

CHAPTER II

REVIEW OF RELATED LITERATURE

As the teacher-researcher and the classroom teacher, of great importance was the connection between my case study and the related literature. My search of the related literature highlighted three groups of individuals: (a) the teacher with his or her roles in the classroom, (b) the students and their roles as learners, and (c) the community of scholars who conducted research on learning contracts. In this chapter, I connect my case study with each of the three groups.

The Teacher's Roles in the Learning Process

The classroom teacher has a variety of roles and responsibilities that change according to the students he or she instructs. Teaching the life science curriculum encompasses a broad spectrum of choices with respect to delivery strategies and hands-on activities that enhance instruction. In this next section, the teacher's roles include individualizing and differentiating instruction, selecting age-appropriate teaching strategies, and acting as the facilitator of learning.

Individualized Instruction

According to Dunn and Dunn (1972), a student contract "should be a part of every dynamic educational program," and as a powerful teaching tool it should stimulate individualized learning (p. 31). They also stated that "individualized instruction is the one-on-one relationship between a student and what he learns" (Dunn & Dunn, 1975, p. 5).

One of my reasons for selecting the Dunn and Dunn model for the learning contract used in my case study was their idea of individualized instruction. This instructional tool gave the students more opportunities to be actively involved in the educational process, and it enabled the teacher to offer a variety of learning opportunities for the mixed-ability students. The learning opportunities changed with the types of assignments, the availability of resources for hands-on activities, enrichment activities, and review activities for reinforcing curriculum concepts.

Differentiating Instruction

The challenge for the middle school teacher is to differentiate or to adapt instruction to respond to the diverse student needs found in inclusive, mixed-ability classrooms (Tomlinson, 1995c). A differentiated classroom offers a variety of learning options designed to tap into different readiness levels, interests, and learning profiles. According to Tomlinson (1995c),

“Teachers utilize (a) a variety of ways for students to explore curriculum content, (b) a variety of sense-making activities or processes through which students can come to understand and ‘own’ information and ideas, and (c) a variety of options through which students can demonstrate or exhibit what they have learned” (p. 1).

After I read the different articles by Dr. Carol Tomlinson, I went back to the lessons that had already occurred to check and see if I had utilized variety in my daily instruction. As the classroom teacher, I did use several different instructional strategies in the learning contract to promote learning and an understanding of the material being taught in the seventh-grade life science classroom. I introduced and reinforced curricular content using a computer with CD-ROM, filmstrips, laser disc, and videos. “Sense-making activities” included hands-on activities, lab exercises, Power Point exercises in the computer lab, and group projects, for example building a cell using candy as inclusion bodies or organelles. Students had a variety of options to demonstrate what they had learned through class discussions, tests, lab exercises, projects, and additional activities. Because of the mixed-ability students in my classroom and their need to understand the science concepts being taught, differentiating instruction became important to me.

The teacher uses four strategies to shape teaching and learning in an effective, differentiated classroom (Tomlinson, 1995a): (1) “Instruction is concept focused and principle driven.” All students come to understand the key principles. Such instruction enables struggling learners to grasp and use powerful ideas and at the same time, encourages advanced learners to expand their understanding and application of the key concepts and principles. This type of instruction stresses understanding rather than retention of fragmented bits of information. (2) “On-going assessment of student readiness and growth are built into the curriculum.” Teachers do not assume that all students need the same segment of study, but continuously assess student interest and provide assistance when needed. (3) “Flexible grouping is consistently used.” It encourages students to work in many patterns, whether in-groups or individually, or as one large group. (4) “Students are active explorers,” and “teachers guide the exploration.” (p. 1) In the differentiated classroom the teacher works as a guide or facilitator of learning. Students learn to be responsible for their work and develop ownership of their learning (p. 1). The students’ learning contract is one of many strategies that offers the foundation necessary for the learners to assume the responsibility for their individual learning journey.

The learning contract used for my case study contained activities that promoted flexible grouping for daily seating and lab activities. Students participated in self-evaluation at the end of each grading period, and they were actively engaged as they searched through the reference materials in the life science classroom or in the computer lab. The students assumed responsibility for their learning by completing assignments listed in the learning contract.

According to Tomlinson (1995b), there must be a reason to differentiate instruction. To be successful, the teacher must draw on classroom management and routines, prepare both students and parents for a differentiated approach to learning, and work with other faculty members to coordinate a team approach to learning. These considerations move the students toward student-centered learning, or self-directed learning, and help prepare them as they start their journey as life-long learners.

Strategies for Learning

Teachers plan strategies to differentiate instruction to help students find a good learning plan. The following list of strategies help: “(a) multiple texts and supplementary materials; (b) computer programs; (c) interest centers; (d) compacting; (e) tiered sense-making activities and tiered products; (f) tasks and products designed with a multiple intelligence orientation; (g) independent learning contracts; (h) complex group investigation; (i) product criteria negotiated jointly by students and teachers; (j) graduated task and product rubrics; and (k) learning contracts” (Tomlinson, 1995c, p. 2).

At the University of Connecticut, Joe Renzulli developed curriculum compacting as a strategy to help advanced learners maximize their time for learning. The process contains three stages. In stage 1, the teacher identifies the students and assesses their knowledge about a particular topic. With stage 2, the teacher notes those concepts that the students did not show mastery, and he or she develops a plan for the students to learn those concepts. In stage 3, the students and teacher design a project that the students can work on while the other students work with general studies. According to Tomlinson (1995a) “advanced learners gain little by continuing to relearn the known, but they gain much from the expectation that they will continually engage in challenging and productive learning in school. Compacting helps eliminate the former and facilitate the latter” (p. 49).

Tiered lessons are a way of “taking the same concepts and essential understanding of a lesson and adapting them to the various ability levels, interests, and learning profiles of students” (C. A. Tomlinson, personal communication, September 8, 2000). Both of these strategies, compacting and tiered-sense-making activities, while new to me as the teacher-researcher, could be used within the guidelines of a learning contract in the future.

Thompson and Poppen (1972) stated that learning contracts allow the teacher to initiate a number of learning strategies. These learning strategies focus on the students as the individuals responsible for: “(a) making choices about meeting learning objectives; (b) making commitments to complete personal learning goals; (c) learning through independent learning activities; (d) using learning styles to develop alternatives to learning; (e) working cooperatively with peers; (f) sensing a freedom from threat of failure; (g) identifying the area where the task is challenging; (h) finding the opportunity for stimulating learning experiences; (i) completing course objectives; and (k) connecting the learning process to real-life encounters” (p. 118).

Thompson and Poppen’s strategy list helped in planning activities for curriculum development and concept mastery using a learning contract. These strategies added more variety to instructional methods, and they allowed students to use what they learned in the classroom and then apply it to real-life situations. Students made choices about which additional activities they wanted to complete, and they worked cooperatively with their classmates. There was a sense of freedom from the threat of failure because the students worked cooperatively within their teams as they completed course objectives. When the students signed up for a grade, they identified personal learning goals. The opportunities for stimulating learning experiences occurred with class discussions, lab activities, modeling, computer lab exercises, and group projects.

Facilitators of Learning

The traditional instructor accepts the responsibility for what and how students learn. To achieve the goal of teaching students how to learn, instructors should become facilitators of learning (Cristiano, 1993). “Knowing how to learn is the most basic of all skills because it is the key that unlocks future success. Individuals who know how to learn can more easily acquire other skills. Without this essential skill however, one’s learning is not as rapid or as comprehensive and long lasting” (Carnevale, Gainer, & Meltzer, 1990, p. 37).

Carl Rogers (1983) wrote about the role of the teacher as facilitator, and he suggested that the instructor ask the following questions:

Now how can I help him or her find the resources-the people, the experiences, the learning facilities, the books, the knowledge in myself-which will help them in ways that will provide answers to the things that concern them, the things they are eager to learn? And, then later, how can I help them evaluate their own progress and set future learning goals based on this self-evaluation? (p. 136)

Instructors feel a sense of accomplishment by helping students achieve course competencies by serving as motivators, coaches, and resource persons. Students achieve course competencies by developing, implementing, and evaluating their own learning plans (Cristiano, 1993).

Malcolm Knowles (1986) summarized these feelings when he said:

Faculty members must change their psychic reward system from valuing the extent to which the learners conform to their direction to valuing the extent to which the learners take the initiative in directing their own learning. Traditional teachers tend to get satisfaction from controlling the energy of learners; facilitators get their satisfaction from releasing the energy of learners. (p. 246)

Perhaps a better way of saying this is that “creative leadership is that form of leadership that releases the creative energy of the people being led” (Knowles, 1990, p. 183).

The learning contract used for my research enabled me to become the facilitator of learning with my students. By planning activities that engaged the students, by providing a variety of choices through the additional activities, and by rotating the students through cooperative learning teams, I better facilitated their learning. Through the pages of the learning contract, the instructional concepts allowed the students to take charge of their learning plan.

As the facilitator of learning, I witnessed the students’ energy at its highest each time I distributed a new learning contract. Rogers (1969) stated that the critical element in performing the role as facilitator is “the personal relationship between the facilitator and the learner, which in turn depends on the facilitator’s possessing three attitudinal qualities: (1) realness or

genuineness, (2) nonpossessive caring, prizing, trust, and respect, and (3) empathic understanding and sensitive and accurate listening” (pp. 106-126).

Malcolm Knowles (1990) in his transition from teacher to facilitator of learning recalled:

I saw my role shifting from content-transmitter to process manager and only secondarily-content resources. ...I found myself performing a different set of functions that required a different set of skills. Instead of performing the functions of content planner and transmitter, which required primarily presentation skills, I was performing the function of process designer and manager, which required relationship building, needs assessment, involvement of students in planning, linking students to learning resources, and encouraging student initiative. I have never been tempted since then to revert to the role of teacher. (p. 181)

The Student's Role in the Learning Process

“Much of the emphasis in individual differences research is on how learning professionals should alter their learning facilitation and leadership to make learning more meaningful to learners. A complementary response has been an emphasis on helping learners expand their learning abilities through ‘learning-how-to-learn’ interventions.” (Knowles, et. al., 1998, p. 166). A learning contract is just one of these interventions for the student learner.

Education needs to be an active rather than a passive process (Codde, 1996). The students' roles include participating in their own learning and developing the skills of self-directed inquiry. The learning contracts allow students to structure their own learning and to be active participants (Codde). White and Greenwood (1992) explained, “the learning contract allows the students to have a say in what and how they will learn” (p. 20). Student choice is a democratic process for making assignments. The students assume more responsibility for their learning plan when given choices. Learning contracts empower the students as learners to be in control. They establish a climate in the classroom that signals, “students are valued, respected, and capable of assuming responsibility for a large portion of their learning” (p. 20).

The learning contract enabled students to identify their learning objectives within the parameters of the course objectives and served as a means for students to learn how to learn in their subject area (Cristiano, 1993).

The seventh-grade students actively participated while using learning contracts to plan for learning throughout the school year. With each new learning contract, the students selected activities from a menu of available assignments. They took charge of their learning on a daily basis, and they developed the skills needed to be successful learners.

Students and Diversity

When I began to teach in January 1997, I discovered big differences between the high school students I had recently instructed and the seventh-grade middle school students I now called my students. Diversity, not uniformity, is the norm for the students in the seventh-grade. This diversity manifests itself in physical, social, emotional, and intellectual stages of development. Each of these stages can have a direct influence on the students' learning ability.

In grades 7 and 8, there can be great disparity with respect to physical growth. Girls may be taller than boys in the 10-to-15-year-old age group, and the uneven development of bone and muscle structure results in a lack of coordination (McKay, 1995).

Students' development ranges from a strong dependence on the home and family to peers as a source of standards and models of behavior. "Group membership is a strong social need, and the student will go to great lengths to acquire it and respond readily to what they see as peer pressure" (McKay, 1995, p. 20).

Adolescents demonstrate feelings of inadequacy, superiority or inferiority, and independence from parents. They struggle with self-concept and sex-role identification. They have a short attention span and relatively shallow thinking powers (McKay, 1995).

The developmental stage ranges from limited thinking and reasoning skills to formal abstract thinking. "The right and left brain development and growth periods lead to a wide range of academic ability among these students" (McKay, 1995, p. 20).

In 1989, the Carnegie Council on Adolescent Development, addressed the mismatch between schooling and the adolescent learner as follows:

The world is being rapidly transformed by science and technology in ways that have profound significance for our economic well being and for a democratic society. Work will require much more technical competence and a great deal of flexibility. In the years immediately ahead, the national cohort of young people will be smaller than in recent decades. Fewer college-age students will enter the work force. We need to

develop the talent of all our people if this nation is to be economically competitive and socially cohesive in the different world of the next century. To do so, we must take advantage of the neglected opportunity provided by the fascinating period of early adolescence, ages 10 to 15 years. This is a time not only of inordinate vulnerability, but an exceptional chance for constructive interventions that can have life-long influence. (p. 12-13)

Through learning contract activities, the adolescent learners develop their talents to be self-directed learners. If in fact fewer college-age students enter the work force, then the need to give our students an immediate goal and a future aim for success in the work force falls on the shoulders of the classroom teacher. He or she accepts the challenge to reach out to this mismatched group and provide an instructional foundation on which their pupils can go forward and meet the challenges of the future.

Students and Ability Grouping

Johnston and Markle (1983) reported that although a majority of teachers believe that ability grouping improves effectiveness, the practice has a deleterious effect on teacher expectations and instructional practices, especially for low-ability students. This affects students in the areas of perceptions of self, of others, and of academic performance. Furthermore, “ability grouping limits opportunities for students to learn from and accept peers of different social and economic backgrounds. It may perpetuate the notions of superior and inferior classes of persons” (McKay, 1995, p. 19). However, despite the recommendation of the Carnegie Council on Adolescent Development to allow all students to enter advanced courses, the universal practice in today’s middle schools remains tracking students by academic achievement (Ames & Miller, 1994). It is further believed that tracking has a negative impact on low achieving students’ aspirations and self-esteem, while denying them access to the advanced courses that they need to get into college and find rewarding careers (Oakes, 1985; Wheelock, 1992).

The school in my case study did not use ability tracking to schedule seventh-grade students for science classes. Therefore, the learning contract, as a learn-how-to-learn intervention, had meaningful effects for mixed-ability students. The gifted students, the students with special needs, and the average achievers had the opportunity to attain high grades through the learning contract’s activities.

Students and Learning Processes

According to Knowles (1986) a learning contract typically specifies five major themes: (a) how the knowledge, skills, attitudes, and values are to be acquired by the learner (learning objectives); (b) how the learning objectives are to be accomplished, (learning resources and strategies); (c) how to assign a target date for their accomplishment; (d) how the evidence to be presented will demonstrate that the objectives have been accomplished; and (e) how the evidence will be judged, or validated, or how much credit will be awarded to the learner, or what grade.

With a learning contract, students use a variety of assignments to achieve a final grade. However, in the situation where a class uses a midterm and a final examination to arrive at a grade, a student's grade is based on a very narrow sampling of his performance capability (Newcomb & Warmbrod, 1974). "But sampling behavior by testing in education is like standing by a river with a cup, dipping into the stream as it moves by. In assessing learning, like dipping the cup into the river, one seldom gets an adequate sample" (Frymier, 1965, p. 235).

Allowing students to decide which grades they wish to strive for, which activities they will engage in, and how they will demonstrate that they have satisfactorily completed their studies permits a teacher to seize upon powerful motivating forces within individual students. These student-centered choices "shifts responsibility for learning from the teacher to the student, but at the same time offers an incentive by insuring success under known conditions. Students are challenged without being threatened. Students are almost never dissatisfied with grades, whatever they may be" (Frymier, 1965, p. 263-264).

Students identified problems or issues imperative to them and also relevant to the course at hand. They then identified the learning objectives and learning resources. Course objectives may address attaining knowledge or developing a skill. "The result of the learning contract is some kind of evidence of the achievement of the learning objectives" (Cristiano, 1993, p. 1).

Carl Rogers (1983) stated his purpose for learning contracts as follows:

We are, in my view, faced with an entirely new situation in education where the goal of education, if we are to survive, is the facilitation of change and learning. The only man who is educated is the man who has learned how to learn; the man who has learned how to adapt and change; the man who has realized that no knowledge is secure, that only the process of seeking knowledge gives a basis for security. Changingness,

reliance on process rather than upon static knowledge, is the only thing that makes any sense as a goal for education in the modern world. (p. 120)

Using the learning contract as a means to accomplish the curriculum goals as well as to set the foundation for future learning experiences enables the students to keep abreast of a changing environment.

“An understanding of the ways students learn is the door to educational improvement. And learning style diagnosis is the key to an understanding of student learning” (Keefe, 1987, p. 32). “No educational program can be successful without attention to the personal learning needs of the individual learner” (Keefe, 1987, p. 34). It is important to know what helps students learn and then adjust teaching strategies to enhance the method of instruction. Students can learn from a combination of modalities, hands-on activities, oral and visual instruction and a combination of these methods. The learning contract activities use these methods to optimize learning for the seventh-grade, life science student.

A Community of Scholars

Several researchers and their contributions to the topic of learning contracts provided a foundation for my case study. On the national level, Rita and Kenneth Dunn (1972) documented all the steps for setting up a student-learning contract and proposed the objectives that supported its implementation. Later, in 1975, they authored another book in which they continued to give information about the learning contract’s practical application, design, objectives, and implementation (Dunn & Dunn, 1975). Rita Dunn (1995) continues to research individualized instruction and learning styles. William D. Romey (1968) devoted a chapter in his book to a completed learning contract with requirements, grade stipulations, and activities. His work focused on the inquiry approach to science instruction. Thompson and Poppen (1972) listed the strategies that can be used with a learning contract so that learning becomes the individual responsibility of the student.

Carl Rogers (1983) developed the theoretical foundation for contract learning. Malcolm Knowles (1986, 1990, 1998) expressed a keen interest in learning contracts, and he reported his findings in several articles and books. His definition of learning contracts appeared in several subsequent articles. He presented a collection of learning contracts, the rationale behind contract

learning, and suggestions for achieving success with contracted learning. He is sometimes called the “Father of Adult Learning Theory.”

In the 1990’s, several individuals addressed the learning contract as a means to differentiate instruction. Marilyn J. Cristiano (1993) used learning contracts at the post-secondary level. Debra R. Dew and Jan E. Waggoner (1993) conducted a study on six instructional models, including learning contracts. Carol Ann Tomlinson (1995a, 1995b, 1995c) used the learning contract to differentiate instruction with gifted learners in a middle school. She listed strategies for managing a differentiated classroom.

Joseph Codde (1996) explored the use of learning contracts and the benefits they offered students at the community college level. Geoff Anderson, David Boud, and Jane Sampson (1996) published their findings on learning contracts based on over twenty years of experience with this instructional tool. Their research and practical experiences lend support to using learning contracts.

Research with Learning Contracts and the Reported Outcomes

Several individuals have conducted research using learning contracts. The terms learning contracts, grade contracts, contract learning, contract grading, and Contract Activity Packages (CAP) connect a learner to a learning experience.

In 1973, Lawrence H. Newcomb, under the direction of J. Robert Warmbrod, completed a doctoral dissertation by conducting research using a learning contract. His quasi-experimental research focused on the effect of contract grading on the following six variables:

- (1) The performance of students on a cognitive post test.
- (2) The final grade received by the student in the course.
- (3) The attitude of the students towards the course.
- (4) The amount of assigned reading completed by the students.
- (5) The amount of time students devoted to the course.
- (6) The degree to which students perceived their individual needs to be met by the course. (p. 4)

The study used students in two sections of Introduction to Agricultural Education, Fall Quarter, 1972, and Winter Quarter, 1973. The study used intact groups for each quarter since it was not possible to randomly assign students to the two classes. The researcher randomly

assigned contract grading to one section and conventional grading to the other section each quarter. The same instructor, also the experimenter, taught both sections. The instructor taught the course the preceding three quarters (Newcomb & Warmbrod, 1974). Newcomb (1973) used the non-equivalent control group study design for his research. The two levels of the independent variable (contract grading versus conventional grading) were randomly assigned to the two sections each quarter. He defined conventional grading for this study as a system of assigning final grades for the course based on quizzes, midterms, papers, and final examinations.

Since the instructor might have intentionally or unintentionally favored the experimental section, independent raters monitored his teaching of both sections. They used the Observation System for Instructional Analysis to determine if the teaching-learning interactions differed in either section. The results of this monitoring clearly demonstrated that he taught each section in an almost identical fashion (Newcomb & Warmbrod, 1974). The researcher assessed both groups of students at the beginning of each quarter with a cognitive pretest to determine if either group entered the course with more knowledge pertinent to the content of the course than the other group. The results showed that each group performed essentially the same on the pretest both quarters. Also, both groups' cumulative grade point averages were compared for both quarters and "there were no significant differences between the mean grade point averages for either group either quarter" (p. 7).

Newcomb's (1973) contract had similarities to the grade contract proposed by Frymier (1965). The contract contained the following conditions:

- (1) It is a written agreement negotiated between the instructor and each student that specifies some experiences required by all students as well as some experiences unique to individual students.
- (2) It includes dates when products are due, when tests are to be given, etc.
- (3) It requires specific interaction between the instructor and each student in order for the student to propose products and for the instructor to react to such proposals.
- (4) It provides for all work to be graded as satisfactory or unsatisfactory. All unsatisfactory work is returned and resubmitted by the student until it is satisfactory. (Newcomb & Warmbrod, 1974, p. 6)

The results showed no significant difference between the students' performance in the contract group and the conventional group. During the Fall Quarter, students contracting for grades received final grades in the course not significantly differing from students conventionally graded. However, during the Winter Quarter study, the contract-graded students received significantly higher final grades in the course than the grades received by the students conventionally-graded. The researcher further reported no significant differences between the other variables measured in the experiment. The researcher proposed a future study to specify a more accurate definition of conventional grading since both groups received the same treatment and no differences could have been expected (Newcomb & Warmbrod, 1974).

Brown (1991) compared the math achievement of students taught with traditional instructional methods and students taught with Contract Activity Packages. Brown found no significant differences between the total math scores and problem solving math scores of the students taught by Contract Activity Packages and those students taught by traditional methods. As compared to those students taught by traditional methods, the students taught by the Contract Activity Packages earned significantly higher achievement scores in math computation.

Santano (1996) explored the effects of the Contract Activity Package on achievement in social studies and the attitudes of fourth-grade gifted students. She looked into the differences in attitude and achievement through the use of traditional instructional methods and Contract Activity Packages. The data analysis utilized multivariate analysis of variance employing a repeated measures (counterbalanced) design and showed a significant difference between Contract Activity Packages and traditional instruction. Her research also employed the Dunn, Dunn, and Price Learning Style Inventory (LSI) to measure the attitude of the student learners. This research and the research done by White (1981) formed the link between learning contracts (Contract Activity Package) and learning styles upon student achievement.

White (1981) used two learning style instruments, the Dunn, Dunn, and Price Learning Style Inventory (LSI) and the California Psychological Inventory (CPI) to measure the elements of emotions of learners in seventh-grade social studies. She tested 161 seventh-grade adolescent learners and used a pretest, post-test experimental design. The dependent variable was grade scores on a test of specific behavioral objectives, and the independent variables were learning style and teaching methods. She used a split-plot analysis of variance to analyze the data. The

researcher concluded that the findings did not support the hypothesis of an interaction between learning styles and the selected teaching methods. She had to reject the hypothesis that there would be no difference in mean achievement scores for students classified as more persistent and responsible and those classified as less persistent and responsible. Those students identified as more persistent and responsible scored significantly higher on the test of specific behavioral objectives.

Harris (1994) determined the effects of student learning contracts on specified final grade goals and point-earning activities. He designed the study around two demographically similar groups: a control group of 72 students, which used a learning contract, and an experimental group of 51 students, which did not use a learning contract. Only 25% of the control group completed their contracts; 72.55% of the experimental group completed at least one book report or term paper as compared to 69.44% of the control group; the control group achieved a total point earned mean of 86.07, while the experimental group mean was 94.50. An independent t-test showed the difference in total mean points to be significant ($p < .01$).

The research (Newcomb, 1973; Brown, 1991; Harris, 1994) on learning contracts showed that they significantly affected student achievement. When using the learning contract with the learning style inventories, White (1981) reported on the emotions of the seventh-grade learners while Santano (1996) researched the students' attitudes with student achievement. Santano (1996) recognized a significant difference between learning contracts (CAP) and the traditional methods of instruction upon student achievement.