CHAPTER V
IMPLEMENTATION OF A LEARNING CONTRACT
AND THE MODIFICATIONS TO THE ACTIVITIES

Instructional Space

The atmosphere created by the interaction of the physical organization of space and the students proved just as important as the day-to-day learning contract routines. The seventh-grade life science classroom had several features that enhanced and enriched the learning environment for the students. The classroom features included temperature-controlled air, bright lights, and seven long tables arranged so that each table had a cooperative learning group of four to five students. The students’ chairs at these tables matched the colors assigned to the lab stations.

The students in zero period designed several alternative table arrangements, and I used them throughout the school year. My favorite arrangement placed five tables parallel to each other and perpendicular to the lab counter with tables six and seven perpendicular to the opposite wall. I used an eighth table for materials, for holding an animal’s habitat, or for class handouts. Along with the cooperative learning teams, the arrangement of the tables changed every grading period. Organizing the classroom gave the students the time and the opportunity to work in a variety of grouping situations (Greenwood, 1995).

The classroom, shaped rectangular with one long wall containing three large windows, had a bulletin board between two of the windows. Under the bulletin board sat a computer station with two computers, one for the teacher’s grade book and one with a compact disc (CD) player and a color printer for the students’ use. An audio-visual center, set up on a large, portable cart, contained a television, a laser disc player, and a videocassette recorder (VCR). The computer with the CD player was connected to the television monitor.

The opposite wall contained a long, continuous lab counter designed for five groups of students. Under the lab counter, large, colored doors hid three slide-out trays with the lab equipment for that station. The lab stations’ doors had numbers corresponding to the table numbers. If the students sat at table five, then they used lab station number five.

Located at the ends of the lab counter were two classroom doors. I decorated the door at the front of the classroom with a large “welcome students” sign and a small sign which said,
“Science 7, Mrs. Harmon, Room 204.” The other door displayed a motivational poster, “Never settle for less than your best.”

The front of the classroom contained a second bulletin board with a small table underneath, a door into the science storage room, and a blackboard. On the small table sat a set of five stackable trays with colored folders in which the students placed their corrected additional and required activities. In front of the blackboard, the sixth and seventh lab stations, being double-sided, also served as my demonstration counter. On the blackboard, the date, the required activity for the day, and the homework assignment could always be found. In the corner, by the blackboard, sat my desk.

The back wall of the classroom contained giant shelves, over six feet tall, that extended from the middle of the wall to the end. These shelves housed the resource books, lab equipment, and trays of supplies for students use. On the other side of these shelves, a tall, two-door cabinet held 12 microscopes, file drawers, and support materials for instruction. Beside the two-door cabinet, a four-drawer filing cabinet and a small bookcase with a complete set of encyclopedias provided more storage space for extra materials.

All around the classroom hung brightly colored Argus motivational posters with different animals and the students’ work. The front bulletin board had a monthly calendar that posted school events. The side bulletin board had the “Bill of Rights for Animals” (Morris, 1991, p.168) made into a giant poster. Around the poster was a collage of a variety of different animals. Also on this bulletin board, the color-coded key for each period’s class folder helped with class differentiation. For example, zero period’s folder was hot pink, first’s was green, second’s was orange, fourth’s was yellow, and fifth’s was red.

The instructional space thus prepared an environment conducive to students’ learning experiences.
Implementation of a Learning Contract

“Learning contracts are best introduced at the beginning of a new course through explicit discussion and examples with the whole class, leaving individualization until learners have understood the basic principles involved” (McGarrell, 1996, p. 499).

Implementing the learning contract began immediately after the orientation process (see Appendix A, 1st Grading Period, Week 1, Day 3). The implementation process included the daily classroom routines and procedures, organizational skills, cooperative learning groups, additional activities, and required activities (see Appendix A, 1st Grading Period, Week 1, Day 4; Week 2, Day 1).

I emphasized this phrase as the key to a successful implementation: “practice, practice, practice.” Reinforcing the routines and praising the students with positive comments ensured the mastery of this process. According to Greenwood (1995), middle school students want freedom to make choices and at the same time they need structure, security, and clear limits. The classroom routines gave structure and meaning to the learning contract.

Additional Activities: A Weekly Cycle

Students’ responsibilities included reading the daily agenda on the blackboard, writing down the homework assignment in their school planner, and keeping track of the due dates for additional activities (see Exhibit F). The first set of additional activities I made due on a Friday; however, after that first set, all other due dates for additional activities became Mondays (see Appendix A, 1st Grading Period, Week 1, Day 4).

A weekly pattern developed with the additional activities. On Monday, the students showed the completed additional activities to me, and then they checked them with an answer key. After making corrections, they placed their work in the special class folder for me to record the corrected number of points in my grade book.
Workbook-type activities are the bane of most middle schoolers’ academic lives. As teachers gradually break away from decentralized skill activities, it is important to empower students as much as possible. Under contracts, such activities are much more palatable for students when they are relied upon to self-correct them with publisher-made or teacher-made answer keys. (Greenwood, 1995, p. 88-96)

After checking in the additional activities, the students picked out a new set of additional activities. They used their learning contracts to record the total possible points in the upper right-hand corner of the worksheet and to note which resource book they needed to help find the answers. The students used the remaining time to work on the new additional activities.

I established a Monday-to-Monday cycle for the students to complete the additional activities (see Figure 2).

| Monday | chose new additional activities | recorded total possible points on each | completed during week | Monday showed teacher to verified completion | student checked work with the answer key | corrected mistakes and noted number wrong on top of worksheet | returned to teacher for points earned | teacher returned to student to record points on Student Progress Sheet | repeated the cycle |

**Figure 2. The additional activities cycle from Monday to Monday.**

After the establishment of a pattern for the additional activities, the students balanced the different assignments so that the amount of work did not overwhelm them. They could progress at their own pace.

By making Monday the additional activity check day, the students could take advantage of the weekend to finish work unable to be completed during the week. This pattern or routine also gave the students a comfort zone. They knew the additional activities due dates, how to complete the assignment, the number of points for each, and the procedure used to check the work. They also had the information sheet titled “Additional Activity Information” (see Exhibit H).
Additional Activities and Letter Grade Requirements

The students needed to complete a minimum of 150 additional activity points to earn an A. Students who contracted for an A+ had to complete 200 additional activity points. The additional activity points remained the same for all letter grades. The grade requirements for the additional activity points did not change from one grading period to the next. Only required activity points changed with a grading period. For example, the first grading period had a total of 150 AA points and 350 RA points for a total of 500 points. The second grading period had a total of 600 points, 150 AA points plus 450 RA points. At the beginning of a new grading period, I reinforced this information with the students when they set up their Student Progress Sheets.

The point value for an additional activity started at 10 points. Fifteen points could be earned for an additional activity that was “A required” and 20 points for “A+ required”. The higher point values on the later additional activity provided an incentive for the students to try to complete these worksheets (see Appendix A, 1st Grading Period, Week 2, Day 2). These additional activities challenged the students more and required the students to use higher levels of critical thinking skills.

The A+ additional activities had to be done in addition to the A additional activities. For example, additional activity 20 (AA 20) had to be completed for both an A and A+, but additional activity 22 (AA 22) only had to be completed for an A+. Students who contracted for a grade other than an A or A+ did not have to include those special A or A+ additional activities in their total number of additional activities’ points. This option allowed students a choice of additional activities, and it also set the stage for reinforcing the life science concepts first introduced with the required activities’ assignments.

The students had 10 additional activities to choose from for the first additional activity check day. The majority of the students completed all ten (see Appendix A, 1st Grading Period, Week 2, Day 5).
Implementation of the Required Activities

The required activities seemed easier to implement because these activities had to be completed daily while in the classroom or for homework. A required activity, as the name implies, meant that all students were required to complete them (see Exhibit E). I assigned the required activities, and they were due either the same day or the following day. I wrote the required activity for the day on the blackboard so that students knew the exact plan for the day. Like the additional activities, the required activities for a grading period could be found listed in the learning contract together with the life science objectives (see Exhibit D). The Student Progress Sheet allowed the students to locate the total points for the required activity (see Exhibit C).

I set up the majority of the required activities as team-oriented so students worked within their cooperative learning groups. After the first grading period, the students chose their cooperative learning team at the beginning of a new grading period.

A total of seven teams worked on the required activities. These activities consisted of laboratory experiments, definitions of new terms, questions from a chapter’s section review, LASERVISION activities, a video or filmstrip, computer lab activities, and live habitat observations.

Using the information sheet from the orientation titled “Rules for Writing Up Activities” (see Exhibit G) and their learning contracts, the students set up their papers for a required activity. After completing the assignment, I called on different students to give their answers. During class time, they checked all of the required assignments with me leading the discussion and the students participating. This practice allowed me to check for understanding among the students regarding the life science concepts.

The students checked the required activities with a red pen and made corrections. The number of correct answers, the number of corrections, and the neatness of their work determined the total number of points earned. The number of possible points depended on the type of assignment. For example, definitions of new terms and a section review each had a weight of 10 points. The lab experiments totaled 15 points, while a chapter review earned 20 points. Unlike the additional activities, whose total points were based on the degree of difficulty and varied from 10, 15, or 20 points, these required activities maintained a consistent point value. The
abbreviation RA stood for required activities, followed by a number, e.g., RA 4. The number helped the students and I identify and describe the required activity when using the learning contract (see Exhibit D).

Required Activities and Letter Grade Requirements

Students who contracted for an A or A+ passed all required activities and had either a passing average (D) on the tests (for an A) or a C average on tests for an A+. If the students did not successfully complete all the required activities, then they had an opportunity to try again or retest. The points earned on a repeated required activity could not be higher than a C in my grade book. Of the total points earned during a grading period of six-weeks, 70% resulted from the completion of the required activities. In the first grading period, students could earn a total of 75 possible points for tests; the second grading period test points numbered 60; third grading period test points could total 80. During a grading period of six-weeks, I administered two tests to the students.

When I discussed the above mentioned test requirements for an A or A+ and test grades with the former teacher, she remarked “A test does not show all a students has learned” and “It never bothered me that a student made a ‘C’ on a test but earned an ‘A’ (personal communication, May 9, 2000).

Final Grade for a Grading Period of Six-Weeks

The combined, total points earned from the additional activities and the required activities determined a student’s grade for a grading period. If the student contracted for an A or an A+, then all the grade requirements needed to be accomplished or they did not make the grade. For example, if the student had the correct number of total points for an A or A+ but did not complete ALL the special additional activities or comply with the test requirement, then the letter grade earned became a B+.

At the end of a grading period, the students completed a Final Grade Summary Sheet (see Appendix C). They had the opportunity to see the total points earned and how these total points translated into a letter grade. The students also had an opportunity to reflect on their academic accomplishments and to make plans for the new learning contract (see Appendix A, 2nd Grading Period, Week 1, Days 1-2). Examples of new strategies follow: to do more additional activities, to study for tests, to following through on activities due dates, to be better organized, and to read
the board for homework assignments. On the first day back in January 1998, the students and I reflected on 1997, and then they created a list of eight ideas about what needed to happen to continue to be good students (see Appendix A, 3rd Grading Period, Week 4, Day 1).

The implementation process trained the students to be successful by completing the learning contract requirements for the letter grade for which they contracted. During the process, the students learned how to become better students by setting and achieving academic goals (see Appendix A, 1st Grading Period, Week 2, Day 4). It took between three to four weeks before the students completely understood the procedures and developed good routines (see Appendix A, 1st Grading Period, Week 4, Day 5).

Modifications to the Learning Contract Activities

Modifications to the learning contract occurred throughout the three grading periods. I noted 28 adjustments or modifications in my research journal (see Appendix A) deemed significant and necessary for the students’ learning experiences. These changes can be grouped into several categories: (a) activity point changes, (b) lab activities, demonstrations, and models, (c) concept reinforcement activities, (d) computer technology, (e) classroom aids, (f) self-evaluation, (g) time allotment, (h) audio-visual updates, and (i) live habitat observations.

Activity Point Changes

The point changes occurred when I added either an additional activity or required activity to the learning contract. An example, the “Letter to Students and Parents,” became 10 additional activity points after being signed by all three parties--student, parent, and the teacher (see Appendix A, 1st Grading Period, Week 2, Day 1).

On occasion, if I felt an activity had a higher degree of difficulty than normal, then I changed the total points for all classes (see Appendix A, 2nd Grading Period, Week 3, Day 2). It was not unusual for a student to request a point change, and if I agreed, then I adopted the point change for all classes. At the end of the grading period, if the total points did not match the original figures which the learning contract mandated, then the double points option would be used to make up the difference in the total points (see Appendix A, 1st Grading Period, Week 6, Day 1). This option became necessary due to snow days, high class absences, or field trips (see Appendix A, 1st Grading Period, Week 5, Day 3).
I planned the learning contract activities with a few extra activities to adjust for those activities that did not require a lot of time, for more difficult concept materials, which needed more time, or for other time constraints (see Appendix A, 1st Grading Period, Week 6, Day 3). The latter referred to lab activities that required the students to manipulate a variety of lab supplies or reagents. The lab activities had been previously set up for six teams; however, this year the classes had seven teams. In some cases, we did not possess the necessary reagent containers to make up an additional set of reagents e.g., dropper bottles or glassware. Since we had only 12 microscopes available, a class of 30 students required more time to finish.

**Lab Activities, Demonstrations, and Models**

During this second year for the new science curriculum, the lab activities and demonstrations were still being updated and modified (see Appendix A, 2nd Grading Period, Week 6, Day 3). Because of live human tissue restrictions, a lab that examined cheek cells could no longer be done. Some of the older textbooks still used this lab; however, another lab procedure used chicken tissue as a substitute for this concept (see Appendix A, 2nd Grading Period, Week 4, Day 2 & 5). I added a lab practical to test students on basic lab measuring skills (see Appendix A, 1st Grading Period, Week 6, Day 1 & 2).

Demonstrations to use group dynamics and critical thinking skills were also added to the learning contract activities (see Appendix A, 3rd Grading Period, Week 6, Day 4). An example of a new demonstration included placing an egg in vinegar to help explain fluid transport in cells (see Appendix A, 2nd Grading Period, Week 6, Day 3).

In class, I encouraged construction of models to help the students understand a concept from another viewpoint. The students made models of cells with edible organelles to help learn the different names and functions of these cell parts (see Appendix A, 2nd Grading Period, Week 3, Day 2). The students made models of DNA using a small shape from home as the base and then cut out the remaining amino acids shapes (see Appendix A, 3rd Grading Period, Week 4, Day 4 & 5; Week 5, Day 2.).
Concept Reinforcement Activities

These activities involved getting students ready for either a chapter test or a six-weeks test. The new activity, Cell Bingo, helped students review for new word definitions (see Appendix A, 2nd Grading Period, Week 3, Day 5). Another activity, called team wars, had the students in teams that earned points for correct answers to possible test questions. In each case, the students generated the definitions or the team war questions. I then pooled them and used them to ask the students questions.

Computer Technology

The new computer lab opened late in the second grading period, and both teachers and students went through an orientation period with a computer assistant. After that time, teachers coordinated programs within their individual curricula with the computer lab assistant and then scheduled a time on a master schedule to use the computer lab (see Appendix A, 3rd Grading Period, Week 5, Day 1 & 5).

The computer technology activities added a new dimension to the learning contract. Because of the scheduling time in the computer room, these activities had to be coordinated in advance. If for some reason school was not in session on the day that I had planned the computer activity, then I had to reschedule. This incident occurred three times in one month, each time due to bad weather.

Some of the computer activities included: Internet search for cell organelles; paint, draw and word processing to design a transgenic organism, and then describe its use for mankind; Power Point charts to compare DNA and RNA; and later in the year, frog dissection using the virtual frog (see Appendix A, 2nd Grading Period, Week 7, Day 1 & 3rd Grading Period, Week 5, Day 5).

Classroom Aids

I added visual aids to help remind the students about due dates. In the first grading period, they included: a homework poster from Argus; an additional activities calendar noting the numbers of the additional activities and their due dates; a poster of the learning contract points, and the grade requirements portion of the learning contract printed on the same color paper as the students’ posted on a bulletin board (see Appendix A, 1st Grading Period, Week 3, Day 1 & Week 5, Day 3). Throughout the year, the students’ work hung all around the room as
exemplary models of different science concepts, as visual aids, and as classroom aids (see Appendix A, 1st Grading Period, Week 3, Day 3).

**Self-Evaluation**

I devoted class time to showing the students how to calculate their current grade based on the total points earned to date (see Appendix A, 1st Grading Period, Week 3, Day 1). Once at mid-term and again at the end of the six-weeks, students used the Student Progress Sheet, and then the Final Grade Summary Sheet to help tally total points (see Appendix A, 1st Grading Period, Week 4, Day 2 & 2nd Grading Period, Week 1, Day 1). After the first grading period, the students felt more comfortable with this process and with the forms. On the Final Grade Summary Sheet, the students also answered two questions about their contracted grade and the earned grade and then determined what goals needed to be set for the new grading period.

**Time Allotment**

I did adjust due dates for activities either because of the weather, conflicts with scheduling the computer lab, student absences, or because the students needed more time on an assignment (see Appendix A, 3rd Grading Period, Week 1, Day 2).

Until I got a feel for the students’ combined capabilities, timelines needed to be adjusted. With several labs, I changed the due dates so that the students could go beyond the general procedure and go to a higher level of thinking skills. Often, the textbook authors did not write the lab exercise directions very clearly, so they took more time to explain. In some cases, because of the increased class enrollment, the labs took longer because of the space constraints and reagent availability. The necessity to share materials also caused a delay, and the students completed some labs with a rotation through lab stations. Activities that had a more hands-on nature, particularly those that required the students to make models or construct posters, took longer to complete because of the nature of the activity. Edible labs allowed for creativity and self-expression and therefore needed different time allotment, e.g., the cell lab with edible organelles.
The computer lab contained 25 computers, but since the class sizes all held over 25 students, time needed to be adjusted for these activities as well (see Appendix A, 3rd Grading Period, Week 6, Day 4).

**Audio-Visual Update**

Instead of viewing outdated filmstrips, I replaced them with videos, CD-ROMs, and laser discs (see Appendix A, 3rd Grading Period, Week 3, Day 3). Computer programs also helped teach science concepts, helped with the review of material, or showed daily applications to real world situations. An example used later in the school year was the virtual frog for dissection. A new CD-ROM described in detail the five kingdoms. As these audio-visual materials became available, I composed new worksheets, and these replaced the older required activities.

**Live Habitat Observations**

Observations of the live habitats were added to the learning contract as a required activity. The classroom housed seven different live habitats, one for each cooperative learning term. These habitats included four turtles, six hermit crabs, two albino frogs, a gerbil, two geckos, a fighting fish, and four mice. Some of these live animals, used the previous school year, the students adopted for the summer (see Appendix A, 1st Grading Period, Week 6, Day 1 & Day 4).

The student teams followed a weekly rotation schedule through the seven habitats and then made daily observations. By observing each habitat, the students learned about the daily care, maintenance, and feeding habits of the specimens. Each team held the responsibility of providing fresh water and food for the habitat dwellers (see Appendix A, 1st Grading Period, Week 6, Day 1).

Over the holidays, the students had the opportunity to adopt an animal and return it when school reopened. Summer adoption of an animal could only be approved with written permission from the parents.

Each of the modifications offered an updated approach to the life science concepts, and they expanded the learning contract activities. The modifications to the learning contract activities needed to be carried out in order to meet the very diverse learning needs of the seventh-
grade life science students and to offer more opportunities for the students to achieve their learning contract grade.