

CHAPTER II

REVIEW OF LITERATURE

Taking advantage of time students normally spend at home during the summer and using that time to strengthen skills is the premise on which the Extended School Year Program was developed. This chapter is organized into seven sections to provide a literature review for related components of the Extended School Year Program. The first section contains learning theories that schools should consider when implementing programs. Because the Extended School Year Program was implemented in a middle school, the second section contains literature about middle-level learning. Literature on the relationship between time on learning and student achievement and summer regression is in the third and fourth sections. The fifth section contains literature on student attendance. Literature on effective programs is in the sixth section. This chapter concludes with the seventh section that contains literature on program evaluation.

The Extended School Year Program and Learning Theories

Before evaluating programs that are designed to impact learning, attention should be given to learning research. This section explores learning theories as a basis for evaluating the Extended School Year Program. In discussing learning, several theorists drew consideration.

Consideration was given to Piaget's theory of learning: "(1) Knowing is grounded in activity, (2) development occurs gradually and progressively resulting in a reorganization of mental structures used to make sense of the environment, and (3) learning occurs when the individual acts to resolve conflicts between held beliefs and new data which does not fit those beliefs" (Jordon, 1993, p.8). Piaget stressed that individuals make sense of their world and stressed activities that bring understanding to concepts or views. Piaget emphasized inquiry teaching, cooperative learning, and independent study rather than direct teaching strategies (Jordon). Other researchers supported Piaget's.

Bruner, (1965) who believed learning occurs in steps and is more likely to be successful when there is a connection with what is familiar to the learner, supported Piaget's work.

Although Kingsley and Hall (1967) were critics of Piaget's theory, they believed cognitive growth takes place when children have an opportunity to experience the content.

Carroll (1985), a significant contributor to research on time and learning, drew several parallels to Piaget's theory in his model of school learning. Carroll's model suggested that certain factors determine how much time a person needs to learn a task. Time may differ based on instructional strategies, student aptitude, and persistence.

In support of Carroll, Bloom (1985) suggested that many strategies could be used to support mastery learning. Each strategy should deal with learning differences through relating instruction to the needs and characteristics of each child (Bloom).

In formulating the Extended School Year Program, organizers wanted to maximize time for student inquiry by connecting action-based methodologies and instruction based upon the student's individualized needs. The curriculum and instructional guides were designed to enhance student learning. Furthermore, the design committee sought to rearrange the teaching environment to promote the type of learning discussed by Piaget. In its design, the Extended School Year Program required different instructional methodologies, different uses of time, and additional time.

The Extended School Year Program and Middle Level Learning

The Extended School Year Program was designed to provide extra time to enhance the learning environment for participating middle-level students. Because the program was geared toward middle school students, research was conducted on adolescent behavior that was closely related to behaviors associated with middle school students.

Milgram (1992) grouped change and growth for adolescents into four areas: physical, social, emotional, and intellectual. "Students change dramatically during a relatively short period of time, which means that the changes themselves and the speed in which they occur have an impact on students" (Milgram, p. 16).

The need to socialize is particularly strong for the middle school student. Developmentally, peer association is normal and an important part of learning. Middle school students who are under-socialized often miss out on learning opportunities and, in some ways, were not achieving one of the developmental stages appropriate to their age

group (Milgram, 1992). During the Extended School Year Program, teachers utilized teaming, researching, scientific lab experiments, and other cooperative activities to encourage student interaction. Program designers used field trips, snack breaks, and transportation to and from school to encourage student interaction. By utilizing learning opportunities that required student interaction, and giving students opportunities within the course of the day, to socialize, program designers and teachers promoted the types of social interaction required for adolescent development.

According to Milgram (1992), the growth of emotional maturity is not only supported by good role models but by young adolescents' advances in intellectual development. Although most middle-level students desire a sense of autonomy, emotionally, this characteristic is not yet fully developed. Adolescents tend to have significant mood swings that may affect how other students and adults perceive them. Changes in emotions could also cause an adolescent to struggle academically and socially. The design of the Extended School Year Program was created to help with some of the academic and emotional barriers students' experience during the school year. The Extended School Year Program was designed to use time, during the summer, to address not only academic areas but social and emotional issues of participating students. The summer provided opportunities for instructors to utilize the additional time to address emotional issues that may have gotten in the way of learning during the school year. One guidance counselor was also available for the students who participated in the Extended School Year Program. The counselor addressed pressures associated with puberty and sought to remove social and emotional obstacles. Once removed, more focus can be directed to academic development.

Considering the vast differences in how middle-level students learn, the designers of the Extended School Year Program sought to find innovative ways to educate children more effectively. This innovative approach required teachers to use learning strategies that accommodated student's special and varied needs (Irvin, 1992). According to Irvin, middle school students should be provided with "(1) the opportunity to work cooperatively in groups; (2) a vehicle for connecting new information to what is already known, thus helping students to feel more confident about learning new material and recognizing and validating their own experience; (3) success-oriented experiences in

abstract thinking that may help students move gradually from the concrete to the abstract levels of reasoning; (4) an opportunity to move and change activities; (5) successful experiences that help students feel better about themselves as learners; (6) motivation to learn through the use of strategies that heighten students' curiosity about learning" (Irvin, p. 297). To promote the type of instruction suggested by Irvin, middle schools will need to either do more with allocated time for learning or find ways to extend instructional time.

Middle-level learning was studied because adolescents' experience struggles due to their development. In designing the Extended School Year Program, designers wanted to insure that all components of adolescent behavior were addressed. By providing time for social activities the designers wanted to insure that students had every opportunity to interact socially. Student interaction also occurred naturally on the bus ride to and from school and during the daily snack breaks.

While the program was designed to improve academic performance for lower-skilled students, designers also wanted students to enjoy their experience and be able to apply their learning to real situations. Therefore, activities were to engage students in the learning process. Teachers used movement, games, manipulatives, and field trips that motivated students to continue with their participation in classroom activities. Because of the activities, students continued to attend the Extended School Year Program. By providing students with more time, the Extended School Year Program allowed for the use of non-traditional instructional methodologies. The use of such methodologies can offset struggles associated with adolescent children.

The Extended School Year Program and Time and Learning

Considering that the Extended School Year Program increases time, it is important to understand the effects an extension of time may have on student achievement. Researchers (Axelrad-Lentz, 1996; Funkhouser, Humphrey, Rosenthal & Panton, 1995; Karweit & Slavin, 1981; Kneese, 1996) over the past two decades suggest that increasing time on instruction has been a factor in improving academic achievement, particularly as it relates to at-risk students. One could surmise the more instructional time devoted to a course of study, the greater the achievement that generally results.

However, researchers (Axelrad-Lentz, 1996; Funkhouser, Humphrey, Rosenthal &

Panton, 1995; Karweit & Slavin, 1981; Kneese, 1996) on time and learning suggest that attention to individual differences and the quality of instruction affect student achievement more than increasing the quantity of time. Correlation between the amount of time and achievement range from .10 to .60 (Walberg & Frederick, 1983) when the beginning ability of students is controlled.

Karweit and Slavin (1981) attempted to measure the effects of time on achievement in an observational study of 18 elementary school classes. They examined three questions: “(1) What accounts for the variation among students in the amount of time spent learning; (2) what are the measurement consequences of using alternate measures of time and learning; and (3) what are the problems with using the same model for all students regardless of entering skill level or aptitude” (p.159)?.

Four schools within the same Maryland school district, 12 teachers (multiple classes were included for two teachers) and the students of the 12 teachers were studied. Three boys and three girls were selected from each class. Subjects were divided into two groups and observed to calculate actual instructional time and engaged time. One groups contained 33 second and third graders and the other contained 62 fourth and fifth graders. “The observations included the classroom activity, the child’s response to it (on/off task), and the content of the lesson (p.159). The observation system provided for five possible activities: Procedural, lecture, seatwork alone, seatwork with teacher, and test; and five possible responses during those activities: on-task, raised hand, off-task (OK), off-task (not OK), and no task opportunity” (p.159). Off-task (OK) was used when the student finished assignment and had no other work. Off-task (not OK) was used when the student was not completing the task assigned.

For the observations, four measures -- scheduled time, actual instructional time, engaged time, and engaged rate -- were recorded. Scheduled time was the number of minutes per-week that each teacher supplied for math instruction. Actual time was obtained by subtracting the loss of learning time due to intrusion, procedure, and inattention from the scheduled time. Engaged time was the “minutes of instruction actually consumed by the average student after losses from total scheduled time due to variations in teacher scheduling, procedural time, and individual time off-task” (Karweit

& Slavin, 1981, p.163). Engaged rate was calculated by dividing the engaged time by the instructional time.

Regression was used to predict achievement on the Comprehensive Test of Basic Skills (CTBS) posttest from the four measures of time for the second and third graders and for the fourth and fifth graders. Results from the analysis of second and third graders indicated that engagement rate and engaged time positively and significantly predict the posttest score. Total instructional time and total schedule time were not related to posttest scores (Karweit & Slavin, 1981). Results from the fourth and fifth graders indicated that none of the time factors were related to posttest scores.

Because of the differences between the second and third graders and fourth and fifth graders, an additional regression was performed using chapter pretests and posttests given the day before and the day after the observation period. For grades four and five, total allocated time and engaged time were all predictors of posttest chapter scores. For grades two and three, none of the time factors predicted posttest scores (Karweit & Slavin, 1981).

The researchers performed a third analysis because of the inconsistent results discovered in the previous analyses. For the final analyses, pretest and posttest scores were regressed on time-on-task after dividing the sample into those above their class pretest CTBS mean and those below.

Researchers found that time-on-task positively predicted the pretest and posttest scores for the second and third graders below their class mean and the fourth and fifth graders below their class mean. For both groups above the class mean, no relationship between time-on-task and pretest and posttest scores was reported. The findings of the study hint that measures of time have the greatest effect when both time and achievement variables were chosen to match the activities of the actual instructional day (Karweit & Slavin, 1981). “Thus, time measures that capture individual students’ engaged time show the strongest relationship with achievement” (Karweit & Slavin, 1981, p.170).

Other researchers have supported Karweit and Slavin in concluding that extending the school day or year without first improving the quality of instruction and percentage of school time spent “on task” produces disappointing results (Axelrad-Lentz, 1996; Funkhouser, Humphrey, Panton & Rosenthal, 1995; Kneese, 1996).

In order for the Extended School Year Program to be effective as a program that extended learning by using time during the summer, the program had to become a part of the total school program. To become part of the total school program, the Extended School Year Program needed to contain instruction, curriculum, and assessments that were similar to those used during the regular school year. In 1996, Axelrad-Lentz concluded, “districts and schools that integrated the Extended School Year Program into a comprehensive plan for school improvement were more effective” (p. 95).

Axelrad-Lentz (1996) conducted an evaluative study of 14 school districts in Michigan that had implemented an Extended School Year Program for two years. The Extended School Year Programs studied were supported by a competitive grant from Michigan lawmakers. Using program documentation, local district evaluations, administrative interviews and surveys of 2,500 Extended School Year participants (students, teachers, administrators, and other school personnel), Axelrad-Lentz sought to evaluate the effect of the Extended School Year Program on students, other stake holders, professional development opportunities, and school district resources. Issues that must be addressed in extending the school year were reviewed. Qualitative and quantitative measures were used to answer the evaluation questions. Surveys were the primary methodology used. Other approaches included in-depth interviews with program coordinators, review of program documents, review of district level evaluation data, and review of Michigan Educational Assessment Program (MEAP) scores.

Axelrad-Lentz (1996) concluded that in the most successful programs all participants reported greater learning and retention of information over the summer. Year round programs were consistently found to have the most positive results with respect to student achievement, attitudes toward learning, and retention of skills. Year round programs were found to have positive results with respect to teachers’ attitudes toward their profession. Programs extending the number of days in the school year were the least successful in this study.

Carolyn Kneese conducted another body of research on time and learning in 1996. The research design, method, and findings follow. In her meta-analysis, Kneese (1996) investigated fifteen studies from the preceding decade to compare student achievement in

year-round schools to traditional calendar students over a one to four year period.

Studies selected had several criteria.

First, only studies conducted or published between 1982 and the present were considered. All studies had to (a) involve multi-tracking or single-tracking in year-round schools, (b) include a control group or comparison, (c) be in place for at least one year, and (d) include student achievement as a dependent variable. Second, studies in which initial differences were accounted for were preferred, but the sample also included unadjusted mean scores. Third, studies chosen were both of cross-sectional and longitudinal analysis. And fourth, results of statistical analysis must have been reported. (p. 62).

All studies were put into a single-track or multi-track schedule category and examined to establish the effect of the schedule on student achievement. Once selected, a coding system was devised for each schedule that included reference information, sample, time, design characteristics, outcome, and statistical procedures used. The traditional calendar was considered the control group.

After being coded, all results were translated into effect size. Effect sizes were reported as follows: .2 indicated a small effect size; .5 indicated a medium effect; and .8 indicated a large effect (Kneese). Once effect size was computed for each study, all effect sizes were combined across studies. When disaggregated by track the single-track effect size was +.33 which implies that single-track YRE slightly out-performed multi-track YRE designs (Kneese, 1996). Positive effect sizes favored year-round calendars.

Kneese concluded that year-round education had an overall positive, but very small effect on academic achievement. Additionally, Kneese recommended more studies on the effects of programs that increase the amount of time for the purpose of raising student achievement. For this reason an evaluation of the Extended School Year Program is appropriate.

In another study, Roby (1995) compared math and reading achievement scores of two sixth grade groups from different schools. One school used a traditional schedule while the other used a year-round schedule. While demographic information on the subjects was not available in his article, Roby reported that all subjects had attended their respective elementary schools for at least three consecutive years. Roby indicated that

both schools were chosen because they were similar in total students housed and the number of sixth graders in each building. The IOWA Test of Basic Skills (ITBS) and the Cognitive Abilities Test (CogAT) were administered to all students in the populations. Mean ITBS scores in reading and math were compared for the two schools. Scores were interpreted by Normal Curve Equivalents (NCEs). An analysis of covariance using CogAT verbal, quantitative, and nonverbal scores as the covariate were used to adjust scores. Adjusted scores were used to indicate whether differences existed between mean math and reading achievement scores in the year-round and traditional calendar schools.

With the verbal cognitive ability covariate held constant, a statistically significant difference in math achievement existed between the traditional calendar students and the year-round students favoring the year-round students (Roby, 1995). After adjusting mean scores for the quantitative and nonverbal covariates, there was no difference between the traditional and year-round schools (Roby). “With the verbal covariate held constant, reading adjusted mean scores were 53.68 for the year-round schedule students, compared to 47.90 for the traditional-calendar students” (p. 8). The statistically significant difference favored the year-round students (Roby).

While the Extended School Year Program did not extend the school calendar into a year-round format, Roby’s study suggests that altering the traditional school calendar, to add more instructional time, could positively impact student achievement. By adding the additional time, the Extended School Year Program may prove beneficial for participating students.

Joseph Haenn (1999) studied a program created by a policy passed by the Board of Education of the Durham (North Carolina) Public School System in 1997. The policy required all students performing below grade level on the 8th grade competency test in either reading or math to attend summer school and demonstrate progress to be eligible for promotion to the next grade. The program lasted 18 days. Tests were created to measure growth in mathematics during the summer session. Pretests and posttests were used to measure differences.

The average student gained 3.5 points in mathematics between the pretest and posttest. Additionally, 70% of the eighth graders participating had gains.

Haenn (1999) concluded that:

The extremely large percentage of summer school attendees who demonstrated growth may be attributed, at least in part, to the provision of instructionally relevant diagnostic information to teachers at the very beginning of the summer school session as well as the seriousness with which students now face the summer school experience (p. 5).

The studies on time and learning are mixed on whether increasing time would produce gains in student achievement. However, when time has affected student achievement, several characteristics exist. First, the strongest relationship that time has with achievement occurs when students are engaged in the learning process (Karweit & Slavin, 1981). Second, programs that had positive effects on student achievement were year-round programs. Third, when instruction was relevant and based on diagnostic information for each student, students demonstrated large gains. Finally, large achievement gains were also recorded when students were serious about their summer learning experience.

Time, learning and achievement were studied because the researcher wanted to determine whether time could impact learning and, more importantly, student achievement. Because the Extended School Year Program was developed to effect learning and achievement, the effect of time on learning and student achievement required review.

The Extended School Year Program and Summer Regression

Frequently cited reasons for implementing Extended School Year Programs are: (1) preventing summer learning loss, (2) allowing students and teachers to explore school-year material or special topics in greater depth, and (3) creating more congenial learning atmospheres with smaller classes and more flexible programming (Herman & Stringfield, 1997).

Reducing the amount of time students spend away from school may be another incentive for extending the school year. Spending time in programs during the summer keeps students active in learning and may eliminate any learning loss that otherwise might occur. The Virginia Department of Education (1992) conducted a comprehensive study of the design of the school calendar. The study contained a synthesis of available

research along with surveys and interviews. As a result of the study, the Virginia Department of Education concluded that while some regression in student learning occurs over the summer months, the lack of practice is more detrimental to student learning than forgetfulness. Therefore, summer programs should enable continuous practice of skills learned during the regular school year (Virginia Department of Education, 1992).

Four years later, Cooper, Nye, Charlton, Lindsay, and Greathouse (1996) performed a review of 39 studies and found that achievement scores declined over summer vacation. After conducting a meta-analysis, they concluded that summer loss equaled almost a month on a grade-level-equivalent scale or one-tenth of a standard deviation relative to spring test scores.

Summer regression was reviewed because school officials wanted to begin the Extended School Year Program at L. Douglas Wilder Middle School to take advantage of idle time to affect achievement, especially in English, math, science, and social studies. For students at L. Douglas Wilder Middle School, the summer provided an opportunity to reinforce and review information covered during the previous year. With this type of repetition, officials hoped students would retain more information over the summer months than in previous years.

The Extended School Year Program and Student Attendance

According to Brodbelt (1985), average daily attendance is positively related to achievement. When children are not in school, they miss instruction and consequently cannot practice what they learn. With no chance to practice, students' chances for academic success decrease (Atkins, 1998). One goal in this study was to examine the effect of an extended school year program on attendance.

Data from a study done by the Baltimore County Public School System indicates that student attendance positively and consistently correlates with achievement test performance (Lamdin, 1996).

Lamdin examined 97 elementary schools (K through 5) in Baltimore, Maryland. Analysts used the production function approach and multiple regression analysis to examine the relationship between the output of the education process and the inputs into this process (Lamdin). Test scores were the output measures. The input measures were student and school input variables. Student input variables were a socioeconomic

measure, the percentage of minority (non-white) students, and the percentage of students who do not qualify to receive free lunch (no free lunch). School input variables were teacher/pupil ratio and professional staff/pupil ratio.

Next, dependent variables were identified. The dependent variables were the percentage of students above the median in reading on the California Achievement Test, the percentage of students above the median in mathematics on the California Achievement Test, and the average percentage of the two measures.

Once identified, each dependent variable was regressed on the no-free lunch variable, attendance variable, and one of the school input measures. From the regression analysis, “the coefficient on the attendance variable was positive and statistically significant at the .05 level in all nine of the specifications and significant at the .01 level for eight of the nine” (Lamdin, p. 158). “The coefficient on the socioeconomic measure was positive and significant at the 1% level across all specifications” (Lamdin, p. 158). The coefficient on the school input measures were nearly all negative” (Lamdin, p. 159).

Lamdin concluded that the average level of attendance at a school has a positive influence on student performance.

Attendance was studied because it is a predictor of student achievement. Attendance during the Extended School Year Program may not necessarily be consistent with student attendance during the school year. However, for the purpose of evaluating the Extended School Year Program student attendance should be studied as it is a predictor of academic success.

The Extended School Year Program and Effective Programs

When considering effective programs for at-risk students, there is value in beginning with a review of effective schools research. After reviewing research on effective schools, there is a need to examine the following elements: (a) the principal’s role, (b) teacher expectations, (c) instructional grouping, (d) school climate, (e) collegiality, (f) student discipline, and (g) cooperative learning (Wells, 1990). Lehr and Harris (1988) supported this assertion by identifying similar characteristics that are common in effective schools.

Wehlage, Rutter, and Turnbaugh (1987) described model programs that schools can use to address the academic needs of at-risk high school students. These programs

include concepts like schools-within-a-school, more personal small programs, an extended teachers' role, individualized curricula, clear objectives, an active student role, experimental learning, and social experiences.

In describing common components of successful schools or programs Cuban (1989) identified characteristics similar to those of Wehlage, Rutter, and Turnbaugh (1987). While several characteristics of successful schools exist, Hamby (1989) suggested that the coordinated efforts of all areas of society are needed to solve the problems of at-risk students.

Effective programs were reviewed here because researchers (Hamby, 1989; Lehr & Harris, 1988; Wehlage, Rutter, & Turnbaugh, 1987; Wells, 1990) suggested that the most effective programs were those that were designed and organized with components identified in effective schools. In developing new programs, organizers should consider components that can be coordinated with other agencies and groups within society.

In designing the Extended School Year Program, organizers wanted to include components identified in effective schools. The training teachers received included strategies for active student learning and experimental learning. Those were the two components of effective schools that were included in the design of the Extended School Year Program.

Program Evaluation

Since the 1800s, evaluations have been used to assess educational and social programs in the United States (Worthen, Sanders, & Fitzpatrick, 1997). Influenced by Horace Mann, tests in several subjects were used as the basis for school comparisons in Boston in 1845. During the late 1800s, efforts began that led to the process of accrediting secondary schools and universities. Educational testing increased in popularity by the early 1900s as objective testing was becoming common in the military, industry, and at all levels of education. "By the mid-1930s, more than half of the United States had some form of statewide testing, and standardized, norm-referenced testing, including achievement tests and personality and interest profiles, became a huge commercial enterprise" (Worthen et al. 1997, p.28). In 1942, an elaborate eight-year study conducted by Ralph Tyler included outcome measures that set the stage for criterion-referenced and norm-referenced tests. In 1960 the federal government began funding evaluations as a

result of the National Defense Education Act of 1958 that was created in response to the Soviet-launched Sputnik. Later, the creation of the Elementary and Secondary Education Act (ESEA) of 1965 required educators to evaluate their efforts (Worthen et al.). “ESEA has often been referred to as the birth of contemporary program evaluation” (Worthen et al. 1997, p. 33).

Evaluation is “the identification, clarification, and application of defensible criteria to determine an evaluation object’s value (worth or merit), quality, utility, effectiveness, or significance in relation to those criteria” (Worthen et al, 1997, p. 5). Scriven (1991) described two types of evaluation: formative and summative. Formative evaluation takes place concurrent with the implementation of the program for which the evaluation is being conducted. The information collected can be used to make changes for the purpose of improving the program. Summative evaluations generally occur at the conclusion of the program. Information from summative can be used to influence decision makers or potential consumers. A summative evaluation generally includes judgements about the worth or merit in relation to some sort of criteria (Worthen et al.).

Before performing a program evaluation, the researcher should know how an evaluation is to be conducted. To conduct an evaluation, the researcher should know what is being evaluated and what process will be used to conduct the evaluation. The researcher should also identify the stakeholders and the methodology used for completing the evaluation. Stufflebeam (1973) indicated that before performing an evaluation, determine the focus to include what is being evaluated, why it is being conducted, what the stakeholders what to learn, and what criteria is used to make judgements. Once the focus has been determined, a plan is to be created that includes how the information is to be collected, organized, analyzed, and reported (Stufflebeam, 1973).

For the purpose of evaluating the Extended School Year Program, formative and summative evaluation purposes were used. The formative purpose involved the collection of, pretest achievement results and daily attendance. The summative purpose involved the collection of data at the end of the Extended School Year Program that included posttest achievement results and student, teacher, and parent, satisfaction. Both formative and summative purposes were used to allow for the evaluation of items outlined in the objectives of the program.

Summary

A review of the literature related to the Extended School Year Program suggests that any program that deals with potential relationships between time and learning must also investigate other variables that might be associated with student success. While the Extended School Year Program contains a relationship between time and learning, achievement was not the only variable identified for this study. Attendance and student, teacher, and parent satisfaction were also examined to determine whether the program met its objectives. One question that still remains is how should a program of this nature be evaluated? Chapter III contains the methodology used in the evaluation of the Extended School Year Program.