

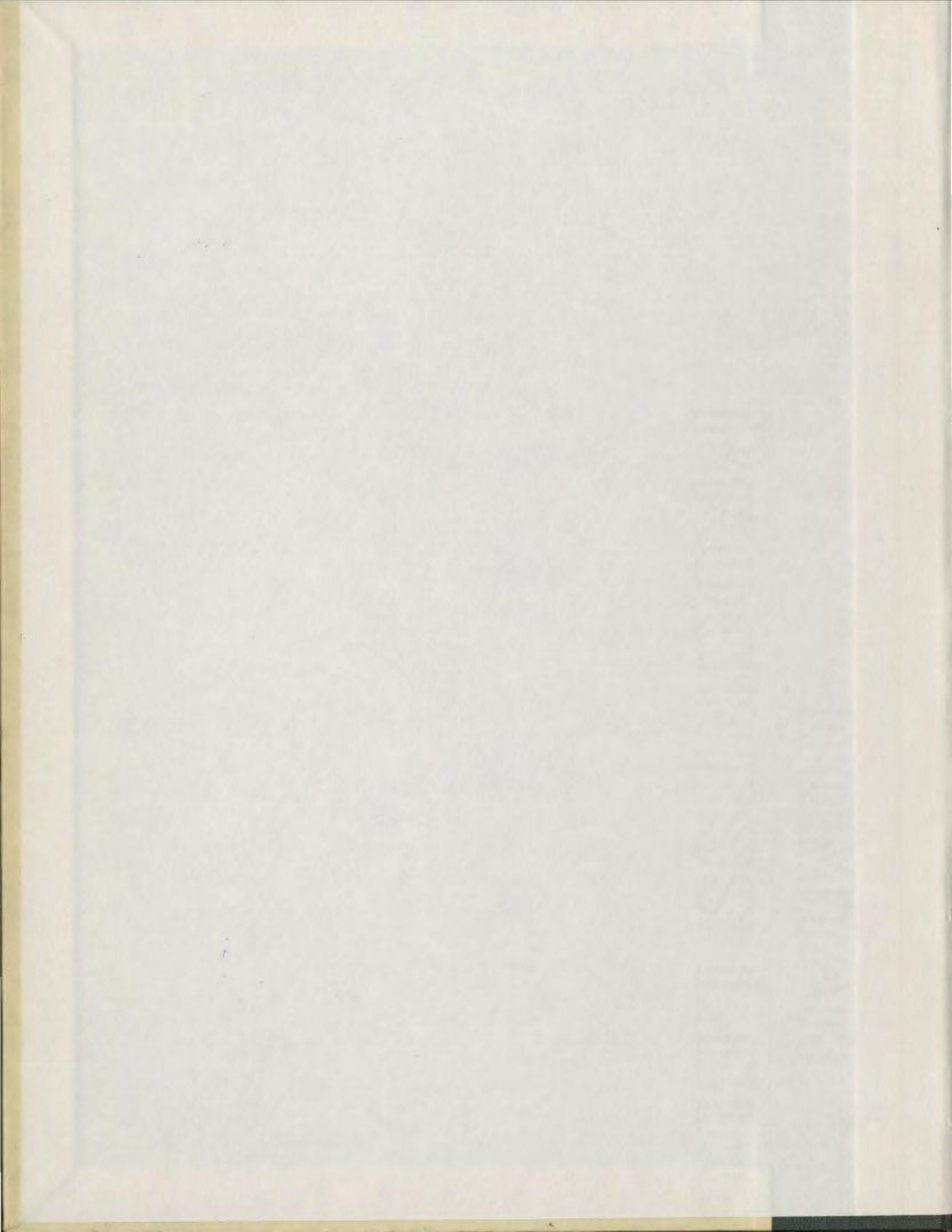
A BEHAVIOUR MODIFICATION APPROACH TO THE REMEDIATION
OF READING DIFFICULTIES

CENTRE FOR NEWFOUNDLAND STUDIES

**TOTAL OF 10 PAGES ONLY
MAY BE XEROXED**

(Without Author's Permission)

WILLIAM DAVID SMITH



385576



377-288



A BEHAVIOUR MODIFICATION APPROACH TO THE REMEDIATION
OF READING DIFFICULTIES

An Internship Report
Presented to
the Faculty of Education
Memorial University

In Partial Fulfillment
of the Requirements for the Degree
Master of Education

by

William David Smith

October 1974



ABSTRACT

The primary purpose of this internship was to implement a motivationally based remedial reading program, using principles of behaviour modification, designed to improve the performance of seven grade five children who were severely retarded in reading and were apathetic to improvement. A related aim was to provide school personnel with some evaluative data concerning the efficacy of behaviour modification as a practical technique to apply in the remediation of reading difficulties.

Subjects of the study were five girls and two boys who lived in the Shea Heights area of St. John's. They ranged in chronological age from twelve to fourteen and in mental age from 8-4 to 12-5 years. The students attended St. John Bosco School where they received regular class instruction which was supplemented by help in reading given in another classroom by a remedial teacher. Each student had a history of academic failure and was retarded by at least two years in reading achievement. Most were from low socio-economic families and all were highly negative in their attitudes toward school.

The internship covered a period of approximately seven weeks. During this time, the intern worked with the subjects' remedial teacher in carrying out the procedures designed to fulfill the purposes of the study. These

procedures included diagnosing the subjects' instructional needs in reading, planning and implementing effective remedial reading instruction, and establishing a token reinforcement system whereby students received reward contingent upon their performance in specified reading activities.

The effectiveness of the internship in achieving its purposes was reflected by desirable changes in students' reading achievement, productivity, class attendance, and attitudes toward school. The subjects showed gains in reading achievement of 0.3 years in vocabulary and 0.8 years in comprehension which, when compared with anticipated growth, were statistically significant for comprehension ($p < .02$) but not for vocabulary ($p > .10$). The students accomplished more and better work. Attendance figures improved for those whose rate of absenteeism had been high. Attitudes toward school became more positive through increased enjoyment of remedial class sessions and heightened enthusiasm for school work.

It was concluded that the internship was generally effective in achieving its purposes. Recommendations were made to school personnel concerning the application of behaviour modification techniques to the remediation of reading difficulties.

ACKNOWLEDGEMENTS

The writer gratefully acknowledges the assistance of the many people who cooperated with him to make this internship possible. Appreciation is expressed to the principal and staff of St. John Bosco School, St. John's, where the study was conducted. The writer is deeply indebted to Dr. Ethel Janes, his internship supervisor, for her direction and constructive criticism during the development and completion of this internship, and to Dr. Lawrence Walker and Dr. Wayne Nesbit for their many helpful suggestions.

Special gratitude is expressed to my wife, Shirley, for her help and encouragement.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	ii
LIST OF TABLES	vi
 Chapter	
1. THE PROBLEM	1
PURPOSES OF THE INTERNSHIP	3
SIGNIFICANCE OF THE INTERNSHIP	3
ORGANIZATION OF THE REPORT	4
2. REVIEW OF THE RELATED LITERATURE	6
NATURE AND SCOPE OF THE RESEARCH	6
STUDIES EMPLOYING TOKEN REINFORCEMENT	7
Initial Investigations	8
Further Research	12
3. THE LOCAL SITUATION	18
THE STUDENTS	18
Intelligence	19
Reading Achievement	20
School Attitudes	23
Physical and Mental Health	23
Socio-economic Background	24
THE COMMUNITY	24
THE SCHOOL: RESOURCES	25
THE SCHOOL: READING PROGRAM	26

Chapter	Page
SUMMARY	28
4. INTERNSHIP PROCEDURES	30
DIAGNOSIS OF INSTRUCTIONAL NEEDS	30
Skills in Reading	31
Diagnostic Testing	33
Diagnostic Profiles	35
REMEDIAL INSTRUCTION	37
Instructional Materials	37
Teaching-Learning Experiences	40
APPLICATION OF REINFORCEMENT	42
The Reinforcement System	42
Administration	45
SUMMARY	47
5. EVALUATION OF THE INTERNSHIP	49
READING ACHIEVEMENT	49
STUDENT PRODUCTIVITY	52
ATTENDANCE	54
STUDENT ATTITUDES	54
SUMMARY	55
6. SUMMARY, CONCLUSIONS, RECOMMENDATIONS	56
SUMMARY OF THE INTERNSHIP	56
The Problem	56
The Students	57
Internship Procedures	58
Outcomes	59
CONCLUSIONS	60

Chapter	Page
RECOMMENDATIONS	61
REFERENCES CITED	63
APPENDICES	67
A. A Detailed Diagnostic Reading Profile	68
B. Instructional Reading Materials	73
C. Sampling Lists of Back-up Reinforcers	77
D. Records of Student Reinforcement	79

LIST OF TABLES

Table		Page
1.	Data Obtained from the <u>Peabody Picture Vocabulary Test, Form A</u>	20
2.	Student Reading Achievement on two Subtests of the <u>Gates-MacGinitie Reading Test, Survey D, Form 1</u>	22
3.	Student Grade Scores on the Subtests of the <u>Durrell Analysis of Reading Difficulty</u>	36
4.	Back-up Reinforcers and their Corresponding Point Values	44
5.	Student Grade Scores in Vocabulary and Comprehension for Forms 1 and 2 of the <u>Gates-MacGinitie Reading Test, Survey D</u>	50
6.	Subjects' Expected and Actual Reading Gains (Expressed in Years) in Vocabulary and Comprehension	52

Chapter 1

THE PROBLEM

This internship deals with the problem of motivating students who are apathetic to improvement to become more proficient in the skills related to reading. It explores the application of principles of behaviour modification to the remediation of reading difficulties and attempts to provide some evaluative information concerning the efficacy of behaviour modification as a technique to motivate students to learn in a remedial reading situation.

One need only observe the behaviour of primary pupils to realize that most enter school with an insatiable thirst for knowledge. They are curious about their surroundings and about the people with whom they are associated. This curiosity drive partly accounts for high levels of motivation in young children, which leads to rapid learning during the preschool and primary school years (Frandsen, 1967:285-287).

As children grow older, however, many of them appear to lose their interest, drive, and curiosity for academic learning. This seems to be particularly true with children who have difficulty coping with the school curriculum. When a child experiences academic failure, he encounters

frustration which leads to decreased motivation on his part to improve both through his own efforts and the efforts of others. The result is a student who does not care to learn, who sees no purpose in learning, and who thinks he cannot learn. This problem is usually most pronounced among older children who have suffered through several years of academic failure.

In reading instruction a common practice is to assign children who are reading well below grade expectancy level to remedial classes or groups. The teachers of these children presumably diagnose individual students' needs in terms of reading skills they feel a child must have in order to become a proficient reader. Remediation usually follows such a diagnosis in the form of drill on those skills in which the child is found to be deficient. It is generally assumed that such skill practice will eventually enable the child to read much better. Sometimes this skill drill seems to be carried on in isolation without any assessment of a student's other needs, including his need for motivation.

It would seem that one of the first tasks in remedial reading instruction is to develop in students a taste for learning. As Kennedy (1971:213) states, "The craving to learn must be rekindled in the remedial class." It is hazardous to assume that skills instruction alone will be sufficient to enable a child to read or be willing to read. One requires a carefully planned and skillfully implemented program to keep discouraged pupils

interested throughout an instructional program that involves hard work and concentrated practice on technical reading skills. If students remain apathetic to improvement, their attainments will be limited, regardless of the effort expended to help them in remedial situations. Motivation thus becomes a fundamental issue in remedial reading instruction.

PURPOSES OF THE INTERNSHIP

The major purpose of this internship was to implement, using principles of behaviour modification, a motivationally based remedial reading program designed to improve the performance of seven grade five students who were severely retarded in reading and were apathetic to improvement. A related aim was to provide school personnel with some evaluative data concerning the efficacy of behaviour modification as a practical technique to apply in the remediation of reading difficulties.

SIGNIFICANCE OF THE INTERNSHIP

Recent research indicates increasing experimentation with, and growing acceptance of, behaviour modification as a technique to motivate students to learn in remedial reading situations. However, as yet, most studies on the subject have been conducted by trained researchers under rather artificially structured conditions, possibly unlike those that prevail in a regular school environment. In very few cases has knowledge gained from the research been put

4

to use in a functional educational setting by knowledgeable school personnel. Indeed, to the writer's knowledge, no systematic attempt has ever been made to implement in the schools of Newfoundland a remedial reading program utilizing behaviour modification techniques designed to motivate apathetic learners to improve.

The decision to conduct a study in a Newfoundland school was therefore made with the aim of providing some evaluative information concerning the application of behaviour modification principles to student learning in a functional remedial reading situation. It was hoped that such information would at least provide the impetus for subsequent careful examination of the utility and viability of behaviour modification as a practical motivational technique to apply in the classroom setting.

ORGANIZATION OF THE REPORT

This chapter has included a discussion of the problem under consideration, the purposes of the internship, and the significance of the study. Chapter 2 of this report reviews the literature concerned with the application of behaviour modification techniques to the remediation of reading difficulties. Special emphasis is placed upon those studies employing token reinforcement systems. Chapter 3 contains an assessment of the local situation that applied to this internship. In particular, information regarding the students, the community, and the school is presented. The

procedures used to carry out the purposes of the internship are outlined in Chapter 4. An evaluation of the internship follows in Chapter 5. The final chapter summarizes the study, discusses conclusions drawn from it, and makes specific recommendations.

Chapter 2

REVIEW OF THE RELATED LITERATURE

Behaviour modification involves the "application of the results of learning theory and experimental psychology to the problem of altering maladaptive behaviour." (Ullman and Krasner, 1965:2). Its basic principle is that behaviour is a function of its consequences. In other words, the probability of a certain behaviour recurring depends upon what has followed that behaviour when it has previously occurred. Behaviour can thus be strengthened or weakened by manipulating its consequences. Behaviour can be strengthened if it is followed by a positive reinforcer (reward) or by the cessation of a negative reinforcer. Behaviour will be weakened if it has no consequence - if it has no effect on the environment - or if it is followed by a negative reinforcer or by the termination of positive reinforcement.

NATURE AND SCOPE OF THE RESEARCH

Laboratory work in the area of behaviour modification started with Pavlov in the early part of this century. B. F. Skinner (1953) publicized and popularized experimentation in the field. Subsequent research has demonstrated the efficacy of behaviour modification techniques in altering inappropriate behaviour. Early studies employed mostly

animals as subjects. More recently, principles of behaviour modification have been systematically applied to the amelioration of various human problems, both academic and non-academic.

In the area of reading, several investigations have demonstrated the efficacy of behaviour modification as a technique to motivate children to learn in remedial reading situations. Subjects of these studies ranged widely in intelligence (from retarded to above average), chronological age (from preschool to adult), and social adjustment. Many types of reward systems were used and found to be effective. Reinforcers varied from social (verbal praise and commendation) to material (tokens to be exchanged for candy, toys, or privileges, or common objects appealing to the subject, such as pencils, erasers, pocket books, or even money).

STUDIES EMPLOYING TOKEN REINFORCEMENT

The vast majority of studies designed to remediate reading difficulties through the use of behaviour modification techniques have used a reinforcement system in which students received tokens which were exchangeable for material back-up reinforcers. Axelrod (1971:371) points out that the superiority of the token reinforcement system over other reward systems is considerable. The advantages of this system lie in the facts that it can be conveniently administered; tokens can serve as an immediate reinforcer of a response;

they can be used to purchase several different types of back-up reinforcers; they can be saved and spent at a later time when a particular state of deprivation does exist in the organism; and they can be exchanged for some more expensive item that has more reinforcing value for the individual than some lesser item.

Material back-up reinforcers have been found to be more effective than rewards such as praise, largely because they are clearly defined concrete objects. Intangible rewards are not clearly defined and, in many cases, are not motivationally appealing because of past indiscriminate use of such by teachers in the classroom setting.

Initial Investigations

It seems that the first published investigations involving the use of principles of behaviour modification in the remediation of reading difficulties were reported during the mid 1960's. Studies conducted by researchers such as Staats and Butterfield (1965), Birnbrauer et al. (1965), Bijou et al. (1966), and Nolen, Kunzelmann and Haring (1967), established the groundwork for subsequent research. In each one of these investigations a token reinforcement system was used.

Staats and Butterfield (1965) applied token reinforcement to the treatment of non-reading in a culturally deprived juvenile delinquent. The subject, a fourteen year old boy from a very large Mexican-American family, was in

constant trouble with the law and repeatedly failed school subjects. His intelligence quotient as measured by various tests was normal.

The study employed a reinforcement system in which tokens, varying in value, were presented to the subject contingent upon his performance on various skills related to reading (vocabulary recognition, oral reading, silent reading, and reading comprehension). Records were kept of tokens earned by the subject and of the manner in which they were used.

The experimental treatment covered a period of four and one-half months. During this time seventy training sessions of about thirty-five minutes each (totaling approximately forty hours of instruction) were conducted.

Results of the study indicated that during the treatment period the subject increased his reading level from grade two to grade 4.3, received passing grades for the first time in all subjects in school, and exhibited better school behaviour. However, this study has little generalizable weight since only one student received treatment. Furthermore, there is some question of the validity of the author's assessment of gains because of his use of non-equivalent test forms.

Birnbrauer et al. (1965) conducted an experiment in an attempt to determine whether or not the reinforcement program or the greater attention paid by teachers to student problems is responsible for producing increased student

output. They hoped to shed some light on this matter by systematically withdrawing and reapplying reinforcement. Of the seventeen mentally retarded children who took part in the study, two were mongoloid, three were familial, nine were brain damaged, and three had no available diagnosis. Intelligence quotients measured by the Peabody Picture Vocabulary Test ranged from 50 to 72.

The students were subjected to three sequenced treatment conditions. The first (B) paired social approval with tokens; the second (NT) used teacher approval but no tokens; and the third condition (B2) was the same as the first.

Results revealed that five children showed no decrement in performance during NT. Six made more errors during NT, but completed the same or a greater number of items and presented no greater number of behaviour problems. Four children made more errors, did less work, and presented serious disciplinary problems during NT. After tokens were reinstated all subjects returned to the original level of performance (B) or better. It appeared, therefore, that the token reinforcement rather than teacher attention accounted for the behavioural changes.

Bijou et al. (1966) reported on three years of research in which a token reinforcement system was applied to the teaching of reading, writing, and arithmetic to twenty-seven retarded children ranging in age from 8-7 to 14-9. The average IQ, measured by the Peabody Picture

Vocabulary Test, was 63 for the group. Eleven of the subjects were diagnosed as brain damaged, three as mongoloid, four as cultural-familial, and nine as uncertain or unknown. The authors implied that the results of the study were quite favourable, but failed to include objective data.

A study involving behaviour modification in a junior high learning disabilities classroom was conducted by Nolen, Kunzlemann, and Haring (1967). Students enrolled in the class were twelve to sixteen years in age, with individual achievement levels in reading and other subjects ranging from preschool to sixth grade. Etiologies included a variety of emotional and learning disorders, as well as mental retardation.

Initial organization of the classroom entailed an extensive tabulation and compilation of all skills that could be identified within any one academic area. Once both skill sequences and students' functioning at some point in the sequence were identified, completely individualized programs were organized, built largely from commercially programmed materials together with selections from traditional texts and worksheets.

To provide reinforcement the teacher allotted points for a child's successful completion of each of a number of gradually lengthening academic exercises. These points were negotiable at any time for play periods analogous to school recesses or for a variety of enrichment or practical studies in the public school, such as handicrafts, typing,

woodworking, and organized games.

After one hundred days of instruction, a median of 2.7 years gain in arithmetic and 2.05 years gain in reading was found. To test the effectiveness of the reinforcement system in producing these results, the experimenters administered rewards on a noncontingent basis for a period of time. This brought about a significant decrease in appropriate academic behaviour which was quickly resumed once reinforcement was reinstated on a contingent basis.

Follow-up studies of three of the students who were transferred to a regular classroom indicated that their performance had declined. However, their productivity was still superior to that of the other students in their new class.

Further Research

All of the gains in reading achievement reported in the above studies cannot be definitely attributed to the effects of token reinforcement. Many of the early investigations concerned with the application of principles of behaviour modification to the remediation of reading difficulties contained serious flaws. Later research studies, however, have employed more experimental rigour and have provided much more conclusive evidence regarding the effectiveness of behaviour modification techniques (in particular, token reinforcement) in remedial reading situations.

Wolf, Giles, and Hall (1968) conducted a program,

using token reinforcement, intended to improve the academic behaviour of sixteen low-achieving children from an urban poverty area. Fifteen of the subjects for this study were from the sixth grade; the other was from grade five. All scored at least two years below their grade level on the reading portion of the Stanford Achievement Test. According to school records, their intelligence quotients ranged from 73 to 104. The remedial program incorporated standard instructional materials, mastery of which was supported by token reinforcement.

The effects of the program on the academic achievement and report card grades of the children were found to be significant when compared with the gains of a control group. The experimenters reported that at the end of a year the program was effective in producing an overall median growth in academic achievement of 1.5 years for the experimental group. The control group gained a median of 0.8 years. The differences between these results were significant at the .01 level of confidence.

McKenzie et al. (1968) introduced a reinforcement system, using grades as tokens and allowances as back-up reinforcers, in order to improve achievement of ten subjects who were retarded by at least two years in one or more academic areas. Prior to the introduction of token reinforcement, the children were reinforced, based on their academic performance, with recess, special privileges, weekly grades, and other school-related rewards. However,

achievement under these conditions was judged to be less than optimal. The introduction of token reinforcement, whereby parents paid children allowances according to weekly grades received, resulted in a significant increase in arithmetic and reading achievement. The authors reported that at the end of a year all subjects were working successfully one to four levels above their starting points in all academic areas and that six of the ten students were returned full-time to regular classes at one grade higher than previously. The returned subjects were again promoted the following year, this time by their regular classroom teachers.

Heitzman (1970) investigated the effect of a token reinforcement system on reading and arithmetic achievement of migrant primary school pupils. The subjects were sixty Negro and Caucasian primary school pupils registered in a six week summer school program conducted by the Sodus Central School, Sodus, New York. The pupils were divided equally between treatment and control groups. Chronological ages for the treatment group ranged from 80 to 114 months; control group ages ranged from 69 to 138 months.

Treatment group subjects were reinforced for the learning of skills related to arithmetic and reading. In addition such behaviours as listening attentively to the teacher and attending to a task were rewarded. The children received tokens, transparent bingo markers, which were exchangeable for a variety of consumable and durable objects.

Pre- and post-test scores were obtained on the Wide Range Achievement Test with mean differences favouring the treatment group (.05 level of confidence) for both reading and arithmetic. When participating teachers were asked their opinions of the effectiveness of the reinforcement program, they all agreed that there had been positive effects.

Staats, Minke and Butts (1970) conducted a study using a token reinforcement system to help remediate the reading problems of thirty-two Negro ghetto children. To help administer the program the experimenters employed adult volunteers, later termed "subprofessional therapy technicians," to work under the supervision of a teacher trained in the techniques of behaviour modification. The study used three types of tokens, distinguished by colour and value, which could be used to purchase a wide variety of items. Records were kept of the tokens earned by each subject and of the manner in which the tokens were used.

Results of the treatment, which covered a period of one semester, again indicated a degree of success. In comparison with a control group of thirty-two children, the subjects in the treatment group showed increases in achievement tests, grades, attendance, and deportment.

Wadsworth (1971) used a sample of ten third graders to investigate the application of reinforcement techniques to cases of learning disabilities. The subjects were taught under four conditions in which they served as their own controls in determining the effects of the treatment upon

reading achievement and school behaviour.

Condition one (April, 1969 - June, 1969) involved instruction in the regular classroom with learning disability consultation. During this period the regular classroom teacher received help from a learning disability specialist. Condition two (June, 1969 - September, 1969) involved tutoring in a reading clinic for three forty-five minute periods per week. Condition three (September, 1969 - December, 1969) involved instruction in a self-contained learning disability class. Token reinforcement was introduced during this phase of the experiment. Observances of rules on social and academic behavioural expectations were reinforced with points which were later exchangeable for tangible items and free time privileges. Condition four (December, 1969 - May, 1970) involved the reintegration of the subjects into the regular classroom environment. Students now received reinforcement only when they made short visits each day to the original self-contained classroom for remedial help.

The Slosson Oral Reading Test and the School Behaviour Test were administered prior to the start of experimental proceedings and after each instructional phase of the study had terminated. These tests yielded scores for reading achievement and general disciplinary behaviour. A comparison of mean expected and actual reading grade scores at the end of each treatment condition indicated significant differences in favour of actual gains only in stages three

and four when reinforcement was in effect. An analysis of school behaviour indicated significant differences in the direction of improvement at the end of phases one and three. Behaviour was not considered a problem at the end of stage three. Thus, no further improvement was expected or attained during stage four.

Research continues to mount in which behaviour modification principles are applied to the remediation of reading difficulties. Studies by Haring and Hauck (1969), George (1970), Heitzman and Putnam (1972), Kimble and Davison (1972), Hamblin and Hamblin (1972), Willis, Morris, and Crowder (1972), and others lend further evidence for the effectiveness of behaviour modification. Indeed, out of a total of twenty-seven studies reviewed by the writer, twenty-five reported some degree of success the studies by Kuypers, Becker, and O'Leary (1968) and Hewitt, Taylor and Artuso (1969) being the notable exceptions. The majority of these studies used token reinforcement systems with material rewards as back-up reinforcers.

Chapter 3

THE LOCAL SITUATION

The Roman Catholic School Board, St. John's, granted the intern permission to conduct his study at St. John Bosco School. This chapter reports information relating to the local situation in which the internship took place. Specifically, characteristics of the students, the community, and the resources and reading program of the school are discussed.

THE STUDENTS

The subjects for this internship were seven students - five girls and two boys - who attended St. John Bosco School. They ranged in age from twelve to fourteen years. Each subject had experienced academic failure and had repeated one or more grades. These students were assigned to two regular grade five classes - four in one and three in another. Their regular class instruction was supplemented by help in reading given during a one and one-half hour daily instructional period in another classroom by a remedial teacher. No other students attended those remedial class sessions.

In past years the children had been placed in special education classes. However, during the year of the

internship the objective of the school was to reintegrate them into the regular classroom setting.

Intelligence

Cumulative records revealed that three different tests of intelligence had been administered at different times to different pupils. Three children had been given the Weschler Intelligence Scale for Children, two more had been administered the Stanford-Binet Intelligence Scale, and one had received the Primary Mental Abilities Test. The other student had not been tested. Obtained intelligence quotients, which ranged from 72 to 83, placed these children in the group often referred to as slow learners.

In order to acquire a uniform, up-to-date assessment of the subjects' intellectual abilities, Form A of the Peabody Picture Vocabulary Test (Dunn, 1965) was administered by the intern during the early part of the internship period. The results of this test are reported in Table 1. Generally, the intelligence quotients correlated highly with those that were obtained on the above mentioned tests. The student for whom no data was available scored an intelligence quotient of 95.

Reading Achievement

The children were considered by their teachers to be severely retarded in reading achievement. Based on the results of past reading tests and their own general

Table 1
Data Obtained from the Peabody Picture
Vocabulary Test, Form A

Student	Chronological age	Intelligence quotient	Percentile score	Mental age
A	12-11	80	6	10-0
B	12-8	95	40	12-5
C	14-7	83	12	11-0
D	12-11	85	13	10-7
E	13-7	70	1	8-4
F	13-4	86	15	10-8
G	12-7	77	3	9-5

observations, teachers estimated that the subjects were reading anywhere from two to four years below grade placement level. Teaching these children to become more proficient readers was considered to be the biggest educational problem facing the teachers.

The intern administered the Gates-MacGinitie Reading Test, Survey D, Form 1, (Gates and MacGinitie, 1965) just prior to the internship treatment condition to obtain a more accurate assessment of the subjects' general level of reading achievement. Test results for both vocabulary and comprehension are reported in Table 2. These results indicated severe retardation and confirmed teachers' assessments of the students' general reading levels. Even though this test was specifically designed for children in grades four, five, and six, several of the subjects didn't even score as high as the lowest norms in certain categories. No subjects approached the norms for their grade level. Furthermore, the results of this test, when compared with those of other survey tests that were previously administered, revealed little or no improvement in the students' reading performance within the past year.¹

¹The subjects' reading achievement as measured by this and other survey tests could have been somewhat depressed because of lack of motivation on the part of the students to perform well.

Table 2

Student Reading Achievement on two Subtests of the Gates-Macginitie Reading Test, Survey D, Form 1

Student	Vocabulary			Comprehension		
	Standard score	Percentile score	Grade score	Standard score	Percentile score	Grade score
A	Below norms ^a	Below norms ^b	2.0	Below norms ^c	Below norms ^d	Below norms ^e
B	29	2	2.7	Below norms	Below norms	2.3
C	Below norms	Below norms	2.1	Below norms	Below norms	2.3
D	Below norms	Below norms	2.1	30	2	2.5
E	32	4	3.2	31	3	2.6
F	35	7	3.4	30	2	2.5
G	43	24	4.4	37	10	3.3

^aLowest norm = 29.

^bLowest norm = 2.

^cLowest norm = 30.

^dLowest norm = 2.

^eLowest norm = 2.2.

School Attitudes

The teachers and the principal of the school agreed that lack of motivation on the part of the students may, indeed, have been a major reason why attempts at remediation had met with limited success. The children were said to dislike school and to have little interest in academic work. Teachers noted that these children frequently displayed behaviour inconducive to learning. For example, the remedial teacher stated that trying to control these students had been her biggest problem at the beginning of the school year. School attendance was also reported to be highly irregular for some of the children.

Much the same impressions of the subjects' attitudes toward school were gleaned by the intern during a casual observation of the children, prior to the internship treatment, while they were in the remedial classroom. Some of the subjects openly expressed contempt for the particular instructional material they were reading and occasionally refused to obey teacher requests. Indeed, some students told the writer in informal conversation that they hated school and planned to quit when they were old enough to legally withdraw. These particular attitudes seemed to be very prevalent among all the subjects.

Physical and Mental Health

School medical records revealed that the subjects of this internship were free from any apparent physical

abnormalities which might impede their progress in reading. All subjects appeared to be physically normal in all respects. Likewise there was no evidence to suggest any psychological disorders. However, teachers did report that the students were socially immature and tended to become upset very easily. It was felt by both the teachers and the principal that this immaturity was precipitated mainly by the subjects' home background and the fact that they had been previously enrolled in special education classes where they had been largely shut off from the mainstream of school life.

Socio-economic Background

According to school records, most of the subjects of this internship were from families of low socio-economic standing. Many had grown up in homes where few reading materials had been available and where reading had neither been highly valued nor become a habit. Teachers felt that the home background was the main factor contributing to the students' lack of motivation to learn and militating against teachers' attempts to remediate the educational problems.

THE COMMUNITY

The school, the students, and the curriculum exist within the larger context of a community. Often, the resources of a community affect the programs offered in the school, and the nature of a community and its people suggest guidelines for the school's educational philosophy and its

objectives for the students.

The subjects live and attend school in the area of St. John's called Shea Heights. Although it is included within the municipal jurisdiction of St. John's, Shea Heights has certain characteristics, which distinguish it from other parts of the city.

Geographically, the region is well defined. Shea Heights is situated on the rugged, hilly terrain located on the south side of St. John's harbour. It is physically separated from other areas of the city and is accessible via one main road.

Economically, Shea Heights is depressed. The majority of residents have a low socio-economic status. The incidence of unemployment in the population is quite high. However, the situation is rapidly improving through a government-financed urban renewal plan for the area.

Culturally, Shea Heights lacks most of the cultural agencies and institutions found in most other parts of St. John's. Residents generally have to go to other parts of the city to gain access to such things as recreational facilities, shopping malls, movie theaters, and public libraries.

THE SCHOOL: RESOURCES

St. John Bosco School, in contrast to its cultural environment, is one of the more progressive in St. John's. In terms of both human and material resources it is at least

on a par with most other schools in the city. The school is staffed by well qualified personnel. It is serviced by various educational specialists, including two reading consultants and two remedial reading teachers, at both the school board and school levels. St. John Bosco also contains its share of facilities commonly found in other schools, such as a gymnasium, a cafeteria, a laboratory, an industrial arts workshop, a library, audio-visual equipment, and various resource rooms. However, as expressed by the principal, there is still a need for such things as more teachers to alleviate the problem of overcrowded classrooms; more curriculum specialists, particularly remedial reading teachers, to cater to the needs of students requiring special help; and more and better instructional materials, including better equipped school and classroom libraries, to help provide children with better learning experiences.

THE SCHOOL: READING PROGRAM

Since St. John Bosco School serves students from kindergarten to grade eight, the intern found that there was naturally a heavy emphasis placed upon the teaching of reading, especially by teachers responsible for primary and elementary units. This emphasis was further strengthened by the fact that the reading problem was particularly pronounced among students at that school. The principal informed the intern that, although the situation was improving, the level of reading achievement of students in

his school, as measured by various survey tests, was below the norms for the city of St. John's.

The main response to the pressing reading problem had been the establishment of two remedial reading classes. The remedial classes were set up to operate on the basis whereby small groups of students, those considered to be most in need of help in reading, would leave their regular classrooms for certain periods during the week and go to the remedial centers. One remedial class received students from the lower primary grades; the other handled students from grades three, four, and five.

In the remedial class where the intern eventually worked, instruction in reading had centered around the use of the basal series Open Highways which is specifically designed for pupils who do not respond successfully to materials and approaches appropriate for the majority of students. The remedial teacher had made little use of supplementary materials. Indeed, apart from the Readers Digest Skill Builders, which were seldom used, there had been little else available. Furthermore, there was little evidence that instruction had been based upon a specific diagnosis of students' instructional needs in reading. Except for the Stanford Diagnostic Reading Test, Level I, no other diagnostic test had been administered. The teacher stated that this test had provided her with little information and that she based her instruction upon her own observations and the opinions of teachers who had had the

students previously.

Within the regular classrooms the teaching of reading followed conventional patterns. In the two grade five classes from which the subjects of this internship came, all of the students were taught reading through the use of one particular series, with little supplementary material being used. Also, little provision was made for corrective reading within these regular classrooms.

SUMMARY

The subjects of this internship were seven grade five students who ranged in chronological age from twelve to fourteen and in mental age from 8-4 to 12-5. They received regular classroom instruction which was supplemented by remedial help. Each student had a history of academic failure and was retarded by at least two years in reading achievement. All were highly negative in their attitudes toward school. Most were from low socio-economic families where reading was neither practiced nor encouraged.

The students lived, and attended St. John Bosco School, in the Shea Heights area, an economically and socially depressed part of St. John's. The school, in contrast to its cultural environment, is one of the more progressive in St. John's. In terms of both human and material resources it is at least on a par with most other schools in the city. However, St. John Bosco School still lacks a sufficient supply of appropriate instructional

materials, specialized teaching personnel in the area of reading, and an effective remedial reading program that caters to all students requiring remedial reading instruction.

Chapter 4

INTERNSHIP PROCEDURES

In order to meet the purposes of the internship, the intern considered it necessary to fulfill the following procedural objectives: (1) diagnose individual students' instructional needs in reading in relation to those skills necessary to decode adequately and comprehend fully reading material; (2) develop and implement a program in reading designed to meet students' instructional needs; (3) set up a schedule of reinforcement whereby reward would be contingent upon successful student performance in various reading activities; and (4) work with the subjects' remedial teacher in fulfilling the above objectives. This chapter reports the procedures employed by the intern to achieve these objectives during the internship which commenced in mid-April and ended in early June, a period of approximately seven weeks.

DIAGNOSIS OF INSTRUCTIONAL NEEDS

Since behaviour modification techniques are means designed only to facilitate the learning process, invariably they will have little effect upon student learning if used in conjunction with an inappropriate educational program. For this reason and the fact that the subjects' remedial

program appeared to be deficient in certain respects, the intern decided that a firm basis for remediation had to be established before reinforcement could be applied. The first step in this procedure involved a diagnosis of students' instructional needs in reading. This encompassed a specification of the skills that characterize reading, the selection and administration of appropriate diagnostic instruments, and an analysis of specific strengths and weaknesses in individual student profiles.

Skills in Reading

A major problem in reading instruction is the lack of an adequate definition of reading. Without a clear-cut concept of the nature of the reading act it is almost impossible to plan the goals of reading instruction, evaluate the reading behaviour of the pupils we teach, and distinguish an individual who is truly adept in reading from one whose skills are only superficially adequate.

Many different opinions of the nature of the reading act have been offered by various people concerned with the subject. From an educational viewpoint, the writer considers the concept of reading as a skill development process to be the best definition. Even though it is a very limited interpretation of what is really a very complex activity, this conceptualization of the reading act provides the educator with a practical framework within which to guide reading instruction.

Much has been written about the skills the individual uses in reading. Detailed listings can be found in practically any text concerned with the teaching of reading. These skills are commonly grouped under the headings of word attack, vocabulary, and comprehension.

Skills included under word attack are the development of sight vocabulary, use of context, ability in phonetic and structural analysis, and the awareness of syntactic arrangement. Vocabulary, apart from the mere recognition and pronunciation of words, refers to knowledge of word meanings. Comprehension involves the use of several skills and abilities. The ones most often mentioned under this heading are getting the literal meaning of a passage; interpreting deeper meaning than the literal through the use of such skills as predicting outcomes, seeing cause and effect relationships, and drawing conclusions; and evaluating the quality, value, accuracy, and truthfulness of what is read.

In addition to these skills which characterize reading in general, there are also basic skills relating to reading and study in the content areas. Teachers must teach reading skills specific to their subject areas. Some of these include previewing, skimming and scanning, reading graphs, using library resources, and organizing and reporting information.

The above conceptualization of reading as a process of skill development does not mean to imply that reading is

a group of separate skills to be practiced in isolation and later blended together into the total act. Rather, reading is a total act from the beginning. Indeed, most of the skills involved in reading are interwoven into a good reading program from the start of formal reading instruction. Knowledge of these skills must be put to effective use in diagnosing students' instructional needs and in implementing appropriate reading instruction.

Diagnostic Testing

Both standardized and informal diagnostic tests were used to assess the subjects' instructional needs in reading. The standardized test used was the Durrell Analysis of Reading Difficulty (Durrell, 1953). This is an individually administered test designed to diagnose a student's strengths and weaknesses in a number of areas including silent and oral reading, listening comprehension, word recognition and word analysis, visual memory of words, spelling, and handwriting. The informal diagnostic battery consisted of two group administered tests: (1) The Basic Sight Word Test (Dolch, 1942) and (2) a phonics test from Source Book of Evaluation Techniques in Reading (Gilstad, 1972:15-19). The former is designed to test a reader's knowledge of basic sight vocabulary commonly associated with the primary grades; the latter is intended to give a detailed assessment of a subject's phonic abilities.

During the first week of the internship, the Durrell

Analysis of Reading Difficulty was administered to each subject. Since the administration of this test required a considerable amount of time, the intern was given permission by the principal to test the subjects during time they spent in both the regular and remedial classrooms. All formal testing was done in an unoccupied room which was later to become the reinforcement center. The informal diagnostic tests were administered during the next two weeks after formal instruction, based on the results of the standardized test, had begun.

An effort was made to involve the subjects' remedial teacher (hereafter referred to as the cooperating teacher) as much as possible in the diagnostic phase of the internship. However, because of her lack of experience in any systematic attempt at instructional diagnosis the intern was mainly responsible for the administration of tests and the interpretation of results. Nonetheless, she was keenly interested in the process of diagnosis, and many of her comments about past experiences she had had with the subjects were of diagnostic value.

Diagnosis did not end with the administration of the above mentioned tests. Evaluation of the students' instructional needs was continuous throughout the entire internship. Student performance in both general and specific reading activities served as the basis for this continuous evaluation.

Diagnostic Profiles

Based on the results of both formal and informal diagnostic tests, profiles of students' specific strengths and weaknesses in various reading skills were constructed in order to guide instruction (see Appendix A for an example of a detailed diagnostic reading profile). The performance of individual students on the various subtests of the Durrell Analysis of Reading Difficulty are presented in Table 3. This test revealed that the overall instructional levels of the subjects ranged from middle grade one to high grade three.

There were considerable fluctuations in individual performances on the subtests of the standardized test. In general, the subjects tended to score lowest in oral reading speed and comprehension, silent reading speed and comprehension, visual memory of words and spelling. There were no specific areas of strengths which characterized the entire group. Rather, strengths varied among individuals. However, in no case, except in handwriting, did student performance on any one subtest of the Durrell Analysis of Reading Difficulty reach the norms for grade five, the subjects' grade placement level.

Table 3

Student Grade Scores on the Subtests of the Durrell
Analysis of Reading Difficulty

Subtests	Student						
	A	B	C	D	E	F	G
Oral reading speed and accuracy	2.8	2.2	1.5	1.2	3.2	3.2	3.5
Oral reading comprehension (estimate)	2.5	3.0	2.0	2.0	3.5	3.8	3.0
Silent reading speed	2.8	2.2	2.2	2.2	3.5	3.5	3.8
Silent reading comprehension (estimate)	3.0	3.5	1.8	2.5	3.8	4.0	4.0
Listening comprehension	3.5	3.5	3.0	3.2	3.5	3.8	3.5
Flashed words	2.5	2.5	2.2	1.5	4.2	3.2	3.8
Word analysis	2.8	3.5	2.8	1.8	4.2	3.8	4.8
Visual memory	3.5	2.5	2.5	1.5	3.5	1.5	3.5
Spelling	1.8	3.0	1.5	1.5	4.0	4.2	4.8
Handwriting	2.5	2.2	2.5	3.2	5.8	4.5	5.5

The results of informal diagnostic testing contributed further information to the construction of student profiles of strengths and weaknesses in reading. The Basic Sight Word Test revealed that only three of the seven subjects had mastered the basic sight words normally learned in the primary grades. Of the four who had not mastered these words, two functioned at the grade one level and the others at grade two. The informal phonics test revealed that the subjects had a fairly adequate knowledge of initial consonants, initial consonant blends, digraphs, and long and short vowel sounds. However, they had trouble with certain variant vowel sounds such as vowel digraphs and diphthongs. Moreover, the subjects experienced difficulty with the initial consonant phonograms test and the consonant blend and digraph phonograms test.

REMEDIAL INSTRUCTION

Having diagnosed the subjects' strengths and weaknesses in the various skills related to reading, the intern's next step was to implement an effective remedial reading program designed to meet the students' instructional needs. This involved the gathering of appropriate instructional materials and the organizing of suitable teaching-learning experiences.

Instructional Materials

As was outlined in Chapter 3, the subjects of this internship had received reading instruction primarily

through the use of one instructional series, Open Highways. Very little supplementary material had been available in the remedial classroom. From the beginning the intern had felt that an effective remedial reading program should not focus entirely upon the use of one basal reading series. Often a basal reading series does not lend itself to complete individualization of instruction nor does it provide the wealth of reading experiences students need. Furthermore, strict adherence to a basal series in a remedial situation often leads to the re-teaching of already mastered skills. Hence, remedial reading students need, in addition to a core program, a variety of materials designed to remediate specific skill deficiencies.

The need for additional instructional materials in the class in which the intern worked became even more apparent when the diagnosis of instructional needs revealed that four of the seven students were reading Open Highways material that was at their frustration level. Obviously, since it would have been futile to have let these students continue or have them repeat material already covered, they had to be removed from the Open Highways program entirely, at least until their reading abilities had improved sufficiently to enable them to read this material. Indeed, two students did not return to the series during the internship period.

The facilities of both the Curriculum Center and the Language Arts Resources Center at Memorial University

enabled the intern to supply needed supplementary reading materials appropriate for remedial situations. These were commercially produced items (see Appendix B for a detailed listing) which included SRA Reading Laboratory Ib, the Gates-Pearson Reading Exercises, skill-building materials published by the Continental Press, and high interest - low vocabulary books.

SRA Reading Laboratory Ib contains Power Builders organized into eight levels of difficulty ranging from grade 1.4 to 4.0. These provided the subjects with opportunity for interesting reading in the areas of social studies and general science and with practice in the skills of vocabulary development, word attack and comprehension.

The Gates-Pearson Reading Exercises contain material which facilitates the development of speed and comprehension in reading. In addition, they develop competence in the specific skills of reading to comprehend the main idea, reading to follow directions, and reading to note details. The exercises selected for use from the series ranged in difficulty from grade two to grade four.

The Continental Press materials that were used consisted of reproducible worksheets and reading selections intended to give specific instruction in a wide variety of reading skills, including phonics and word analysis, comprehension, reading-thinking skills, and reading-study skills. These materials enabled the students to acquire further practice in skills essential to the development of

facility in reading.

The selected high interest - low vocabulary books ranged in difficulty from low grade one to high grade three and had interest levels appropriate for the chronological ages of the subjects. These provided the students with easy, pleasurable reading experiences.

In addition to these particular materials various phonics games, word lists, word cards, and word charts were used as instructional aids. At times teacher-made worksheets were also used to help provide remediation in a specific skill.

Teaching-Learning Experiences

Remedial instruction covered a period of approximately six weeks, commencing April 29, the second week of the internship, and ending June 7 when school examinations made it necessary to terminate the study. Excluding two school holidays and one day when no remedial session was held, the total number of days for instruction during this period amounted to twenty-seven. Each day the subjects received instruction during the one and one-half hour period they normally spent in a remedial situation. Hence, no modification of the school schedule was required to accommodate the internship. All instruction took place in the remedial classroom. During these instructional sessions the cooperating teacher and the intern worked jointly in planning and implementing instruction.

The following elements characterized the remedial instruction the subjects received:

1. Instruction followed logically from the diagnosis of the students' needs. Wherever possible, instructional resources were systematically applied to remediate specific skill deficiencies.

2. Attention was focused on the individual rather than the group. Because of the small number of students, the use of supplementary materials, and the fact that two people were doing the remediation, it was possible to establish completely individualized programs.

3. A balanced approach to remediation, in terms of skill development and other aspects of reading instruction, was employed. Students received remediation in the various vocabulary development, word attack, comprehension, and study skills generally considered to be of essential importance in reading. Daily lesson plans included oral and silent reading, instruction and independent practice in skill development, and leisure reading.

4. Attempts were made to improve the students' functional reading abilities through providing reading instruction in the content areas.

5. Recreational reading was promoted by encouraging the students to read the high interest - low vocabulary books.

APPLICATION OF REINFORCEMENT

In order to make remedial instruction more effective, principles of behaviour modification were used throughout the instructional phase of the internship to motivate the students to learn. These behaviour modification techniques essentially involved the establishment of a schedule of reinforcement whereby reward was made contingent upon successful student performance in various reading activities. The application of reinforcement in this internship followed many of the methodological procedures used in the research studies cited in the review of literature.

The Reinforcement System

The system of reinforcement employed in this study involved the use of tokens which were exchangeable for a variety of back-up reinforcers. White, red, and blue poker chips were used as token reinforcers. These were assigned values of one, five, and ten points respectively.

The back-up reinforcers consisted of both consumable and durable items which were assigned point values roughly corresponding to retail cost. During the first week of the internship the exact nature of these reinforcers was determined by an informal assessment of the subjects' preferences for a variety of objects. The subjects were asked to rank the items contained in three sampling lists (see Appendix C) in order of their preference. In addition,

they were encouraged to suggest other appropriate items which they would like as rewards. Table 4 contains the list of back-up reinforcers that resulted.

An effort was made to ensure that the ultimate list of back-up rewards contained objects that varied in value and were appealing to both sexes. Also, the list was constructed so as to include edible, school-related, and sundry items.

All back-up reinforcers, with the exception of certain perishable items, were kept in a reinforcement center (the spare room where formal testing was conducted) which contained several shelves where the reinforcers could be neatly stored. Perishable items were kept in the school canteen where they could be easily obtained upon request.

A list of back-up reinforcers with their corresponding point values was posted in both the remedial classroom and the reinforcement center. In addition, each subject received a copy of the list of items available.

Table 4

Back-up Reinforcers and their Corresponding Point Values

<u>10 Points</u>	<u>15 Points</u>	<u>25 Points</u>	<u>100 Points</u>
apples	bars	fishing lines	eye shadow
bananas	coloured markers	fishing lures	perfume
cheezies	ice cream	hockey pucks	powder
chips	milk	pocket books	records
combs			snorkels
comic books	<u>20 Points</u>	<u>50 Points</u>	<u>200 Points</u>
erasers	exercise books	hair buckles	baseballs
gum	pencil sharpeners	jigsaw puzzles	earrings
oranges	pens	lipstick	softballs
peanuts	soft drinks	nail polish	
pencils			<u>300 Points</u>
rulers			model building sets
			sunglasses
			swim masks

Administration

Reinforcement was introduced in the remedial class on the first day of instruction and continued throughout the entire instructional period. Initial organization included an explanation of the nature of the reinforcement system to the students and the formulation of ground rules governing the acquisition and administration of tokens and back-up reinforcers. In general, the following features characterized the administration of the reinforcement system as it existed during the internship:

1. Reinforcement was made contingent upon the successful completion by the students of written exercises designed to improve their performance in various skills in which they had difficulty. Although the subjects engaged in several other activities intended to remediate their reading difficulties, it was decided to reinforce with tokens only written responses. Successful performance in these written responses invariably required that subjects also take part in other activities.

2. Students were always told beforehand the number of points to be awarded upon the successful completion of a particular exercise. This was to ensure maximum utilization of the motivational appeal of incentives.

3. A criterion of performance required in order to receive reinforcement for each particular written response was established and made known to the students before they engaged in the responding activity. In general, an average

of eighty percent correct performance on written exercises was considered sufficient mastery for students to receive tokens.

4. Students were given an opportunity to receive tokens during every class session, the total point value of such being at least equal to the number of points required to receive the cheapest back-up reinforcers. This was to ensure that students could be continuously reinforced if they wished to exchange their tokens immediately.

5. Tokens were administered only at the beginning of each class session. During this time each subject received tokens he had earned the previous day.

6. Tokens were permitted to be exchanged for back-up reinforcers during lunch time on Wednesday and during recess on other days. These were considered to be the best times since students did not have to interrupt their work to go to the reinforcement center. Besides, remedial instruction immediately preceded recess every day except Wednesday. Wednesday's session immediately preceded lunch time.

7. Records were kept of all transactions involving the administration and exchange of tokens for back-up reinforcers (see Appendix D). These records kept the reinforcement system working smoothly, enabled the intern to keep account of its actual cost, provided information concerning the most preferred rewards, and indicated student progress as evidenced by each subject's accumulation of

points.

8. As instruction progressed, students were required to complete more work to receive tokens. This was done to ensure maximum utilization of the incentive power of the reinforcing agents and to increase student productivity.

9. Students received praise whenever they received tokens. It was hoped that by pairing a secondary reinforcer (praise) with a primary reinforcer (tokens), the former would acquire more effectiveness as a reinforcing agent.

10. Criticisms and calling attention to disruptive or non-academic behaviour were avoided unless a subject interfered with others. By neither reinforcing nor punishing deviant responses, it was hoped that such behaviours would be extinguished.

The intern and the cooperating teacher administered the reinforcement system. Both shared the responsibility for specifying reinforcement exercises, allotting points, establishing criteria of performance, and administering tokens and back-up reinforcers.

SUMMARY

The internship covered a period of approximately seven weeks. During this time the intern worked with a cooperating teacher in diagnosing the subjects' instructional needs in reading, in planning and implementing effective remedial reading instruction, and in establishing a schedule of reinforcement whereby students received

reward contingent upon their performance in specified reading activities.

Diagnosis involved the specification of skills that characterize reading behaviour, the selection and administration of diagnostic tests, and the interpretation of test results. Remediation required the gathering of appropriate instructional materials and the planning and implementation of suitable teaching-learning experiences. The application of a schedule of reinforcement necessitated a determination of the nature of an effective reinforcement system and the establishment of rules governing its administration.

Both standardized and informal diagnostic tests were used to assess students' instructional needs in reading. Instructional materials included a core program plus a variety of supplementary reading matter. The system of reinforcement employed in the study involved the use of tokens which were exchangeable for a wide variety of consumable and durable reinforcers.

Chapter 5

EVALUATION OF THE INTERNSHIP

This chapter contains an evaluation of the internship. Empirical data, teacher opinions, and general observations are presented as evidence to illustrate changes effected by the internship in the subjects' reading achievement, productivity, class attendance, and attitudes toward school.

READING ACHIEVEMENT

Alternate forms of the Gates-MacGinitie Reading Test, Survey D were administered to assess gains in reading achievement the subjects made during the period of the internship. As was mentioned in Chapter 3, Form 1 of this test was given prior to the commencement of instruction. After instruction and reinforcement was terminated, Form 2 was administered.

Grade level scores received by the subjects on vocabulary and comprehension for both forms of the test are presented in Table 5. These results indicate that the subjects made some gains in reading achievement during the period of the internship. The greatest gains were made in comprehension where the subjects increased their mean grade level from 2.5 to 3.3, a difference of 0.8 years. The mean

grade score for vocabulary increased by approximately 0.3 years from 2.8 to 3.1. Individual gains were as high as 1.1 years in vocabulary and 1.5 years in comprehension. Practically every subject showed some improvement in performance. In no cases were there losses.¹

Table 5

Student Grade Scores in Vocabulary and Comprehension for Forms 1 and 2 of the Gates-MacGinitie Reading Test, Survey D

Student	Vocabulary		Comprehension	
	Form 1	Form 2	Form 3	Form 4
A	2.0	3.1	Below Norms ^a	2.5
B	2.7	2.9	2.3	2.8
C	2.1	2.6	2.3	3.8
D	2.1	2.3	2.5	3.3
E	3.2	3.3	2.6	2.9
F	3.4	3.5	2.5	3.9
G	4.4	4.4	3.3	3.6
Mean score	2.8	3.1	2.5	3.3

^aLowest norm = 2.2. Subject A was assigned this score in this and subsequent analyses of the data.

¹It should be noted that gain scores are subject to some error in measurement.

In order to determine whether or not these gains in reading achievement were significantly greater than those which would have been normally anticipated during the six week instructional phase of the internship, a statistical analysis developed by Libaw, Berres, and Coleman (1962) was employed to measure the subjects against themselves. This analysis enabled a computation of the subjects' expected reading gains, taking into account past learning speed and intelligence, which could be compared with actual reading gains. Rate of learning was computed by dividing a pupil's pre-test score, expressed as a grade-equivalent, by the expected grade placement for his mental age. Expected grade placement was calculated by subtracting the number, five, the normal age of entering school, from the subject's mental age (Della-Piana, 1968:41). The student's expected score after the period of instruction was simply obtained by multiplying rate by time (one and one-half months).

The statistical comparison is contained in Table 6. An application of the t test for correlated samples revealed that the differences between expected and actual mean gains were significant for comprehension ($t = 3.24, p < .02$) but not for vocabulary ($t = 1.49, p > .10$).

Table 6

Subjects' Expected and Actual Reading Gains (Expressed in Years) in Vocabulary and Comprehension.

Student	Vocabulary		Comprehension	
	Expected	Actual	Expected	Actual
A	0.06	1.10	0.01	0.30
B	0.05	0.20	0.05	0.50
C	0.05	0.50	0.06	1.50
D	0.06	0.20	0.07	0.80
E	0.14	0.10	0.11	0.30
F	0.09	0.10	0.06	1.40
G	0.15	0.00	0.11	0.30
Mean gain	0.09	0.31	0.08	0.73
Level of significance	$t = 1.49, p > .10$		$t = 3.24, p < .02$	

STUDENT PRODUCTIVITY

Coupled with gains in reading achievement were increases in student productivity. The cooperating teacher felt that during the instructional and reinforcement phase of the internship the students accomplished more and better work than they had done previously in the remedial class. She indicated that this was especially true for two of the poorest readers whose levels of productivity in various

reading activities had been extremely low. The cooperating teacher attributed increased productivity to the effects of both reinforcement and the implementation of a more comprehensive reading program.

The records of transactions involving the administration and exchange of tokens for back-up reinforcers (see Appendix D) yield more evidence to support the contention that the subjects' productivity levels were high during the internship. An examination of these records reveals that practically every student received points every day he was present. The number of points received per day increased rapidly during the first week of reinforcement and thereafter remained fairly constant, even though students were required to complete more work to receive points as instruction progressed.

According to the observations and opinions of the regular class teachers, some improvement in student productivity in the regular classrooms was noticed. One teacher indicated that two students, the subjects considered by the cooperating teacher to have shown the greatest productivity increases, performed better after the internship began. It is interesting to note that these performance increases occurred in the absence of systematic reinforcement.

ATTENDANCE

According to the attendance figures recorded in the remedial classroom register, the rate of absenteeism had been quite high for some of the students prior to the beginning of the internship. However, after the instructional and reinforcement phase of the internship began, attendance figures showed marked improvement. Apart from one boy, who missed a week of classes because of a severe leg injury, other students who had previously been absent for several days of school each month attended remedial class regularly. Those students who had had few absences maintained their good records.

The same improvement was noticed in the regular classes. The teachers reported that the subjects were absent less frequently from these classes, even during the afternoons when remedial sessions were not being held.

STUDENT ATTITUDES

During the period of the internship certain subtle changes in the students' attitudes toward school in general and reading in particular appeared to occur. For example, the cooperating teacher felt that the subjects showed more willingness or enthusiasm for doing work. Indeed, the students readily engaged in reading activities assigned to them. They worked quite diligently on those exercises which were worth points. Often their desire to earn points led to

requests for additional work during the remedial sessions.

The students also appeared to enjoy school more. The regular classroom teachers reported that the students seemed eager to attend the remedial sessions whenever the time came for them to leave their regular classes. They felt that this enjoyment probably stemmed from the subjects' enthusiasm for the reinforcement system. Certainly, receiving tokens and exchanging them for back-up reinforcers seemed to be highlights during the students' school day.

Certain discipline problems, which were prevalent prior to the beginning of the internship, also seemed to decline as instruction and reinforcement progressed. The students arrived punctually for class, took their seats promptly, and displayed fewer outbursts of disruptive behaviour as time passed. Fewer negative opinions were expressed about assigned tasks, reading materials, and school.

SUMMARY

The effectiveness of this internship in achieving its purposes was reflected by desirable changes in student behaviour. The subjects attained statistically significant increases in reading achievement, increased their productivity levels, improved their classroom attendance, and became more positive in their attitudes toward school and reading.

Chapter 6

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

This chapter contains a summary of the internship, a discussion of major conclusions drawn from the study, and recommendations to school personnel concerning the application of behaviour modification techniques to the remediation of reading difficulties in a regular classroom situation.

SUMMARY OF THE INTERNSHIP

The Problem

This internship dealt with the problem of motivating students who were apathetic to improvement to become more proficient in the skills related to reading. Its major aim was to implement a motivationally based remedial reading program, using principles of behaviour modification, designed to improve the performance of seven grade five children who were severely retarded in reading. A related purpose of the study was to provide school personnel with some evaluative data concerning the efficacy of behaviour modification as a practical approach to the remediation of reading difficulty in an ordinary classroom situation.

The Students

The subjects of the internship were seven grade five students - five girls and two boys - who attended St. John Bosco School in St. John's. Most of these children were from a low socio-economic background. They ranged in chronological age from twelve to fourteen and in mental age from 8-4 to 12-5. All scored at least two years below grade level on the vocabulary and comprehension sections of the Gates-MacGinitie Reading Test, Survey D, Form 1, which was given during the first week of the internship. Each subject had experienced academic failure and had repeated one or more grades.

The students attended regular grade five classes. However, their regular class instruction was supplemented by remedial help in reading which was given in a different classroom by another teacher. The children received approximately one and one-half hours of instruction per day in this remedial class. Formerly, the children had been placed in special education classes.

Lack of motivation was considered by teachers to be the major reason why the subjects had shown little progress despite attempts at remediation. The children were said to dislike school and to have little interest in academic work. Teachers noted that the students were socially immature and frequently displayed behaviour inconducive to learning.

Internship Procedures

The internship covered a period of approximately seven weeks. During this time the intern worked with a cooperating teacher (the subjects' remedial teacher) in carrying out the various procedures designed to fulfill the purposes of the internship.

The initial phase of the internship involved an extensive diagnosis of the students' instructional needs in reading. The various word attack, vocabulary development, and comprehension skills that characterize reading behaviour were identified; formal and informal diagnostic reading tests were selected and administered; and student profiles were constructed, based upon the results of the tests.

Upon completion of the diagnosis of instructional needs, each child was given remedial instruction in relation to his particular difficulties. Appropriate instructional materials were gathered and suitable teaching-learning experiences were planned and implemented. Instruction took place in the remedial classroom during times the subjects normally spent in remedial sessions.

As soon as instruction had begun, reinforcement was introduced to make the remedial program motivationally appealing. A token reinforcement system was instituted in which students received tokens which were assigned point values and were exchangeable for a variety of back-up reinforcers. Students received tokens contingent upon their performance in specified reading activities.

Outcomes

The following outcomes resulted from the internship:

1. The students illustrated gains of 0.3 years in vocabulary and 0.8 years in comprehension as measured by a pre- and post-test of reading achievement through administration of alternate forms of the Gates-MacGinitie Reading Test, Survey D. When compared with growth normally expected during the internship period, these gains were statistically significant for comprehension ($p < .02$) but not for vocabulary ($p > .10$).

2. Corresponding increases in student productivity were noted. Students completed more and better work in the remedial class. Student productivity also increased in the regular classes for two subjects but remained much the same as before for the others.

3. Attendance in both the remedial and regular classrooms improved for those students who had previously missed several days of school per month. The others maintained their good attendance records.

4. Student attitudes toward school seemed to become more favourable. The subjects displayed more enthusiasm toward their work, appeared to enjoy the remedial class sessions, engaged in fewer instances of disruptive behaviour, and expressed fewer negative opinions about school in general and reading in particular.

CONCLUSIONS

The following conclusions are drawn from the results of the internship:

1. The outcomes suggest that the internship was effective in achieving its purposes. Although its evaluation contained elements of subjectivity, it does appear that desirable changes occurred in students' reading achievement, productivity, class attendance, and attitudes toward school and that these results can be attributed primarily to the effects of the procedures employed in the internship.

2. The amount of change in student behaviour that can be directly attributed to the effects of behaviour modification remains undetermined because of the absence of experimental controls in the internship. However, given the strong body of research supporting the efficacy of behaviour modification as a technique in the remediation of reading difficulties and the intern's subjective impressions of how the reinforcement system worked, the writer concludes that behaviour modification was a major factor contributing to the outcomes of the internship.

3. The writer feels that the results of the internship could possibly have been limited by the time of year in which the study was conducted and the short period of time the intern had to work with the subjects. Outcomes might have been more dramatic could more time have been taken and had the internship been conducted at the beginning.

of the school year when educational plans were initially formulated.

4. A period of follow-up study is required in order to assess fully the effectiveness of the internship. It is hoped that in the future the writer will receive information regarding any effects the study might have had on subsequent student achievement and educational planning in St. John Bosco School.

RECOMMENDATIONS

Several recommendations can be made to school personnel concerning the application of behaviour modification techniques to the remediation of reading difficulties in a regular classroom situation:

1. Behaviour modification techniques should only be applied by personnel who possess knowledge of the underlying principles.

2. Behaviour modification techniques should only be applied to cases where it is apparent that lack of motivation is a major contributing factor to poor student achievement in reading.

3. The application of behaviour modification techniques to the remediation of reading difficulties should be preceded by an extensive diagnosis of students' instructional needs and by the establishment of an effective remedial program. Behaviour modification will be ineffective if students are frustrated by inappropriate instruction.

4. Systematic use may be made of rewards already available in the school environment. Some examples of such are teacher praise, free time, and opportunity to engage in pleasurable school activities.

5. Once begun, behaviour modification techniques should be applied until student achievement improves sufficiently and until systematic reinforcement can be effectively phased out without altering student performance.

REFERENCES CITED

REFERENCES CITED

- Axelrod, S. 1971. "Token Reinforcement Programs in Special Classes," Exceptional Children, 37:371-370.
- Bijou, S. W., et al. 1966. "Programmed Instruction as an Approach to the Teaching of Reading, Writing, and Arithmetic to Retarded Children," Psychological Record, 16:505-522.
- Birnbrauer, J. S., et al. 1965. "Classroom Behaviour of Retarded Pupils with Token Reinforcement," Journal of Experimental Child Psychology, 2:219-235.
- Della-Piana, G. M. 1968. Reading Diagnosis and Prescription. New York: Holt, Rinehart and Winston.
- Dolch, E. W. 1942. The Basic Sight Word Test. Champaign, Illinois: Garrard Publishing Company.
- Dunn, L. M. 1959. Peabody Picture Vocabulary Test. Circle Pines, Minnesota: American Guidance Service.
- Durrell, D. D. 1955. Durrell Analysis of Reading Difficulty. New York: Harcourt, Brace and World.
- Frandsen, A. N. 1967. Educational Psychology. 2d ed. New York: McGraw-Hill Book Company.
- Gates, A. I. and W. H. MacGinitie. 1965. Gates-MacGinitie Reading Test, Survey D. New York: Teachers College Press, Columbia University.
- George, J. E. 1970. "Fixed and Variable-ratio Reinforcement of Reading Performance," Reading: Process and Pedagogy, Nineteenth Yearbook of the National Reading Conference, (Milwaukee: The Marquette University Press), 1:146-151.
- Gilstad, J. (ed.) 1972. Source Book of Evaluation Techniques for Reading. Bloomington, Indiana: Measurement and Evaluation Center in Reading Education.
- Hamblin, J. A. and H. I. Hamblin. 1972. "On Teaching Disadvantaged Preschoolers to Read: A Successful Experiment," American Educational Research Journal, 9(2):209-216.

- Haring, N. G. and M. A. Hauck. 1969. "Improved Learning Conditions in the Establishment of Reading Skills with Disabled Readers," Exceptional Children, 35:341-352.
- Heitzman, A. J. 1970. "Effects of a Token Reinforcement System on the Reading and Arithmetic Skills Learnings of Migrant Primary School Pupils," Journal of Educational Research, 63:455-458.
- _____ and M. J. Putnam. 1972. "Token Reinforcement and Adult Basic Education," Journal of Reading, 15:330-334.
- Hewitt, F. M., F. D. Taylor, and A. A. Artuso. 1969. "The Santa Monica Project: Evaluation of an Engineered Classroom Design with Emotionally Disturbed Children," Exceptional Children, 35:523-529.
- Kennedy, E. C. 1971. Classroom Approaches to Remedial Reading. Itasca, Illinois: F. E. Peacock Publishers.
- Kimble, R. L. and R. G. Davison. 1972. "Reading Improvement for Disadvantaged American Indian Youth," Journal of Reading, 15:342-346.
- Kuypers, D. S., W. C. Becker, and E. D. O'Leary. 1968. "How to Make a Token System Fail," Exceptional Children, 35:101-109.
- Libaw, F., F. Berres, and J. C. Coleman. 1962. "A New Method for Evaluating the Effectiveness of Treatment of Learning Difficulties," Journal of Educational Research, 55:582-584.
- McKenzie, H. S., et al. 1968. "Behaviour Modification of Children with Learning Disabilities Using Grades as Tokens and Allowances as Back-up Reinforcers," Exceptional Children, 34:745-752.
- Nolen, P. A., H. P. Kunzelmann, and N. G. Haring. 1967. "Behaviour Modification in a Junior High Learning Disabilities Classroom," Exceptional Children, 34:163-168.
- Staats, A. W. and W. H. Butterfield. 1965. "Treatment of Nonreading in a Culturally Deprived Juvenile Delinquent: An Application of Reinforcement Principles," Child Development, 36:926-942.

- _____, K. A. Minke, and P. Butts. 1970. "A Token-Reinforcement Remedial Reading Program Administered by Black Therapy-Technicians to Problem Black Children," Behaviour Therapy, 1:331-353.
- Skinner, B. F. 1953. Science and Human Behaviour. New York: MacMillan and Company.
- Ullman, L. and I. Krasner (eds.). 1965. Case Studies in Behaviour Modification. New York: Holt, Rinehart and Winston.
- Wadsworth, H. G. 1971. "A Motivational Approach Toward the Remediation of Learning Disabled Boys," Exceptional Children, 38:33-42.
- Willis, J. W., B. Morris, and J. Crowder. 1972. "A Remedial Reading Technique for Disabled Readers that Employs Students as Behavioural Engineers," Psychology in the Schools, 9:67-70.
- Wolf, M. M., D. F. Giles, and R. V. Hall. 1968. "Experiments with Token Reinforcement in a Remedial Classroom," Behaviour Research and Therapy, 6:51-64.

APPENDICES

APPENDIX A

A Detailed Diagnostic Reading Profile

PROFILE OF STUDENT A

The following is a profile of one student's specific strengths and weaknesses in skills involved in reading. Both formal and informal tests were used to gather information.

DURRELL ANALYSIS OF READING DIFFICULTY

Grade Scores Received on Subtests

Oral reading speed and accuracy	grade 2.8
Oral reading comprehension (estimate)	grade 2.5
Silent reading speed	grade 2.8
Silent reading comprehension (estimate)	grade 3.0
Listening comprehension	grade 3.5
Flashed words	grade 2.5
Word analysis	grade 2.8
Visual memory	grade 3.5
Hearing sounds in words (primary)	grade 3.5
Spelling	grade 1.8
Handwriting	grade 2.5

Specific Difficulties

1. Oral reading

- (a) Inadequate phrasing
- (b) Incorrect phrasing
- (c) Monotonous tone
- (d) Poor enunciation of difficult words
- (e) Ignore's punctuation

- (f) Low sight vocabulary
- (g) Word-analysis ability inadequate
- (h) Guesses at unknown words from context
- (i) Ignores word errors
- (j) Holds book too closely

2. Silent reading

- (a) Low rate of silent reading
- (b) Lip movements
- (c) Poorly organized recall
- (d) Avoids use of new words in recall

3. Word recognition and word analysis

- (a) Low sight vocabulary
- (b) Guesses at word from general form
- (c) Word analysis ability poor
- (d) Unable to combine sounds into words
- (e) Enunciates badly when prompted
- (f) Sounding slow or inaccurate

4. Spelling

- (a) Omits sounds
- (b) Adds sounds
- (c) Incorrect sounds

5. Handwriting

- (a) Speed too slow
- (b) Poor letter formation

THE BASIC SIGHT WORD TEST

Number of words tested	220
Number known	176
Number unknown	44
Approximate reading level	grade one

INFORMAL PHONICS TEST

Initial Consonants

One hundred percent correct performance.

Initial Consonant Blends and Digraphs

One hundred percent correct performance on elements tested.

Vowels, Vowel Digraphs, and Diphthongs

Elements known: long and short a, ar, or, short u,
 long and short e, er, short i, ie,
 long o, ay, ai, ou, oa, oo, ow, oi.

Elements unknown: short o, long i, oy, au, ow, ei,
ir, ar.

Initial Consonant Phonograms Test

Difficulty in combining initial consonants f, h, j,
l, p, r, s, t, v, and z with appropriate phonograms.

Consonant Blend and Digraph Phonograms Test

Difficulty in combining elements br, cr, fr, gr, pl,
pr, sm, sp, tr, wr, ch, sh, wh, gh, and ph with appropriate
phonograms.

APPENDIX B

Instructional Reading Materials

76

CORE PROGRAM

Robinson, H. M., et al. 1968. Open Highways. Glenview, Illinois; Scott, Foresman and Company.

The following books from Open Highways were used for instruction:

<u>Title</u>	<u>Grade Level</u>
Moving Ahead	2.5
Splendid Journey	3.0
Speeding Away	3.5

Each of these books is accompanied by an exercise book, Read and Write, a set of duplicating masters, a teacher's manual, and a package of reading tests.

SUPPLEMENTARY MATERIALS

Parker, D. H. and G. Scannell. 1961. SRA Reading Laboratory Ib. Chicago: Science Research Associates.

SRA Reading Laboratory Ib contains Power Builders ranging in level of reading difficulty from grade 1.4 to grade 4.0.

Several packages of duplicating masters containing skill building exercises are published by The Continental Press, Elizabethtown, Pa. 17022. The following were used during the internship:

<u>Title</u>	<u>Grade level</u>
Reading-Study Skills	grade 1
Reading-Thinking Skills	grade 1
Reading-Thinking Skills	grade 2
Reading for Comprehension	grade 2
Phonics and Word-Analysis Skills	grade 3
Reading-Thinking Skills	grade 3
Reading for Comprehension	grade 3
Phonics and Word-Analysis Skills	grade 4
Variant Vowel Sounds	

Gates, A., and C. C. Peardon. 1963. Reading Exercises.
 New York: Teachers College Press, Teachers College,
 Columbia University.

The following levels of the series were used:

<u>Level</u>	<u>Reading difficulty</u>
Introductory: Levels A and B	grade 2
Preparatory: Levels A and B	grade 3
Elementary - RD	grade 4
Elementary - FD	grade 4
Elementary - SA	grade 4

HIGH INTEREST - LOW VOCABULARY BOOKS

The following series, of high interest - low vocabulary books were selected:

<u>Series</u>	<u>Publisher</u>
The Griffin Readers	E. J. Arnold and Son Limited, Leeds.
The Dragon Books	E. J. Arnold and Son Limited, Leeds.
Sports Mysteries Series	Benefic Press, Chicago.
World of Adventure Series	Benefic Press, Chicago.
Mystery Adventure Series	Benefic Press, Chicago.
Dan Frontier	Benefic Press, Chicago.
Racing Wheels Series	Benefic Press, Chicago.
Space Age Books	Benefic Press, Chicago.

APPENDIX C

Sampling Lists of Back-up Reinforcers

In order to partially determine the kinds of rewards which could serve as appropriate back-up reinforcers, the subjects were asked to rank, according to their preferences, the items in each of the following lists:

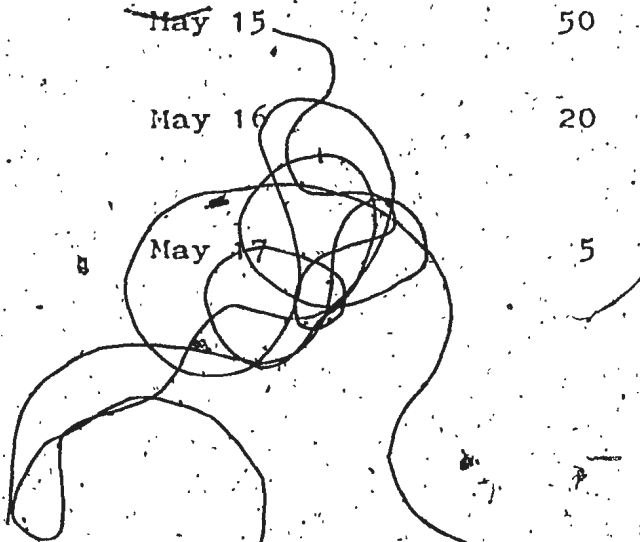
<u>List 1</u>	<u>List 2</u>	<u>List 3</u>
apples ()	coloured markers ()	baseballs ()
bananas ()	erasers ()	combs ()
bars ()	exercise books ()	comic books ()
candy ()	pencils ()	cuff links ()
cheezies ()	pencil sharpeners ()	earrings ()
chips ()	pens ()	fishing lines ()
gum ()	pocket books ()	fishing lures ()
ice cream ()	rulers ()	frisbees ()
milk ()		hockey pucks ()
oranges ()		jigsaw puzzles ()
peanuts ()		lipstick ()
soft drinks ()		nail polish ()
		perfume ()
		powder ()
		records ()
		rings ()
		sunglasses ()

APPENDIX D

Records of Student Reinforcement

STUDENT A

<u>Date</u>	<u>Points earned</u>	<u>Points spent</u>	<u>Balance</u>
April 30	10		10
May 1	20	soft drink 20 gum 10	30 0
May 2	5		5
May 3	20	bar 15 gum 10	25 0
May 6	20	gum 10 peanuts 10	20 0
May 7	20	cheezies 10 peanuts 10	20 0
May 8	35	soft drink 20 bar 15	35 0
May 9	10		10
May 10	5	gum 10	15 5
May 13	20	chips 10 gum 10	25 5
May 14	15	gum 10	20 10
May 15	50	5 chips 50	60 10
May 16	20	bar 15 chips 10	30 5
May 17	5		10



<u>Date</u>	<u>Points earned</u>	<u>Points spent</u>	<u>Balance</u>
May 20	40		50
		soft drink 20 chips 10 eraser 10	10
May 21	35		45
		2 bars 30 chips 10	5
May 22	(Subject was absent)		
May 23	30		35
		2 gum 20 comb 10	5
May 24	5		10
May 27	(School holiday)		
May 28	(School holiday)		
May 29	20		30
		marker 15 gum 10	5
May 30	20		25
		bar 15 gum 10	0
May 31	(No remedial session)		
June 3	15		15
		bar 15	
June 4	15		15
June 5	40		55
		3 bars 45 gum 10	0
June 6	45		45
		3 choozies 30 gum 10	5
June 7	45		50
		2 soft drink 40 chips 10	0

Total approximate cost of reinforcement for Student

A was \$5.65.

STUDENT B

<u>Date</u>	<u>Points earned</u>	<u>Points spent</u>	<u>Balance</u>
April 30	5		5
May 1	10	chips 10	15
May 2	5	chips 10	10 0
May 3	20	chips 10 cheezies 10	20 0
May 6	15		15
May 7	0	cheezies 10	15 5
May 8	35	soft drink 20 cheezies 10	40 10
May 9	15		25
May 10	10	soft drink 20 chips 10	35 5
May 13	20	soft drink 20	25 5
May 14	15		20
May 15	30	sharpener 20 2 chips 20	50 10
May 16	20	soft drink 20	30 10
May 17	20		30
May 20		(Subject was absent)	
May 21		(Subject was absent)	
May 22		(Subject was absent)	

<u>Date</u>	<u>Points earned</u>	<u>Points spent</u>	<u>Balance</u>
May 23	(Subject was absent)		
May 24	(Subject was absent)		
May 27	(School holiday)		
May 28	(School holiday)		
May 29	10	soft drink 20 chips 10	40 10
May 30	25	bar 15	35 20
May 31	(No remedial session)		
June 3	20		40
June 4	15		55
June 5	35		90
June 6	20	4 chips 40 cheezies 10 2 gum 20	110 40
June 7	20	soft drink 20 2 chips 20 2 cheezies 20	60 0

Total approximate cost of reinforcement for Student

B was \$3.65.

STUDENT C

<u>Date</u>	<u>Points earned</u>	<u>Points spent</u>	<u>Balance</u>
April 30	10		10
May 1	20		30
		peanuts 10	
		gum 10	10
May 2	0		10
		comb 10	0
May 3	10		10
		peanuts 10	0
May 6	20		20
		peanuts 10	
		cheezies 10	0
May 7	10		10
		comb 10	0
May 8	20		20
		exercise 20	0
May 9	15		15
		chips 10	5
May 10	10		15
		chips 10	5
May 13	20		25
		chips 10	
		gum 10	5
May 14	20		25
		chips 10	
		pencil 10	5
May 15	30		35
		pen 20	
		eraser 10	5
May 16	25		30
		soft drink 20	10
May 17	10		20
		chips 10	10

<u>Date</u>	<u>Points earned</u>	<u>Points spent</u>	<u>Balance</u>
May 20	25		35
		marker 15	
		eraser 10	10
May 21	30		40
		gum 10	
		chips 10	
		soft drink 20	0
May 22	(Subject was absent)		
May 23	25		25
		sharpener 20	5
May 24	(Subject was absent)		
May 27	(School holiday)		
May 28	(School holiday)		
May 29	10		15
May 30	20		35
		chips 10	
		cheezies 10	15
May 31	(No remedial session)		
June 3	25		40
		pencil 10	
		comb 10	20
June 4	20		40
June 5	15		55
June 6	20		75
June 7	25		100
		record 100	0

Total approximate cost of reinforcement for Student

C. was \$4.35.

STUDENT D

<u>Date</u>	<u>Points earned</u>	<u>Points spent</u>	<u>Balance</u>
April 30	10		10
May 1	0		10
May 2	5		15
May 3	20		35
May 6	5		40
May 7	10		50
May 8	25		75
May 9	25		100
May 10	5		105
May 13	20	record 100	125 25
May 14	40		65
May 15	25	ruler 10	90 80
May 16	40	comb 10	120 110
May 17	15		125
May 20	(Subject was absent)		
May 21	30		155
May 22	25		180
May 23	0		180
May 24	15		195
May 27	(School holiday)		
May 28	(School holiday)		

<u>Date</u>	<u>Points earned</u>	<u>Points spent</u>	<u>Balance</u>
May 29	5		200
		record 100 comb 10	90
May 30	30		120
May 31	(No remedial session)		
June 3	25		145
		marker 15 gum 10	120
June 4	20		140
		record 100	40
June 5	(Subject was absent)		
June 6	20		60
June 7	40		100
		eye shadow 100	0

Total approximate cost of reinforcement for Student
D. was \$4.55.

STUDENT E

<u>Date</u>	<u>Points earned</u>	<u>Points spent</u>	<u>Balance</u>
April 30	10		10
May 1	10	chips 10	20 10
May 2	5	chips 10	15 5
May 3	15	marker 15	20 5
May 6	20	gum 10 chips 10	25 5
May 7	(Subject was absent)		
May 8	10		15
May 9	25	exercise 20 chips 10	40 10
May 10	15	gum 10	25 15
May 13	30	chips 10 gum 10 bar 15	45 10
May 14	25	sharpener 20	35 15
May 15	5		20
May 16	0		20
May 17	10		30
May 20	20		50
May 21	25	chips 10 gum 10 bar 15	75 40

<u>Date</u>	<u>Points earned</u>	<u>Points spent</u>	<u>Balance</u>
May 22	35		75
May 23	15	pen 20	90 70
May 24	10		80
May 27	(School holiday)		
May 28	(School holiday)		
May 29	30		110
		2 bars 30	
		3 gum 30	
		chips 10	
		soft drink 20	20
May 30	45		65
		bar 15	
		chips 10	
		peanuts 10	30
May 31	(No remedial session)		
June 3	40		70
		cheezies 10	60
June 4	25		85
June 5	20		105
		bar 15	90
June 6	25		115
		eye shadow 100	
		pencil 40	5
June 7	35		40
		2 chips 20	
		soft drink 20	0

Total approximate cost of reinforcement for Student

E was \$5.05.

STUDENT F

<u>Date</u>	<u>Points earned</u>	<u>Points spent</u>	<u>Balance</u>
April 30	5		5
May 1	5		10
May 2	10		20
May 3	15		35
		gum 10	25
May 6	20		45
		2 gum 20	25
May 7	0		25
May 8	15		40
May 9	15		55
		gum 10	45
May 10	35		80
		gum 10	70
May 13	15		85
		sharpener 20	65
May 14	15		80
		soft drink, 20	60
May 15	(Subject was absent)		
May 16	0		60
		2 gum 20	40
May 17	30		70
		sharpener 20	50
		chips 10	40
May 20	20		60
		chips 10	50
May 21	25		75
May 22	25		100
May 23	10		110
		soft drink 20	90

<u>Date</u>	<u>Points earned</u>	<u>Points spent</u>	<u>Balance</u>
May 24	20		110
		exercise 20 pencil 10	80
May 27	(School holiday)		
May 28	(School holiday)		
May 29	25		105
		gum 10 cheezies 10	85
May 30	15		100
		2 gum 20 2 cheezies 20	60
May 31	(No remedial session)		
June 3	25		85
		soft drink 20	65
June 4	15		80
June 5	10		90
June 6	30		120
		nail polish 50	70
June 7	20		90
		soft drink 20 2 gum 20 pen 20 2 bars 30	0

Total approximate cost of reinforcement for Student

F was \$4.20.

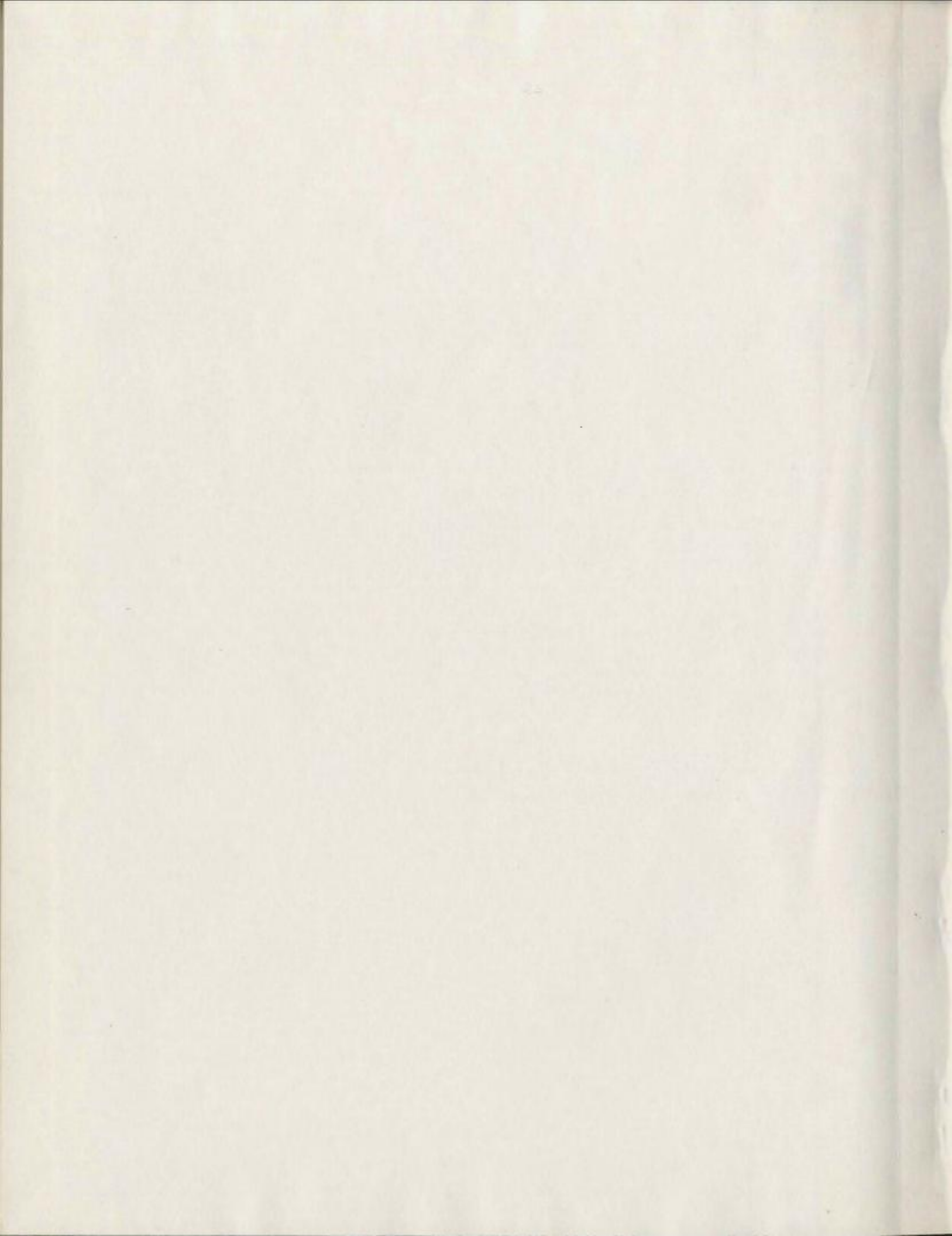
STUDENT G

<u>Date</u>	<u>Points earned</u>	<u>Points spent</u>	<u>Balance</u>
April 30	5		5
May 1	10		15
May 2	5	gum 10	20 10
May 3	20	marker 15	30 15
May 6	20	gum 10	35 25
May 7	10		35
May 8	20	bar 15	55 40
May 9	(Subject was absent)		
May 10	40		80
May 13	25		105
May 14	20	eraser 10 gum 10	125 105
May 15	5	record 100 eraser 10	110 0
May 16	15		15
May 17	25		40
May 20	5		45
May 21	40	chips 10 gum 10	85 65
May 22	35		100
May 23	25		125
May 24	30		155

<u>Date</u>	<u>Points earned</u>	<u>Points spent</u>	<u>Balance</u>
May 27	(School holiday)		
May 28	(School holiday)		
May 29	25		180
		chips 10	
		bar 15	155
May 30	30		185
May 31	(No remedial session)		
June 3	10		195
		record 100	95
June 4	15		110
June 5	20		130
		2 bars 30	
		gum 10	
		chips 10	80
June 6	25		105
June 7	30		135
		perfume 100	
		ruler 10	
		pencil 10	
		bar 15	0

Total approximate cost of reinforcement for Student

G was \$5.10.



THE UNIVERSITY OF CHICAGO

