time each day or week for collaboration only. (5) Obtain faculty consensus to extend the instructional day by twenty minutes one day during the week to allow for collaboration time. This is a short and not all-inclusive list of possible alternatives for finding planning time. These are however the most applicable to this research situation and question (Idol, 1997)

Roles of the Regular and Special Education Teachers

The idea of co-teaching and working collaboratively has many challenges to it. Particularly when is comes to the roles that each teacher must assume in this type of environment. There is no formula for identifying the roles. But there are guidelines for establishing roles. Co-teachers should share responsibility for direct instruction, curriculum development, and re-teaching, monitoring progress, communication outside of the classroom and student assessment and grading. Both teachers should be capable and willing to meet the needs
of the entire student population within the classroom (Thomas, 1997). Most co-teaching environments are not ready for ideal team teaching approaches. With this in mind there are some roles identified for the special education teacher. The special education teacher should monitor the I.E.P.'s, check weekly student progress, preview classroom lessons plans, develop modified assignments and tests for students, provide reteaching opportunities and teach groups of students in the classroom (Idol, 1997). Other co-teaching roles include complementary instruction. This type of instruction is designed to support the course content or class activity. Complementary instruction can also be used to clarify, summarize and review material from previous lessons. The special education co-teacher can also provide supportive learning activities. This role includes adapting tests, study guides, taking notes on the overhead while the teacher lectures and grading papers for half of the class. The co-teacher also focuses students, encourages and assists in discipline problems. Ideally there should not be a difference between the regular education teacher and the special education teacher. Both parties need to be very flexible in their roles. These roles should change on a daily basis (Rainforth, England, 1997).

Chapter Three – Methodology

The 2001-2002 school year creates a new and challenging situation for me as a classroom teacher. Entering into my fourth year as an earth science teacher I was confronted with the challenge of working with a special education teacher in one of my earth science classes. I was excited and eager to begin the school year, as I have never had the opportunity to work with such an individual. The excitement soon changed into frustration as I realized that I had little idea of how to utilize this person in my classroom. What was I supposed to tell this person to do? How was I to use him effectively and efficiently? How will our performances affect the students of
the class? After extensive review of the literature concerning co-teaching and inclusion I realized that utilizing this special education teacher is not the proper terminology nor method. The literature clearly points toward a movement in collaborative co-teaching environments. The focus of this research study will be "How can a science teacher and non-science teacher move from positions of utilizing one another, to effectively and productively collaborate to co-teach the earth science curriculum.

**Participant and Setting**

This qualitative research study occurred within my earth science classroom. The classroom consists of twenty-four students. The students are freshmen, sophomores, juniors and seniors. Their abilities are as varied as their grade levels. Within the classroom there exists seven students classified as special needs students. The daily course of the class varies with instructional strategies. These include note taking, group work, lab work, discussion and problem solving. The percentage of class time spent in each strategy varies with the content being covered. The ultimate goal in this class, as with any regents course, is to have success on the regents examination. Last year, as with previous years, my students have enjoyed success on the earth science regents exam. 79 students attempted the regents exam, 90% passed with a 65 or higher. Of those that passed, 51% achieved 85 or higher.

The special educator working in the classroom is a beginning teacher. He has a bachelor's degree with major concentrations in the arts along with his special education certification. His only previous teaching experience is preparing individuals for the G.E.D. exams. Working together throughout the start of the 2001-2002 school year my observations of his abilities include great creative and artistic abilities. He is also very reserved, patient, soft
spoken, and passive in his approach to teaching. His instructional assignments include earth science, English, applied science, and two periods in the resource room.

I am the regular education teacher. I have a bachelor's degree with major concentrations in earth science and biology. My teacher preparation programs included little on collaboration and team teaching. I have little creative and artistic ability. I am aggressive and demanding of my students during class time. I enjoy organized chaos during lab and group work situations. At the beginning of the school year I had the belief that we would be educational partners in the classroom. I felt that we each would share significant roles in the education of the students in that room.

My expectations were that he would have similar abilities to myself and we would be able to complement and team-teach in the truest sense of the word. He could deliver instruction and I could supplement his lessons and the roles would change. My expectations were not satisfied. As the year unfolded I grew to realize that this individual had little ability and knowledge of science. And as a result his classroom demeanor and confidence suffered greatly. In addition I grew very frustrated because he could not explain concepts or felt weary of dealing with content oriented issues. It was very difficult to speak with him because of my frustrations and anger toward him. Often we would discuss the activities for the week and I would ask him to do something or design review assignments for specific content. He would agree or appear interested but then come the day of the activity or review he would have nothing planned. When asked why he just mumbled and acted confused and uninterested. Most importantly I felt as if I was carrying him during the class time. I felt as if he was not pulling his own weight in the room. It would drive me crazy thinking that this guy makes the same paycheck as I do but is neither responsible nor accountable for anything. He does not appear to plan or take action for
the class. He continually makes excuses for his lack of abilities. He always seemed distant and distracted. His role appeared to be one that simply read tests when needed and wrote notes for students that had difficulty writing.

Data Collection and Analysis

Data collection will be based upon observations, interviews and journal entries. The starting point or tool will be the "Co-teaching Rating Scale Surveys" developed by Susan Gately. This tool will serve as a reference point to define the current status of our co-teaching relationship. This survey will also pinpoint the strengths and weaknesses of our co-teaching abilities. The recognition and discussion of the survey will allow for experimentation, trial and error, of various strategies and circumstances that would develop a better co-teaching environment. All interviews, classroom situations, and reactions are documented in a daily journal. The journal is also a reflection of my feelings as well as observations of my partner and the students. The qualitative data collected was analyzed under the theoretical framework of symbolic interactionism. This framework will allow for me, the researcher, to interpret and develop conclusions and conjectures based upon observation of the special education teacher and the students within the classroom. The qualitative design of this study will constantly demand comparisons between previous classroom situations, current situations and future situations.

Chapter Four: Findings

The Survey

The first step toward a successful co-teaching environment is identifying the strength and weakness of the partnership. The Gately and Gately survey is the tool that provides such insight into our working relationship. The survey is divided in two parts. There is the "regular education teacher" format and there is the "special education teacher" format. The respective
individuals complete each format. Each survey consists of twenty-four questions. Each question is ranked from one to three as 1: least like me, 2: somewhat like me, 3: most like me. The results are compiled (table one). For each category the lowest score is three and the maximum score is nine. The results of the survey indicated that there are numerous problems within our co-teaching environment. The only area where we are good is the assessment. I was intrigued by the results of the instructional planning and instructional presentation. This initiated the first of many interviews with the special education teacher.

**Initial Interview**

The primary focus of the interview was the planning, presentation of instruction and familiarity with the curriculum. These were areas where I felt he needed the most assistance and where we were the weakest as partners. The interview revealed an interesting insight into his personality. He was open about his lack of confidence in the earth science curriculum and his lack of knowledge of the content. In addition he repeatedly used words like “clerical”, “note-taking” and “secretary”. He also stated several times that it might be easier if I “tell him” what to do and when to do it. I was given the impression that he felt as if he was more like a secretary doing clerical work: grading papers, recording grades etc., instead of an educator. In addition the interview led into a discussion of his daily schedule and responsibilities. He is extremely busy during the day. Besides earth science, he pushes into English and applied science, he has numerous duties: bus duty and a study hall, and he has two periods assigned for help in the resource room. This led me to think further into our roles. Instructional planning and presentation within the earth science curriculum was my main focus: But what about his focus? Throughout the interview I got the sense that he needed help. He seemed like he was in over his head. He spoke mainly about his daily routine and added a lot of sarcasm regarding his roles in
duties. This is a first year, special education teacher that has numerous duties and responsibilities. This posed new questions:

How can I, a veteran teacher help a first teacher?
How can I help build his confidence in earth science?
Can his self-esteem and confidence be built up?
What strategies and suggestions can I provide for assistance?

We both left that interview with the notions that we would meet again tomorrow and brainstorm future classroom arrangements or situations that would help both of us.

The next day we met and decided to outline the remainder of the week’s class activities and content that would be covered. I approached the interview from the perspective of getting him to be assertive and assume some responsibility for the class’s actions. I started by outlining the remainder of the unit on storms as well as the following two weeks I wanted to review for the mid-term exam. I was focusing on getting him to tell me how to approach some of the activities and class assignments. He was very reserved at first, almost as if he thought I were judging his responses. There came a point where I simply stated that I wanted a different perspective on how to get the students to further develop their knowledge about storms and storm systems. I stated that I did not want him to reinvent the wheel; I was just looking for other possibilities. He felt a little more at ease and we proceeded to plan for the remainder of the week.

To wrap up a mini-unit on storms one of the last activities we were going to do is a hurricane-tracking lab (appendix two). This lab was designed to incorporate several skills including reading, interpreting data, graphing and interpreting hurricane Gilbert’s movements. As well as further developing knowledge of pressure, wind speeds and storm surge of hurricanes. After a brief discussion of the lab and providing my partner with a copy of the lab he stated that he would “run” the lab activity during class that day, as well as provide the follow up to the lab.
This would allow me, as the regular education teacher, to survey and move freely around the classroom to provide assistance to students that are often reluctant to ask for help from the special education teacher. In addition to that lab we split the responsibilities for writing the daily warm-up exercises. The warm-ups are short questions recalling previous class information. He felt good about the lab and writing the warm-up (appendix three). The hurricane lab was not new content nor were the skills to complete the lab new to the students. The skills lab were application and reinforcement of previously learned material. The warm-ups were done in the same manner, review type questions of previously learned content. We did not discuss any of his other responsibilities outside of this class. He had one day to prepare for the lab.

The day of the hurricane lab he did fine. He modeled the first part of graphing the hurricanes pressure, wind speed, and storm surge. He plotted the first of ten days of the hurricane movement with the class and then the students plotted the remaining nine days. He was clear, concise, and seemingly confident. After everyone had a chance to graph the hurricane’s movement he led a discussion during which some of the lab questions were answered. When the bell rang I pulled him aside and thanked him for the assistance and told him what a good and concise job he did with the lab.

The two weeks following the hurricane/storm lab were designated as review weeks. Designed to review for the mid-term exam. The success of this lab exercise led him to further control of in-class exercises such as assigning review homework, creating review worksheets, as well as reviewing the homework assignments and the review sheets (appendix four). We had an opportunity to talk briefly each day. The conversations were very simple, I would tell him what content we were going to review and he would devise some alternative methods for generating and assessing knowledge. He was given worksheets in advanced to have preparation time.
Some of the review activities that he felt comfortable with and implemented included review BINGO, review Jeopardy and review quizzes (appendix four).

It is also important to note that many times while reviewing an assignment he would ask the same student to answer different questions over and over. I feel that he asked this individual so as not to create controversy between him and the student. This student is a senior that has taken four previous science classes and ranks in the top five of his senior class. I believe that this student academically intimidates my partner. I provide this as an example of the confidence level of my partner. I could see that the student was getting quite annoyed with this but did not say anything. The rest of the class began to mumble about continually questioning this student and they were getting annoyed.

The earth science class was fine for the next two weeks. I was enjoying the flow of our class. We were not collaborating in the truest sense of the word but we were functioning more efficiently and effectively as a regular education teacher and a special education teacher. The class environment was definitely more comfortable. Students started asking him for help. He was capable of providing sound rationale explanation to their questions. Students often still asked me if his answers were correct and after several times of doing that they stopped asking me and relied on him. During mid term week we were also able to find a couple of hours in which to plan for the start of the new semester. The new unit was to be physical and chemical weathering, followed by erosion and deposition. We outlined the weeks to come, divided up some of the class exercises and worksheets. When we outlined the weeks what we would do is take each day and generate an overview of the content and activities that will be occurring. For each day there are at least two or three items on the agenda. The items included taking notes,
discussion, worksheets or labs. I felt good and he appeared to have more confidence with this particular unit than the previous one on storms and weather.

_Times Change_

Week one of the new semester found us working in the same manner as the previous weeks. I was responsible for the new content on physical and chemical weathering, while my partner corrected, reviewed homework assignments, as well as conducted a lab activity on weathering. He was enjoying the class, as were the students. So did I. The environment was more relaxed we each had a role that was energized by what the other was doing. If the students were stuck my special education partner would prompt them with questions. Something he had never done previously.

When the semester changes often for teachers this means changes in room assignments and duties. My schedule did not change. His did. After the 1st week he started coming late to class. Late by five and ten minutes! One day he was responsible for the warm-up questions and he was late. Fortunately I had a few questions in mind and wrote them out on the board. This led me to be frustrated and angry with him. I was hesitant to have him accept responsibility for an action in the class because I was not sure if he would be there on time. In addition we went the entire week without meeting after school or during the school day. When we did finally did meet I was interested to find out just what had developed in his life. His schedule had changed and two new duties had been thrust upon him. In addition he had moved into an apartment at the start of the school year and was currently having difficulties with his neighbors and his landlord. It was obvious to me that he was not dealing with the changes and the new found stress. I had expectations of him that were not being satisfied and it was difficult for me to talk to him. There were instances when I just wanted to reprimand him for being late, for not pulling his own
weight in the class and for not taking responsibility as a professional and as an educator. I did not say anything. There were three days in particular when he came into the classroom that I did not even look at him. He would then just sit in the back and listen and write things down. One day he made the comment that we were back to the start of year again. He was right; we were going well for 3 ½ weeks and now have retreated back to the beginning of the year. I needed to find a way to put things back on track, but I had no idea how. Part of me felt that as an adult, a professional, and an educator he should just deal with the circumstances around him and do his best. I felt as if he was not giving it his all. Another part of me wanted to help him because it was clear he was not enjoying his work or his life at the present state.

Refocus

The first week was great. The second week was terrible. The third week of the new semester we started with a simple conversation during class. I stated that we should meet and try to plan out the next few classes again. He agreed and stated that the last few days have not been enjoyable or productive. He felt as if he was back at his role of secretary. We spoke after school that day and I decided to not focus as much on the class preparation but rather try to understand and let him communicate to me the challenges that he has been facing the last few weeks. I started the conversation by simply asking him what had been going on lately. He started rambling about his new duties, his apartment and his new teacher program that the school district forces all first and second year teachers to participate in. He discussed how much of what he does during the course of the day seems like a waste of time. His time in the resource room has to be structured and he has to have the students work on portfolios instead of studying or working on homework assignments. In addition he greatly resented the time he was being forced to spend on the new teacher program. The new teachers meet every Friday and discuss the week
the week as well as strategies and techniques and keep a daily journal. He was being forced into professional development classes that offered little or no help to his current situation. He had also started work on his master degree. The coursework was to be done through the Internet and was demanding that many papers be submitted in a timely fashion. He mused and mumbled about that as well. (I do not want to appear to be sarcastic or demeaning when I use words like mumbled, muse, or ramble but that is exactly how he talks at times. It is often very difficult to understand and hear what he is trying to say because he is soft spoken and jittery.) I ask him about the other classes that he pushed into, in terms of how he felt in there and how things were going. He stated that in those classes he is rarely ever utilized. He referred to himself as a babysitter and glorified note taker. The regular education teachers in those classes do not ask anything, nor have they had conversations, like the ones that we have been having. He was extremely appreciative of the conversations we had been having along with my effort to incorporate him into the everyday learning process of the class.

We continued to talk for more than an hour about his time issues. He stated that he just did not have time due to all of the other obstacles in his day. I empathized with him. I remembered being a first year teacher and I have never worked as hard or as long in the teacher profession as I did that first year. So we began to talk about stress and stress management. I have numerous ways to deal with the stress of the daily rigor of school. That is the stress that is above and beyond the students. This stress often appears in the form of administration and other adults in the building. We talked about that and agreed that those items stated above are the leading cause of his anxiety. He mentioned that he would like to have someplace to “hide” like I do. Being a regular education teacher I have my own room and often during the course of the day I do not leave that room. In addition I find time to relax during the day by either reading
science magazines or surfing the web. He does not have those options available to him. In the resource room he has to share the area with five other teachers; no privacy. I offered my room to him but felt that he accepted half hearted and felt that I would probably not ever see him in the room. I was growing rather impatient with this part of the conversation because it felt like we were not being productive. Sure we figured out the problems, identified where the stress was coming from, but at no time were resolutions addressed. He continued to stumble over problems without facing them. Part of me felt that as a professional educator he should be capable of dealing with the situations. I got through my first year fine so can he. I decided to change the course of our conversation back to being involved in the classroom.

The current topic we were covering was chemical and physical weathering and then into erosion and deposition. He stated that he felt a little more confident in those areas because the applied science class that he is in had already covered some of the content on erosion and deposition. I asked him what would be the best way to approach the upcoming class periods. He felt that if he could get copies of assignments ahead of time that would help, so at least he would know what was going to be covered and be able handle questions. I usually try to prepare a couple of weeks ahead including getting my entire load of copying done well ahead of time. I provided copies as needed in anticipation of the coming weeks. I told him to read over and complete each assignment and then whichever assignments or labs he felt most comfortable doing with the class he could do. I would take whatever he did not want to do.

Summary of Findings

This research investigation provided valuable insights into the current state of my co-teaching experience. A summary of the findings reveals: (1) The lack of confidence my partner has in his own ability to teach as well as his lack of knowledge of the earth science content. (2) There was
an obvious need for a mentor for this new teacher to communicate his professional and personal issues. (3) The building and system in which my partner operates clearly misuse and overworks him. (4) Steps that I found useful in helping my co-teaching partner included using him for review activities and labs, giving him a choice of which activities to do with the class and which activity not to do, the use of a weekly planer. (5) Personally I realized that I expected too much of myself, my partner and us as co-teachers.

Chapter Five Discussion

The final section of this paper provides the discussion of the research project. Particularly the themes of collaboration and being a new teacher that continually reoccurred in the classroom and during the interviews with the special education teacher. This discussion will be divided into two sections: Addressing the concerns over collaborating with a first year special education teacher and helping a teacher to survive the first year of school.

Helping a first year teacher

Professional educators have demanding careers. There is little “on the job” training. Sure student teaching and observations are part of any teacher preparation programs, but how many teachers student teach in the districts or buildings where they are later employed? Not many. With that said the importance of having support systems in place for new teachers could not be overstated. Often school districts have mentor programs in place to provide some of the necessary support. But what about schools where no such program exists, where does the support come from? What kinds of support should veteran teachers provide beginning teachers? As professionals we have an obligation to assist those just starting out. I had the good fortune of having three informal or unofficial mentors during my first year of teaching. The relationships that I built with those individuals remains strong today. I still seek out advice and we have
frequent conversations both professional and personal. It is also important to note that my mentors are all science teachers. The tone of our conversations has changed from student, to curriculum, to building and administrative concerns.

Throughout the conversations and interviews with the special education teacher it was clear that he did not have anyone to talk to or go to for help. It was clear that he had a great deal of anxiety over his position and place in the building. Our conversations seemed to help. We did not always talk about school. Sometimes we would talk about personal situations: homelife as well as hobbies and recreational activities. After giving him the Gately survey he turned very candid and quiet. He grew more defensive toward my questioning of the interview and how to solve some of the problems. Sensing this I would change the topic of the interview to include personal and anything non-school related. The following days we were able to move forward in our planning. In addition to communication it is also important to have a place to escape during the day. Often faculty members will turn to the faculty room for solstice, but I have found this area to be problematic. Going here to unload stress and anxiety can often lead to greater stress and anxiety. The faculty room contains teachers complaining about children or about the facilities or the teaching profession. Sometimes the best resort is to avoid that room entirely (DePaul, 2000). My special education partner had no room of his own or space of his own, so he turned to the faculty room and it was amazing the stories that he shared with me about ME. People being people, talking about one another and situations that had nothing to do with them nor were they accurate. I opened my room to him. I stated that anytime, whether I had a class, lab, or free period he was welcome to use this room for anything. He did accept but seldom utilized it. He would appear during lab situations and hang out talking with students as well as
Brott and Kajs, (2001), identified keys to an effective working alliance, which included building strong interpersonal skills between veteran and first year teachers. The primary concern should be identifying a veteran teacher that you feel comfortable with talking about your teaching styles and problems. First year teachers need to be able to ask for help. They need to be aware of the quality of work they are doing and how it impacts the students. They should visit veteran teachers to see various teaching techniques and strategies that could be effective for them. Veteran teachers should offer to visit their classrooms to provide feedback on a lesson. First year teachers need to be able to accept and constructively use criticism and not be offended (DePaul, 2000). Reflection and clarifying are vital characteristics of quality first year teachers. All teachers need to have the ability to reflect upon a class, an activity, or a lab to assess effectiveness. First year teachers need to do this everyday for everything and often keeping a journal is the best solution to reflection. In a district that lacks a mentoring program veteran teachers need to be able to recognize stress and anxiety in their first year colleagues. My special education teacher partner hid his stress very well. I would see him in a faculty meeting or in the hall and he appeared confident and excited about this profession, but once we began to talk it was quite evident that he had problems and dilemmas. Communication is a key.

**Collaboration or Confidence**

Suzanne Ripley (1997) identified five planning themes for effective co-planning among co-teachers. These included: (1) Confidence in partner’s skills. (2) Design of learning environments that require active involvement. (3) Creation of learning and teaching environments where each person’s contributions are valued. (4) The development of effective routines. (5) Visible increase in productivity, planning, and creativity over time. These themes
identify every aspect that our co-teaching relationship was missing or struggling with. And I believe that all of the themes rely, start with and revolve around having confidence in a partner’s skills. This list should be expanded to include having confidence in one’s self and ability. My partner lacks the necessary confidence to be an effective teacher. Sure he was an art major being asked to assist in a science classroom, but that should not be viewed as a crutch. It was his lack of confidence and lack of self-esteem that forced us to depart from collaboration as co-teachers to just functioning as co-teachers. I wanted to build his confidence. Every good teacher has confidence in anything that he/she does in a classroom. Educators need to have confidence, if they question what they do or what they say then the educational process will suffer. Students will not be as inclined to “buy” into what they are being told or asked to do. Strategies that I found useful for building confidence in my co-teaching partner included (1) weekly planners and outlines (appendix five). By outlining the weeks work together, as well as activities, chapters, and assignments he was able to read ahead and complete assignments ahead of the students. Thus preparing him to answer questions and guide some of the students. (2) Limiting his role in the classroom to one that reviews homework assignments, quizzes, and review games (appendix four). This helped him. Not only did he feel better about the content he was reviewing, but also it made him feel part of the process and not just a bystander. His lack of assertiveness also hindered his classroom effectiveness. (3) At times he wanted me to tell him what to do and I did. Sure one telling another what to do is not collaboration but it did make us more effective. The students got to see and hear the same material but it came from a different perspective and a slightly different manner. Some of the students respond better to him than they do to me.
Initially I was extremely excited about the concept of team-teaching with a special education teacher. But as the weeks passed I found that I grew more frustrated and my excitement waned. I had these high expectations as to what the class should be like. These expectations were crushed because I was teamed with an individual that had little idea of what to do and how to do it. In addition I recognized some of my weaknesses as a co-teaching partner. My ability to “pass” the chalk was extremely difficult. There were some instances where I jumped right in and saved him because the pace of the class had slowed. I rarely gave him an opportunity to recover or finish. This frustrated him greatly and made him feel more incompetent. Eventually when he was confident to start a more proactive role in the class, I would sit in the back or on side and listen. In that time I found myself very anxious. It was so tough for me to sit there and not be an active part of the class. For the previous three years I was in command of the room and now I was sharing that responsibility and it was tough. Also I feel that my expectations were to high for him and us as co-teachers. This was the fist time for both of us co-teaching. Why did I demand so much? It was unrealistic that from the start he would be tag-teaming the class with me. He was learning a new system, new content, and new students. He had more to deal with than most first year teachers do, and I did not recognize that and appreciate the magnitude of his situation. It was that failure to recognize his particular situation that led us to struggle in the classroom.

The current classroom environment is better. I feel more at ease with his role in what he is trying to do in the class. I enjoy the class period working with him and the conversations we have on a daily basis. He feels more comfortable and confident in taking a proactive role in the assignments and duties of the classroom and feels less like a secretary. Everyday he is actively
involved working with students and helping them to solve problems, something that had not been happening at the start of the school year. We still are not collaborating in the truest sense of the word, but I feel that we have built a foundation upon which we both can grow. I have already requested that next year the two of us be teamed together again. In that I can see better and brighter classroom situations where learning will be the focal point and not our relationship.
**Table One**

**Gately and Gately Co-Teaching Survey**

Minimum score is 3, maximum score is 9

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<tr>
<th>category</th>
<th>regular education teacher score</th>
<th>special education teacher score</th>
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<td>instructional presentation</td>
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<td>4</td>
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<td>5</td>
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<tr>
<td>assessment</td>
<td>8</td>
<td>7</td>
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Appendix One

<table>
<thead>
<tr>
<th>Name of Responder</th>
<th>Date</th>
<th>Co-teaching Partner</th>
<th>Subject</th>
</tr>
</thead>
</table>

The Co-teaching Rating Scale
Regular Education Teacher Format

Respond to each question below by circling the number that best describes your viewpoint:

1: Least like me  
2: Somewhat like me  
3: Most like me

1. I can easily read the nonverbal cues of my co-teaching partner.  
2. Both teachers moving freely about the space in the co-taught classroom.  
3. My co-teacher understands the curriculum standards with respect to the content area in the co-taught classroom.  
4. Both teachers in the co-taught classroom agree on the goals of the co-taught classroom.  
5. Planning can be spontaneous, with changes occurring during the instructional lesson.  
6. My co-teaching partner often presents lessons in the co-taught class.  
7. Classroom rules and routines have been jointly developed.  
8. Many measures are used for grading students.  
9. Humor is often used in the classroom.  
10. All materials are shared in the classroom.  
11. The special educator is familiar with the methods and materials with respect to this content area.  
12. Modifications of goals for students with special needs are fully incorporated into this class.  
13. Planning for classes is the shared responsibility of both teachers.  
14. The "chalk" passes freely between the two teachers.  
15. A variety of classroom management techniques are utilized to enhance learning of all students.  
16. Test modifications are commonplace.  
17. Communication is open and honest.  
18. There is fluid positioning of teachers in the classroom.  
19. I am confident of the special educator's knowledge of the curriculum content.  
20. Student-centered objectives are incorporated into the classroom curriculum.  
21. Time is allotted (or found) for common planning.  
22. Students accept both teachers as equal partners in the learning process.  
23. Behavior management is the shared responsibility of both teachers.  
24. Goals and objectives in IEP's are considered as part of the grading for students with special needs.

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### The Co-teaching Rating Scale

**Special Education Teacher Format**

Respond to each question below by circling the number that best describes your viewpoint:

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>1: Least like me</th>
<th>2: Somewhat like me</th>
<th>3: Most like me</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I can easily read the nonverbal cues of my co-teaching partner.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>I feel comfortable moving freely about the space in the co-taught classroom.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>3</td>
<td>I understand the curriculum standards with respect to the content area in the co-taught classroom.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>4</td>
<td>Both teachers in the co-taught classroom agree on the goals of the co-taught classroom.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>5</td>
<td>Planning can be spontaneous, with changes occurring during the instructional lesson.</td>
<td>1</td>
<td>2</td>
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<td>6</td>
<td>I often present lessons in the co-taught class.</td>
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<td>2</td>
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<td>7</td>
<td>Classroom rules and routines have been jointly developed.</td>
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<td>2</td>
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<td>8</td>
<td>Many measures are used for grading students.</td>
<td>1</td>
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<td>9</td>
<td>Humor is often used in the classroom.</td>
<td>1</td>
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<td>10</td>
<td>All materials are shared in the classroom.</td>
<td>1</td>
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<tr>
<td>11</td>
<td>I am familiar with the methods and materials with respect to this content area.</td>
<td>1</td>
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<tr>
<td>12</td>
<td>Modifications of goals for students with special needs are incorporated into this class.</td>
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<td>13</td>
<td>Planning for classes is the shared responsibility of both teachers.</td>
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<td>14</td>
<td>The &quot;chalk&quot; passes freely between the two teachers.</td>
<td>1</td>
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<td>15</td>
<td>A variety of classroom management techniques are utilized to enhance learning of all students.</td>
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<td>16</td>
<td>Test modifications are commonplace.</td>
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<td>17</td>
<td>Communication is open and honest.</td>
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<td>There is fluid positioning of teachers in the classroom.</td>
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<td>I feel confident in my knowledge of the curriculum content.</td>
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<td>20</td>
<td>Student-centered objectives are incorporated into the classroom curriculum.</td>
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<td>Time is allotted (or found) for common planning.</td>
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<td>Students accept both teachers as equal partners in the learning process.</td>
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<td>Behavior management is the shared responsibility of both teachers.</td>
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<td>Goals and objectives in IEP's are considered as part of the grading for students with special needs.</td>
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## The Co-teaching Rating Scale

Transcribe each of the values for the question numbers below. Then add the columns.

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Plot the totals for each component on the Co-teaching Rating Scale Profile.

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Co-teaching Rating Scale Profile

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© Gately and Gately, 2000
Like other Atlantic hurricanes, Hurricane Andrew, which moved across southern Florida and into south-central Louisiana in August of 1992, started as a low-pressure system in the tropics off the west coast of Africa. Warm water and moisture-laden air supplied the energy for it to strengthen into an ordinary and average tropical storm. Surface winds began to move the storm westward. Although all tropical storms form and develop in this way, only a few intensify into hurricanes. Most encounter upper air winds moving in the opposite direction from the surface winds. As a result, these storms weaken and soon die out. Tropical storm Andrew, on the other hand, encountered upper air winds moving in the same direction as the surface winds. These reinforcing winds caused Andrew to quickly strengthen into an unusually powerful hurricane. In fact, Andrew may well prove to be one of the most intense Atlantic hurricanes of the twentieth century.

### Hurricane Data

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Figure 30.1
Appendix Two

1. Use the grid in Figure 30.2 to plot with a colored pencil the wind speed versus time from the data table in Figure 30.1. Connect the points using a straightedge and label your graph.

2. Use a different colored pencil to plot air pressure versus time. Note that air pressure is along the right vertical axis of the grid. Connect the points and label the graph.

3. Use the track of Hurricane Andrew in Figure 30.3 to determine the time of landfalls, that is, the instances when Hurricane Andrew hit land. For Andrew, there were two mainland landfalls, one in Florida and one in Louisiana. Draw vertical lines on your graph with a third colored pencil corresponding to the hour of each landfall.

4. In a fourth color, draw a vertical line to indicate when Hurricane Andrew moved off the western coast of Florida into the Gulf of Mexico.

5. Mark on the track of Hurricane Andrew in Figure 30.3, the hours of greatest strength, i.e. greatest wind speed and lowest pressure.

---

1. What does your graph show as the general relationship between air pressure and wind speed?

2. What happened to air pressure and wind speed after Hurricane Andrew's landfalls?

3. What happened to air pressure and wind speed after Hurricane Andrew left Florida's west coast and once again moved over water?

4. Explain why air pressure and wind speed are affected by the surface over which a hurricane moves.
Appendix Two

5. Of the cities shown on the map in Figure 30.3, Homestead experienced the most damage from Hurricane Andrew. Why?

6. Use the scale on the map and a ruler to estimate the forward speed in knots (nautical miles/hour) of Andrew on August 24 between
   (a) 6:00 (24/6) and 9:00 (24/9).
   (b) 9:00 (24/9) and 12:00 (24/12).

7. Based on question 6, how did landfall affect the forward speed of Andrew?

8. A tropical storm officially becomes a hurricane when it attains wind speeds greater than 64 knots. When did Andrew change from a tropical storm to a hurricane? When did it change back to a tropical storm?
Graded Warm-ups

(1) What conditions favor strong thunderstorms or tornadoes?

(2) What is the most damaging part of a hurricane?

(3) What time of year is best for the development of Atlantic Hurricanes?

(4) What is the rotation of an Atlantic Hurricane?

(5) Analyze the station model below to indicate the following:

Temp. = , dew point = , pressure , wind direction = , wind speed = , sky conditions
(6) Why do most tornadoes occur during spring and early summer?

(7) Why does tornado alley have the greatest frequency of tornadoes?

(8) State the origins for the following air masses cT, cP, mT, mP.

(9) Describe the typical path for an Atlantic hurricane.

(10) Bonus: Where did the term hurricane originate.
Appendix Three

Questions on Weathering

Name

1. What is weathering?

2. Why do rocks weather?

3a. When was Cleopatra's Needle Carved?

3b. Where was it carved?

3c. What climate was it in before being moved?

3d. What happened when it was moved to New York City?

4. What are two types of weathering?

5. Describe both types of weathering.

6. What are the conditions for ice wedging?
Appendix Three

7. How do plants effect weathering?

8. What are Exfoliated Domes?

9. What are two examples of Exfoliated Domes?
Appendix Four

Earth Science Mid-Term
Topics covered thus far:

1. Astronomy
   - Planets
   - Eccentricity
   - angle of insolation
   - earth's revolution
   - seasons on the earth
   - heating of earth's surface
   - specific heat and latent heat
   - characteristics of the sun
   - electromagnetic spectrum

   - Tides, phases of moon, eclipses

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22 summary p. 410
23 summary p. 430
24 summary p. 454
25 summary p. 472

(3) Weather and Climate
   - water cycle
   - formation of clouds
Appendix Four

- factors that influence precipitation
  - specific heat

- air pressure

- isobars

- high and low pressure

- isotherms

- air temperature

- pressure gradients and winds

- coriolis effect

- high and low pressure belts

- relative humidity and dew point

- air masses and fronts

- factors that influence climate

- ocean currents
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Weathering Review Sheet

Quiz on Friday!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

Complete the following

(1) What are the three factors that influence the rate at which weathering occurs?

(2) What climate favors chemical weathering? Why?

(3) What climate favors mechanical weathering? Why?

(4) How does surface area influence the rate at which weathering occurs?

(5) What kind of climatic conditions would favor little or no weathering?

(6) How would the thickness of the soil horizons appear in an area with little weathering?

(7) Types of Mechanical Weathering

1. 

2. 

3. 

Types of Chemical weathering

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2. 

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