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MYRON ANDERSON
CHAIRPERSON
PHILOSOPHY DEPT
BH



Master's Thesis and Field Study Abstracts

July 1974/June 1977

MASTER'S THESIS AND FIELD STUDY ABSTRACTS

Forward

This publication, the seventh in a series which began in 1957, contains the abstracts of Master's Theses and Field Studies completed by graduate students of St. Cloud State University. The bulletin contains those theses completed during the period from July 1974 through June of 1977.

A bound copy of each thesis is on file in Centennial Hall, which houses the library on this campus. The library copy of each thesis is available for use on an interlibrary loan basis.

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COLLEGE OF BUSINESS

THE EFFECT OF CHANGES IN PRICE ADVERTISING REGULATIONS UPON THE RETAIL LIQUOR MARKET

Randal D. A. Kolb

PROBLEM: In October 1973, the Minnesota State Liquor Commissioner authorized retailers to include prices in store window displays. Laws had previously prohibited this type of advertising. The new policy has, in effect, increased the amount of information the consumer possesses prior to entering the store. This study examined the effects of these new regulations on the pricing and advertising policies of liquor retailers.

PROCEDURE: Prices of twenty-one brands of blended whisky were collected from fifteen St. Cloud area retailers during February, July, October and December 1973. Retailer characteristics, including advertising expenditures, number of advertisements, store size, and the relative location to traffic and other retailers, were recorded.

Using the periodic prices, a t-statistic was calculated to determine if prices were significantly lower with limited price advertising than with nonprice advertising. Retailers were also classified according to their advertising expenditures and comparisons were made to determine if a price difference existed between these groups of retailers. Periodic prices were compared to determine if prices offered by retailers under nonprice advertising policies were more dispersed than the prices under price advertising policies.

An attempt was also made to ascertain the determinants of prices. Regression analysis was performed using price and the other characteristics of the retailers. The analysis indicated which factors were influential in determining the retailers' prices. The four periodic prices were examined separately to observe any changes in the price determinants.

FINDINGS: Prices were lower under limited price advertising policies than when price posting was unlawful. Even after adjusting for the decrease in the wholesale price, 90 percent of the brands had lower prices in December than in July. Only three of the brands, however, had significantly lower prices. The average price for all brands decreased by \$0.15 per quart. Heavy advertisers decreased their prices by \$0.076, some advertisers by \$0.151, and nonadvertisers by \$0.259.

Under nonprice advertising policies, prices offered by heavy advertisers were lower than the prices of some advertisers and nonadvertisers for several brands. In December, however, the number of brands had decreased considerably. Prices of nonadvertisers and some advertisers were not significant from one another.

Price dispersion did increase for several brands, but generally, prices under price advertising policies were not more dispersed than prices under nonprice advertising policies.

In examining the price determinants, advertising variables were significant in July, but not in December.

CONCLUSIONS: By allowing price posting, price competition appears to be affecting prices, and lowering consumer costs in two ways. The average price has decreased. The consumer's search cost is reduced in some instances. These cost reductions have lowered the total cost of purchase.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1974
Robin Peterson, Chairperson

COLLEGE OF EDUCATION

EDUCATIONAL ADMINISTRATION

A DESCRIPTIVE STUDY REGARDING THE SPECIAL LEARNING DISABILITIES PROGRAM ON READING LEVELS AND TEACHING ATTITUDES TOWARD FLEXIBILITY IN READING CURRICULUM

Harvey S. Anderson

WHY AREA OF SLBP IMPACT IS IMPORTANT:

Administrators are increasingly being asked to make decisions regarding special educational services within their school districts. This is especially true of Special Learning and Behavior Problems services. The question most often faced by the local administrators, is whether or not SLBP programs are effective. In other words, what impact does SLBP have on educational achievement? More specifically, what impact does SLBP have on reading achievement?

PROBLEM: The problem in Parkers Prairie High School deems it necessary to evaluate the impact of the SLBP program on both the reading levels of students and upon the attitudes of the mainstream faculty regarding curriculum flexibility.

- I. Past Iowa Test of Basic Skills scores are tabulated for comparison.
- II. Past Iowa Test of Educational Development scores are tabulated for comparison.
- III. Scores for the ITBS and the ITED are compared on those students enrolled in the SLBP program because of learning disabilities relating to reading achievement.
- IV. Surveys will be developed to ascertain faculty attitudes toward SLBP and curriculum flexibility.
- V. Review of the Literature.

ANALYSIS OF DATA: The information the writer received when utilizing the above mentioned research procedures, was graphically displayed to illustrate the progress or lack of progress of the students as a whole. An historical sketch of reading achievement levels in the high school was developed. Also, reading levels of SLBP students are listed for comparison to evaluate the direct impact of the SLBP program on students receiving the service.

Two surveys were developed to evaluate first, the faculty acceptance of SLBP services and secondly, faculty acceptance of SLBP philosophies as they relate to mainstream curriculum.

CONCLUSION: It is the writer's feeling, based on the research data, that the Parkers Prairie High School reading program has significant problems. Students, on the average, decrease in their Minnesota Percentile when they go through the high school program. It appears that the SLBP program has had a positive impact on the overall reading levels of the high school students, and also on the individual students receiving SLBP services. The most important impact of the SLBP program appears to be on the attitudes of the mainstream faculty toward flexibility in their curriculum designs. The research points to a process of impact that the SLBP program is having on the mainstream faculty. The process will not be completed until the mainstream faculty completely adopts the SLBP philosophy as their own. Specific recommendations can be made regarding the overall reading curriculum. First, a remedial reading program must be developed, to accommodate the slow learner. Secondly, the Right to Read program, or a comparable alternative, should be considered for the whole school district. Lastly, intensive emphasis should be given to providing high school faculty with training in the area of reading curriculum.

APPROVED BY RESEARCH COMMITTEE, MAY 1976
James W. Anderson, Chairperson

AN INVESTIGATION OF THE COST AND A SURVEY OF OPINION OF NEGOTIATING TEACHER SALARIES IN THE STATE OF MINNESOTA

Arnold A. Boese

THE PROBLEM: This study was undertaken to (1) determine the cost of negotiating teacher salaries, and (2) obtain opinions on several factors which were considered intrinsic to modification of the procedure used to determine salaries and obtain the money needed to pay teachers in the state of Minnesota.

THE PROCEDURE: The data for the study were developed from responses to two surveys. The instruments were mailed to a stratified random sample of persons who were considered to be cognizant of the problems inherent in negotiating teacher salaries and knowledgeable of the state program of financial aid to education.

The first survey requested from superintendents of schools information on factors which contributed to the total cost of negotiations.

A second instrument requested opinions of chairpersons of teacher organizations and school boards, and state representatives. These persons were requested to express their opinion on items considered to be intrinsic to negotiating and financing teacher salaries.

The data were interpreted by an analysis of means in "t" test of pooled variance and two-tailed probability estimates. The data for the several strata were considered to differ significantly when $P > .05$.

THE LITERATURE: The review of literature was focused on the interaction of forces which have precipitated change in the processes used to finance education and on some changes in the role of the state in faculty salary determination. Also included in the literature was information pertaining to the utilization of an economic variable factor to adjust educator salaries and on the limitations and successes of regional salary negotiations.

THE CONCLUSIONS: A major and a number of supplementary conclusions were presented for each objective of the study. The major conclusions were: (1) that the time-cost of negotiating the teacher master contract for the 1975-77 contract period was at least \$1,330,000.00. And, (2) that cost-of-living based regional salary schedules may be developed. The starting salary in these schedules could be \$9500 for the 1975-76 school year and the money needed for salaries would be provided by the state. However, no attempt should be made to develop a state-wide salary schedule for teachers.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976
James W. Anderson, Chairperson

AN OBJECTIVE APPROACH TO THE EVALUATION OF JOB APPLICANTS FOR TEACHER PERSONNEL

Arthur E. Dickson

PROBLEM: The purpose of this field study was to investigate some of the problems involved with appraising candidates who are in the final running for a teaching position, to study the current literature pertaining to evaluation, and to develop an objective method, via simulation, for the evaluation and selection of job applicants for teacher personnel.

PROCEDURE: The research of current literature was confined to a review of materials available at St. Cloud State University. This study was also limited to data collected by mailing simulated case studies of the final four applicants for a teaching position, together with a rating sheet for each, to two administrators in each of a randomly selected sample of 24 public schools of Minnesota. Using a table of random numbers, eight of the schools had an elementary enrollment of 100-400, eight had an elementary enrollment of 401-700, and eight had an elementary enrollment over 1,000 during the 1974-75 school year. The weighing of the items on the rating scale was entirely a personal judgment, because no authoritative weights are available. A computer terminal was used to transform raw data into statistical tables.

FINDINGS: An analysis of the data was based on the findings of the computer print-outs: Pearson Product-Moment Correlations Coefficients, Spearman Rank Coefficients of Correlation, means, standard deviations, and t-scores. A chart of confidence belts for the correlation coefficient was used to determine confidence intervals. Throughout the study, differences were determined at the .05 level of confidence.

The null hypothesis (H_0) stated that there is no significant difference between the evaluations of two evaluators in utilization of the objective approach to evaluate individuals. The results of the comparisons were found to be significant in many instances. Therefore, these results would show that the null hypothesis (H_0) may be rejected in favor of the working hypothesis (H_w) which stated that the objective instrument will produce a difference in objective judgment.

CONCLUSIONS: The effectiveness and soundness of an educational system depends so much on good teachers. It is imperative that an objective method be used to evaluate the candidates who are in the final running and to select the best individual for the position.

It is, therefore, recommended that the evaluation model utilized in this study be used by school administrators to evaluate job applicants for teacher personnel.

It must be remembered that whatever improvement can be made for the good of the school is ultimately and directly for the benefit of the child.

APPROVED BY RESEARCH COMMITTEE, DECEMBER 1975

George Farrah, Chairperson

A MODEL, USING CROSS-IMPACT ANALYSIS, TO PROJECT THE NUMBERS OF SCHOOL AGE POPULATION IN INDEPENDENT DISTRICT NO. 47 SAUK RAPIDS, MINNESOTA

John K. Clark

The purpose of this study was to develop a more scientific method of projecting the numbers of students Sauk Rapids can expect to have in their school district. Over the past fifteen years Sauk Rapids has seen rapid growth. The author speculates that this growth will continue, albeit at a somewhat reduced rate.

Indices such as; live births, non-public school enrollment, employment levels, building permits, and the number of women at childbearing age were carefully studied and compared.

This study brought to light some interesting relationships between indices. Past estimates of the future were based on such statistics as the number of new homes being built or the number of students in the school district at present. Both of these figures proved to be very unreliable in making sound projections into the future. On the other hand, indices such as; numbers of women who were 20-34 years old and who resided in the district, numbers of live births, and employment opportunities showed a very high correlation with what may realistically be expected to be future enrollment trends. Confidence intervals were developed for the various indices used.

APPROVED BY RESEARCH COMMITTEE, DECEMBER 1976

George Farrah, Chairperson

LOW SELF-CONCEPT SCORES AND LOW MOTIVATION SCORES AS A WAY OF IDENTIFYING CHARACTERISTICS OF SCHOOL DROPOUTS

Philip C. Force

PROBLEM: Mr. James Hill, high school principal, Mr. Vince Ross, guidance director, and Mr. Philip Force, assistant principal, propose the development of a cooperative study on school dropouts that would help the Little Falls students. This is a three part study ultimately designed to aid dropouts and potential dropouts in the Little Falls High School.

Studies of dropouts at state and local levels reveal that a fairly consistent pattern of factors identify and characterize potential school dropouts. The most important of these

factors are the following:

- a. consistent failure to achieve in regular school work
- b. low reading ability
- c. grade placement two or more years below average for grade
- d. retention in grade at least once in elementary school
- e. irregular attendance and frequent tardiness

The statements made above would certainly be characteristic of many school dropouts today. It is difficult to distinguish between cause and effects in relating to the above statements. If this were possible, it might be easier to diminish the dropout rate.

Having selected the topic of the dropout as the underlying problem of this study, it is the author's hope that this study would offer useful facts to be used with existing knowledge pertaining to the early identification of the potential dropout.

PROCEDURE: The hypothesis to be tested states that the author expects to find a lower self-concept and a lower motivation score among those students who drop out of school than among those who remain in school.

To obtain the necessary information, the Self-Concept and Motivation Inventory (SCAMIN) will be administered to approximately one-third of the Little Falls High School student body (approximately 450 students). The Inventory will be administered also to a small number of students who have dropped out of school and to students who are presently enrolled in the evening dropout program in Little Falls. The author will administer the Inventory to all the available universe. The author hopes that this number will approach forty (40). A comparison of scores will be made between the two groups.

CONCLUSIONS: This study should show that when compared with their fellow class members, potential dropouts are recognizable by their self-concept and motivation measures.

After the author interprets the findings of this study and considers their implications for school personnel, one major thought persists--that is, that the use of such measuring instruments as the Self-Concept and Motivation Inventory have their place in a high school testing program.

APPROVED BY RESEARCH COMMITTEE, MAY 1976

George Farrah, Chairperson

A STUDY TO COMPARE THE FACULTY ACADEMIC SELF-CONCEPT AND MOTIVATION INVENTORIES OF SUBURBAN MIDDLE CLASS SCHOOL AND AN INNER CITY MINORITY SCHOOL

David J. Groth

The purpose of this study was to determine whether an inner city minority school faculty had a higher self-concept than did a middle class suburban school faculty. The author speculated that the inner city school faculty would be significantly higher in that the inner city school faculty has a certain camaraderie developed from enduring a variety of problems peculiar to inner city school population.

To show the comparison of these scores the inventory was broken down into predictor variables which are sex, age, experience and all combinations of these and criterion variables which are self-adequacy, personal investment, role expectancy, goal needs, administration, pupil-parents, other teachers, activity climate, pupils, and academic activity.

During this study some interesting data were developed. It was proven that whether the N-values were weighted or unweighted they made no significant difference in the outcome of the inventory. A complete set of confidence intervals for the inner city school faculty, suburban school faculty and universe was developed. Furthermore, after the determination of reliability coefficients, vector analysis was performed to mathematically analyze each variable to determine its validity.

After extensive analyses of the data, it was concluded that the suburban faculty had a higher self-concept in all areas with the exception of the category of administration.

APPROVED BY RESEARCH COMMITTEE, MAY 1975

George Farrah, Chairperson

*AN IN DEPTH REVIEW OF LITERATURE ON THE FACTORS
WHICH MAY CAUSE STUDENTS TO BECOME
HIGH SCHOOL DROPOUTS*

James H. Hill

PROBLEM: Mr. Vince Ross, Guidance Director, Mr. Phil Force, Assistant Principal, and Mr. Jim Hill, Principal at the Little Falls Community High School, propose the development of a cooperative study on school dropouts that would benefit Little Falls students. This is a three part study ultimately designed to aid dropouts and potential dropouts in the Little Falls Community High School.

PROCEDURE: This author's portion of the study will be to do a research of literature in order to gather information on the various causes of high school dropouts. The information will be presented in a meaningful and orderly manner so it can provide valuable background information that can be utilized by Mr. Force and Mr. Ross in developing their research and prescription for aiding students at Little Falls Community High School.

This portion of the three part study will be the introduction and the first part of the study. Because the ultimate goal is to affect the students of Little Falls High School, this author will be responsible for providing some background information on the Community of Little Falls and its educational facilities and resources.

The review of literature may tend to indicate a common pattern of factors which characterize potential school dropouts. If this is the case, it will be of real value. Some care will have to be used by the cooperating authors to insure that the factors are pertinent to the Little Falls student body and not to large metropolitan areas alone. All the common characteristics are probably not found among individual dropouts, but some characteristics common to dropouts might be utilized as guidelines for the development of programs designed to prevent school dropouts.

APPROVED BY RESEARCH COMMITTEE, MAY 1976
George Farrah, Chairperson

*A STUDY OF THE ACADEMIC SELF-CONCEPT AND MOTIVATION
INVENTORY COMPARISON FOR THE FACULTY AT
A SUBURBAN HIGH SCHOOL*

Harold W. Hines

The purpose of this study was to determine whether the suburban pre faculty had a higher self-concept than did a suburban post school faculty. The author speculates that the suburban pre-inventory would be significantly higher than the suburban post-inventory. The suburban post-inventory was given at the end of the school year when the pressure and frustration levels were at their highest.

To show the comparison of these scores the inventory was broken down into predictor variables (sex, age, experience and all combinations of these) and criterion variables (self-adequacy, personal investment, role expectancy, goal needs, administration, pupil-parents, other teachers, activity climate, pupils, and academic activity).

During this study some interesting data was developed. It was proven that whether the N-values were weighted or unweighted they made no significant difference in the outcome of the inventory. A complete set of confidence intervals for the suburban pre faculty, suburban post faculty and universe were developed. Through means of vector analysis this study can be used to mathematically analyze each variable to determine its significance.

The analysis of the inventory showed that the suburban pre faculty had a higher self-concept in all areas.

APPROVED BY RESEARCH COMMITTEE, MAY 1975
George Farrah, Chairperson

AN ANALYSIS OF THE DESIRED AND USUAL HAPPENINGS OF THE STAPLES HIGH SCHOOL CROSS DEPARTMENTAL TEAM MEETINGS

Eugene H. Johnson

There were three major purposes for this study. One purpose was to determine what group processes during the Staples High School cross-departmental team meetings were being carried out by the team coordinators. Another was to determine what groups of teachers had the greatest effect upon the total group's perception of these team meeting happenings. The third purpose was to determine the areas in which in-service education for the team coordinators was necessary.

The research for this study was limited to a review of literature and studies available at the St. Cloud State Library, the Staples High School Professional Library, and at St. Cloud Apollo High School.

The perceptions of the team members of the three high school teams, in regard to both the desired and usual happenings, were measured through an inventory containing thirty-nine criteria and a open-ended sentence. Characteristic data on the team members were also established through the use of an inventory.

The results of the study clearly established a need for in-service education for the team coordinators, as thirty-four of the thirty-nine items measured in this study were found to be significant at the .01 level of significance. The significant difference, on a large number of items, between males and females had the greatest effect upon the perceptions of team members for desired happenings. Females were considerably more idealistic than were the males. In regard to the usual happenings, the characteristic having the greatest effect on the perceptions of the team members was team level. The eleventh to twelfth grade team was much more critical of what was happening than were the other two teams. As would probably be expected, the coordinators perceived the desired and usual happenings, on a number of items, to be much more closer together than did the non-coordinators.

Evidence points to the possibility that many of the problems of the Staples' teams may have been avoided if proper training had been originally provided for the coordinators. The findings also indicate that in-service education for the coordinators is needed in the areas of (1) organizational skills, (2) communication skills, (3) group dynamics, (4) problem-solving and decision-making skills, and (5) attitudinal change skills. Role definitions, team scheduling demands, determination of who makes decisions and in what areas were determined as some of the other major areas that the administration and coordinators must attempt improvement.

APPROVED BY RESEARCH COMMITTEE, MAY 1976

George Farrah, Chairperson

THE FORMULATION OF AN EVALUATION PROCESS FOR ADMINISTRATORS IN ANOKA-HENNEPIN DISTRICT 11

Betty C. Kluge

This field study formulated a process for the evaluation of administrators for Anoka-Hennepin District 11. This process was the result of a survey of the present administrators of the district concerning current practices of policy, procedure, school climate and school board. The results of this survey were tabulated by chi square goodness-of-fit with general findings and interpretations.

It was discovered that fourteen of the thirty-two items were significantly different. These differences occurred within the characteristics of sex, position, and experience. The factor of experience yielded the greatest differences in items which were concerned with school policy.

Certain recommendations, based on the findings, will be shared with the school district as a means of innovating an "evaluation by objectives."

APPROVED BY RESEARCH COMMITTEE, MAY 1977

George Farrah, Chairperson

AN ANALYSIS OF THE RHYTHMIC METHOD OF LEARNING UPON THE STANDARD MATHEMATICS PROGRAM

Charles J. Latterell

The purpose of this study was to analyze the rhythmic method of learning at the grade four, Standard Mathematics Program at Anoka-Hennepin Independent District Number Eleven. The rhythmic theory of learning is an organizational arrangement that included the events: (1) goal setting, (2) readiness, (3) work-study activities, and (4) evaluation. These events took place in a cycle of four to five days and the cycle repeated throughout a seven month period from September, 1975, through March, 1976.

The null hypothesis stated that the rhythmic theory of learning would produce no significant difference in the cognitive skills in mathematics. The students who were involved in the rhythmic method were effective in increasing their cognitive skills in mathematics at the .05 level of significance. The control group not receiving the rhythmic method of learning also increased significantly at the .05 level. Therefore the results of the study indicate further research is needed.

Students from two schools, Eisenhower School and Jefferson School, of Anoka-Hennepin Independent District Number Eleven took part in this study. Each of the schools in this study serviced about eight hundred fifty (850) students, kindergarten through grade six. Specifically, the grade four (ages 9-10) Book Four, Addison-Wesley *Elementary School Mathematics* groups in Eisenhower and Jefferson schools were selected for this study. One hundred thirteen (113) students took part in this study, fifty-two (52) males and sixty-one (61) females. Fifty-seven (57) students attended Eisenhower School and fifty-six (56) attended Jefferson school.

It was recommended that further research be conducted in the areas of: (1) desirable ability levels in which to use the rhythmic method of learning, (2) the effects of the rhythmic method on age level of males and females, and (3) the influence of the individual elements of goal-setting, readiness, work-study activities, and evaluation upon the rhythmic theory of learning.

APPROVED BY RESEARCH COMMITTEE, JULY 1976

George Farrah, Chairperson

AN INVESTIGATION OF STATE AND LOCAL FUNDING PRACTICES IN PUBLIC ELEMENTARY AND SECONDARY SCHOOLS OF MINNESOTA

J. Douglas Myers

The purpose of this study was to trace the development of unequal funding practices of Minnesota public elementary and secondary schools in relation to funds paid to local school districts by the state of Minnesota, and to reveal the attitudes of Minnesota school superintendents toward the practice of unequal funding. Essentially, the research was confined to a review of materials available at St. Cloud State College and the Minnesota State Department of Education. The attitudes of the public school superintendents were determined by personally interviewing a randomly selected sample of twenty-five central Minnesota school superintendents.

The results of the study clearly established that Minnesota secondary education has been, and currently is, granted more money to spend for the education of students than elementary education. Factors that have influenced this differential include, (1) early educational leaders of Minnesota lobbying for incentive funds for the development of secondary education in Minnesota, (2) a possible leadership problem in elementary education, (3) disproportionate salaries paid to male and female teachers employed in Minnesota public schools, (4) the development of varied and specialized courses in secondary schools, (5) state and national research projects that have consistently demonstrated that secondary education is more expensive than elementary education.

Minnesota school superintendents are well aware of the cost differential, and substantiate it locally with many of the reasons cited above. Generally, the superintendents are aware of, and sympathetic to, the problems of elementary education, but they are not willing to commit more funds to the solution of those problems at the expense of secondary education.

The need exists to validate, in terms of worth to the student, each dollar spent for

elementary and secondary education, and to carefully research the historical and present actions of the elementary education leaders in relation to securing increased funding for the solution of elementary school problems.

APPROVED BY RESEARCH COMMITTEE, JULY 1974

James W. Anderson, Chairperson

A STUDY TO COMPARE THE FACULTY ACADEMIC SELF-CONCEPT AND MOTIVATION INVENTORY OF A SUBURBAN MIDDLE CLASS SCHOOL AND A SMALL COMMUNITY SCHOOL

Robert T. Olson

The purpose of this study was to determine whether the suburban faculty had a higher self-concept than did a small school faculty. The author speculates that the suburban inventory would be significantly higher than the small school inventory. The suburban inventory was given at the beginning of the school year.

To show the comparison of these scores the inventory was broken down into predictor variables (sex, age, experience and all combinations of these) and criterion variables (self-adequacy, personal investment, role expectancy, goal needs, administration, pupils' parents, other teachers, activity climate, pupils, and academic activity).

During this study some interesting data was developed. It was proven that whether the N-values were weighted or unweighted they made no significant difference in the outcome of the inventory. A complete set of confidence intervals for the suburban faculty, small school faculty and universe were developed. Through means of vector analysis this study can be used to mathematically analyze each variable to determine its significance.

The analysis of the inventory showed that the suburban faculty had a higher self-concept in most areas.

APPROVED BY RESEARCH COMMITTEE, MAY 1975

George Farrah, Chairperson

A STUDY OF TEACHER EVALUATION METHODS USED BY ELEMENTARY SCHOOL PRINCIPALS TO ASSESS TEACHER CLASSROOM PERFORMANCE IN NORTHERN MINNESOTA ELEMENTARY SCHOOLS

Thomas L. Rosenberger

Supervision of classroom teacher performance is one of the major roles of the elementary school principal. A concerned principal wants this aspect of his work to result in the improvement of instruction for the children whose education he is responsible for.

The literature on teacher evaluation was examined for the purpose of determining current thinking and practices on this subject. The research indicates that this topic is one of the most important and complex areas that the elementary principal deals with. One notes that the authors do not agree on which is the best way to evaluate teachers from the supervision of instruction point of view. However, there does seem to be consensus on the view that evaluation is something that should be done *with* the teacher; not *to* him.

A survey conducted as the major part of this study involved fifty elementary school principals from Northern Minnesota. They were asked to respond to certain predictor and criterion variables. These variables were then analyzed by computer in order to better understand their relationships.

The results of the survey show that there is no instrument used by principals in evaluation that effects improved classroom teaching performance. Fully half of the principals are unhappy with the system and the results of the system they now use. Further, as a principal gets older, he is less satisfied with the evaluation system he now uses. Most principals do not preplan with teachers in advance of classroom visitation. They follow their evaluation visitations with a direct approach conference. This indicates that the least effective way to improve classroom instruction is the one way that is most commonly used. From the survey results it is possible to conclude that most principals not only dislike having to make classroom visitations, but that they are improperly trained to conduct effective classroom observations and

evaluation conferences so that instructional improvement occurs as a result.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1975
James W. Anderson, Chairperson

A SURVEY OF SCHOOL DROPOUT PROGRAMS AND THE ADOPTION OR DEVELOPMENT OF A UNIQUE PROGRAM FOR THE TREATMENT OF THE SCHOOL DROPOUT

Vincent D. Ross

PROBLEM: Mr. James Hill, Principal, Mr. Philip Force, Assistant Principal, and Mr. Vincent Ross, Guidance Director at the Little Falls Community High School, propose the development of a cooperative field study on school dropouts that would benefit students in Little Falls.

This is a three part study ultimately designed to aid dropouts and potential dropouts in the Little Falls School. It is the author's intention that this study will provide benefits for students in Little Falls as well as having the potential of being projected to various school districts in Minnesota.

In this author's school and in other schools in Central Minnesota, a real option in the minds of many students is to drop out of high school before completing a diploma program. In this area of Minnesota, it appears that few opportunities exist for gainful employment for individuals that have not completed high school. In this writer's position in the school, it is assumed that for admissions into post high school educational institutions, the completion of a high school program is important. Many students in this school seek vocational school education and military enlistment. It has been found that high school completion is becoming increasingly important for these endeavors and is eventually sought by individuals. To gain some type of high school completion later in an individual's life becomes much more prohibitive due to various circumstances such as age, family commitments, and others. Consequently, many individuals become dissatisfied and frustrated with themselves and their position in life. They may develop low self-concept.

PROCEDURE: This author's portion of the study will involve the examination of selected dropout programs presently in existence. The purpose of this examination will be to use the findings to select or to develop a potential program that will help to retain students in an educational program.

It is felt by the authors of this study that the dropout has less chance of finding personal and economic satisfaction and has consequently developed this low self-concept. This low self-concept may be due to feelings of failure in his or her own mind as well as in the eyes of others.

Through this field study, a means of identifying potential dropouts will be developed. Following the identification stage, the exploration and development of an educational program that will better meet the needs of many of the potential dropout will be examined. It is hoped that fewer actual dropouts will occur and that those individuals that participate in a potential special program will function in the new situation, will develop a more positive self-concept, and will find some means of personal achievement.

APPROVED BY RESEARCH COMMITTEE, MAY 1976
George A. Farrah, Chairperson

AN EVALUATION OF A SPECIAL NEEDS PROGRAM AT WAYZATA SENIOR HIGH SCHOOL

Theodore H. Sauer

The purpose of this study was to assess "Focus," a special needs program designed for disaffected, dropout-prone students at Wayzata Senior High School, Wayzata, Minnesota. The Focus Program was established for a maximum capacity of seventy-five students with the following subjects being offered: English, social studies, math, reading, family group, and a work experience program.

The evaluation of the Focus Program during its first year of operation had three primary objectives--(1) to establish if there was a positive feeling from Focus students and their parents towards the program, (2) to determine if the basic skills of students enrolled in Focus

improved significantly, and (3) to ascertain if the Focus students' school attendance had improved significantly over the previous school year's attendance.

The results of this appraisal indicated that the Focus Program was successful in meeting one of its three primary objectives. Its first goal was achieved; parents and students both indicated having positive feelings about the program. The second objective, that of achieving significant improvement in basic skills, was only partially accomplished. Of the three standardized tests given to measure the students' gain in reading, spelling, and arithmetic, only one subtest, the arithmetic section of the Wide Range Achievement Test, witnessed a significant positive change. The program's aim to increase student attendance was obtained with a 21.75 percent improvement over the previous year. However, this was not significant at the .05 level.

To attain greater success in meeting program goals, the following recommendations were made: (1) the Focus staff should make an extensive effort to distribute relevant program information to parents of enrolled students; (2) one additional basic skills teacher should be placed on the Focus staff. To supplement the efforts made by these skills teachers, more emphasis should be placed on the teaching of these tools in all classes; and (3) continued progress should be made in strengthening the attendance and follow-up policies within the Focus Program. It was also suggested that another study be undertaken, using a control group of similar students from mainstream school, to determine if improvements made in basic skills by Focus students could be considered significant.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1976

George A. Farrah, Chairperson

THE IDENTIFICATION OF SKILLS AND QUALITIES NEEDED FOR LEADERSHIP IN THE FIELD OF COMMUNITY EDUCATION

Donald S. Skawski

This descriptive and non-hypothecated field study proposed to identify the skills and knowledges necessary for leadership in the field of community education.

This field study utilized four basic methods of investigation to identify the skills and knowledges necessary for leadership in the field of community education. First, twenty-four job descriptions of community educators in Minnesota were analyzed. Second, an analysis of twenty graduate training programs was made to determine what was included in specific training programs. Third, a written survey was conducted in an effort to discover what technical, human, and conceptual skills were considered important by community educators in Minnesota. Fourth, telephone interviews were conducted with twenty community educators to determine what skills and knowledges they felt were important for leadership in community education. knowledges they felt were important for leadership in community education.

Few absolutes were uncovered from this investigation, however, several trends were shown, which allowed for some generalizations concerning the skills and knowledges needed by community educators. First, the community educator should be over the age of twenty-six with a graduate degree in a human service area. Second, the community educator should have a minimum of three years practical work experience, preferably in the field of education. Third, the community educator should show strong aptitude in the human and technical skills and potential to gain mastery over the conceptual skills.

Also, a list of the ten most important skills needed for leadership in community education was developed. This list was developed using the data gathered from the written survey. The skills included in the list are: being open to suggestions and criticisms, scheduling ability, working with people with different degrees of authority, empathy and concern for others, financial management skills, taking calculated risk, being patient and courteous, getting people to work together, creating a good organizational climate, and being able to identify resources within the community.

The field study concluded with some ideas concerning the training of community educators. The training programs should be both in-service and pre-service in nature. Also, all programs should be individualized in nature using the individual's previous experience as a guide.

APPROVED BY RESEARCH COMMITTEE, MAY 1976

George A. Farrah, Chairperson

FACTORS RELATING TO HOW JUNIOR HIGH STUDENTS PERCEIVE SCHOOL

Robert E. Smith

Selected predictor variables included sex, parents education, and grade level which may influence the opinions of adolescent students were analyzed. The analysis was in relation to a thirty item questionnaire which made up the criterion variables. The entire student population of 571 was sampled at South Junior High in Moorhead, Minnesota. The response sheet, which accompanied the questionnaire, contained nine possible responses varying from very strongly agree 9, undecided 5, to very strongly disagree 1. The response sheet was statistically analysed with significant T tests for the means, Pearson correlation coefficients for the items, and stanine profiles for the various predictor variable means.

Several conclusions were drawn from significant statistical results. There was no noticeable difference between the predictor variables and criterion variables. Ages 12 (grade 7), 13 (grade 8), and 14 (grade 9) are very predictable according to this study in comparison with other studies, and parents may have more of an influence on their adolescent children than generally expected.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1977

George A. Farrah, Chairperson

A STUDY OF THE ACADEMIC SELF-CONCEPT AND MOTIVATION OF A SUBURBAN MIDDLE CLASS HIGH SCHOOL

Lyndon J. Sonju

The purpose of this study is to measure the academic self-concept and motivation of a suburban middle-class faculty. An inventory questionnaire was developed to measure the self-concept and motivation of the suburban middle-class faculty.

The inventory questionnaire was set up to measure a teacher's academic self-concept and motivation. The questions deal with an individual's reaction to his self-adequacy, personal investment, role-expectation and goal needs. There is a cross reference dealing with personal reactions to administration, pupils' parents, other teachers, activity climate, pupils and academic climate.

To show the comparison of these scores the inventory was broken down into predictor variables (sex, age, experience and all combinations of these) and criterion variables (self-adequacy, personal investment, role expectancy, goal needs, administration, pupils' parents, other teachers, activity climate, pupils, and academic activity).

During this study some interesting data was developed. It was proven that whether the N-values were weighted or unweighted they made no significant differences in the outcome of the inventory. A complete set of confidence intervals were developed. Through means of vector analysis this study can be used to mathematically analyze each variable to determine its significance.

APPROVED BY RESEARCH COMMITTEE, MAY 1975

George A. Farrah, Chairperson

AN INVESTIGATION OF SCHOOL PLANT FACILITIES AND SITE INDEPENDENT SCHOOL DISTRICT NO. 787 BROWERVILLE, MINNESOTA

E. E. Thompson

PROBLEM: The Board of Education in May of 1973 directed that a classroom feasibility study be undertaken. To comply with their directive, it was necessary to consider the school plant in its entirety.

PROCEDURE: It was postulated the following areas would need examination: population and holding power of the district, taxable wealth and condition of the present plant in terms of educational programs.

In the site examination and study, the factors of soils, topography, playground utilization, suitability for foundations and acquisition possibilities were considered. Area utilities and services were studied to determine their growth and stability.

To retain objectivity and assist in the evaluation of the educational program, the services of an educational consultant were retained in the planning phase of this study. An architectural firm was retained to assist in the evaluation of the present plant.

CONCLUSIONS: Enrollments for the ten year period, 1964-74 in the Browerville Public and Parochial Schools show a steady gain. Projections of census and enrollment show a decline.

School facilities as revealed in the survey and evaluation are inadequate from the standpoint of safety, location, toilet facilities, storage, site size, traffic patterns and educational programming.

The district has no bonded indebtedness, can bond to the limit of approximately 1.6 million dollars and has a reserve of \$200,000.00.

Four alternatives to building were recommended. Of these, reference No. 4 in the study seems to be the most realistic; raze the 1913 structure, build needed secondary space over this area extending westward and add extra rooms to the present five portable classrooms for use by the elementary school.

SUMMARY: The Board of Education of Independent School District No. 787, directed that a classroom feasibility study be made.

Because of the nature of the problem, the entire facility including the site was examined.

Organizational patterns of public and parochial schools within the district, the change from an 8-4 to 6-6 plan and consolidation of common school districts have all posed building problems from the educational standpoint.

Retention of the services of an educational consultant and an architectural firm to assist the district administration in determining building needs was accomplished in the initial phase of this study.

The study included financial capabilities, demographic factors, site survey and acquisition potential, enrollment history and projections, and census of population.

Preliminary conferences with the study group and the director of school facilities planning, State Department of Education were held and exploratory alternatives were recommended for building and/or remodeling for the school district.

APPROVED BY RESEARCH COMMITTEE, MARCH 1975

James W. Anderson, Chairperson

THE ELEMENTARY SCHOOL PRINCIPAL AND THE ADMINISTRATION AND SUPERVISION OF THE FIRST YEAR TEACHER IN THE ST. CLOUD AREA

Sister Patricia Wallis

PURPOSE: To ascertain the needs of first year teachers in the St. Cloud area and effective ways the elementary principal can be of service to these teachers in order to provide adequate and beneficial supervision that can provide the needed support and atmosphere that will reduce or eliminate problems common to him and other first year teachers.

KIND OF STUDY: This study was made and supervised under the direction of a Graduate Council of St. Cloud State College and as a partial fulfillment for the degree of Master of Science in Elementary School Administration. It is limited to a study based on questionnaires sent to first and second year teachers of the St. Cloud area and to their principals. This study is also based on the opinions of the writer, a supervising principal, and on a review of literature related to problems of first year teachers and to various administrative and supervisory duties of administrators.

SIGNIFICANCE: Because of the surplus of teachers and the position of beginning teachers on the salary scale, many first year teachers are being hired. The effectiveness and soundness of our educational system greatly depends on its teachers. Since research shows that outstanding teachers develop their ability during their first two or three years of actual teaching, it is imperative that some attempt be made to identify problems of beginning teachers in order that administrators can provide them with practical means of assistance.

FINDINGS AND RECOMMENDATIONS: While many principals in the St. Cloud area are aware of the needs of their first year teachers and are making some efforts to assist them, they also should have administrative school policies that will provide for these needs and reduce the problems that are still common to these teachers, the greatest of which is still not knowing what is expected of them.

An internship program for first year teachers should be set up in order that first year teachers can exchange ideas, look at problems and approaches that may come to the front and provide support.

Principals should see to the appointment or selection of "young," willing, and experienced teachers whose responsibility would be to assist the new teachers through guidance, counseling, and/or demonstration teaching and observations.

Principals should continue to be hired who can provide the leadership and imagination necessary to uplift the quality of elementary leadership in the first year teachers and to help him to develop his full teaching capacity.

APPROVED BY RESEARCH COMMITTEE, JULY 1974

James W. Anderson, Chairperson

ELEMENTARY EDUCATION

STUDENT ATTITUDES AND PERCEIVED PARENTAL ATTITUDES AS PREDICTORS OF ELEMENTARY SCHOOL MATHEMATICS ACHIEVEMENT

Kenneth J. Haselberger

The purpose of this study was to investigate some of the relationships between student attitudes toward mathematics and student achievement in mathematics in the elementary school.

Specifically, the investigation attempted to answer the following:

(1) Is achievement in elementary school mathematics related to students' attitudes toward mathematics?

(2) Is achievement in elementary school mathematics related to students' reports of their parents' attitudes toward mathematics?

(3) Are students' attitudes toward mathematics related to students' reports of their parents' attitudes toward mathematics?

The investigation was conducted in eight fourth-, fifth-, and sixth-grade classrooms, and the sample included all 162 students enrolled in those grades.

The students were administered two questionnaires: the Mathematics Attitude Scale, and a Perceived Parental Attitude scale designed to measure students' reports of their parents' attitudes toward mathematics. The measure of mathematics achievement was the students' grade equivalent on the Total Mathematics section of the Iowa Tests of Basic Skills.

Responses were analyzed using the Pearson Productmoment coefficient of correlation. The student group was analyzed:

(1) as a total group;

(2) as two sub-groups, boys and girls;

(3) as three sub-groups, fourth-graders, fifth-graders, and sixth-graders; and

(4) as six sub-groups, fourth-grade boys, fifth-grade boys, sixth-grade boys, fourth-grade girls, fifth-grade girls, and sixth-grade girls.

The student reports of their parents' attitudes toward mathematics were analyzed as two sub-groups, mothers and fathers.

From the analysis it was concluded that student achievement in mathematics is directly related to student attitudes toward mathematics, and that student attitudes toward mathematics are directly related to their perceived mothers' attitudes toward mathematics, but

not to their perceived fathers' attitudes toward mathematics. There is no significant relationship between student achievement in mathematics and perceived parental attitude toward mathematics.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1975
Russell H. Schmidt, Chairperson

"PEOPLE TALKS" AS AN APPROACH TO GIVING GUIDANCE TO ELEMENTARY CHILDREN IN THE THIRD GRADE

Myrna O'Neil

The purpose of this study was to investigate People Talks as an effective way of offering guidance to elementary children where professional counselors cannot be hired. The term People Talks is defined as an organized guidance program involving volunteer third graders and voluntary staff members to act as counselors to the third graders for the purpose of overcoming difficulties by talking things out. As defined for this model, counseling means the assistance which comes to a child through People Talks.

The investigation attempted to find out if the students' perception of the adult role would change from teacher and disciplinarian to that of advisor during participation in People Talks.

The investigation was conducted with 53 third grade students. The sample included 21 children.

The projective technique used to test the hypothesis as to the role the adult played in People Talks was a pictorial method. Children viewed a picture of an adult and male student and an adult and female student and were asked to describe what they thought was happening in the picture. The pictures were shown before People Talks began and again at the end of the program. A group of three judges classified the responses as viewing the adult in either the role of a teacher, guidance counselor, or disciplinarian. Each counselor kept a log book and types of questions asked and topics discussed were jotted down. The data collected from the counselors' log books were categorized according to types of topics discussed. These categories are as follows: remarks about school, home, their counselor, and personal remarks. A content analysis was made to compare the types of topics discussed in December with the ones discussed in May.

Responses were analyzed using the chi-square test of frequency of responses.

From the analysis it was concluded that there was a shift in student perception of the adult role from that of teacher and disciplinarian to that of advisor as indicated by the projective technique. The discussion topics of People Talks moved from vague to specific and from common to personal in nature, which points to the children perceiving the adult in the advisor role.

It is recommended that a program of People Talks be employed where professional counselors cannot be hired to develop a guidance program.

APPROVED BY RESEARCH COMMITTEE, OCTOBER 1976
Russell H. Schmidt, Chairperson

THE RELATIONSHIP BETWEEN READING AND THE SELF-CONCEPT

Patricia Ann Schwingamer

PROBLEM: The purpose of this study was to investigate the relationship between the self-concept and reading among primarily language-disabled first grade children in a rural school district in central Minnesota.

PROCEDURE: The study was conducted during the 1973-74 school year, using the forty first grade boys and girls as subjects. A test-retest design was followed, using the *Gates-MacGinitie Reading Tests* and *The Self-Concept and Motivation Inventory* as the measuring instruments. The *Gates-MacGinitie Reading Tests* were administered in January and late spring. The *Self-Concept and Motivation Inventory* was administered in the fall and late spring. The basic techniques that were used in the teaching of reading, following a basal reading program, continued throughout the study in this first grade classroom. The data were analyzed to see if any statistically significant correlations could be found to exist between the variables.

FINDINGS: A high positive correlation (.05 level) was found to exist between the post-test scores in the *Gates-MacGinitie Reading Tests* and the post-test scores in Goal and Achievement Needs, Achievement Investment (Failure Avoidance), and Motivation. Significant positive correlations were found between pre-test scores in Motivation and the change in Comprehension and Total Reading on the *Gates-MacGinitie Reading Tests*. Significant negative correlations were found between the change in scores on the *Gates-MacGinitie Reading Tests* and the change in scores on Goal and Achievement Needs, Role Expectations, Self-Adequacy, and Self-Concept.

SUMMARY AND CONCLUSIONS: The variables were often negatively correlated when change in the scores of both measuring instruments was analyzed. The variables showed a positive correlation quite frequently in analyses where change in the scores of one of the measuring instruments was used with pre- and/or post-test scores on the other measuring instrument. The variables found to have more than one statistically significant correlation with the *Gates-MacGinitie Reading Tests* were Motivation, Goal and Achievement Needs and Achievement Investment (FA). Goal and Achievement Needs and Achievement Investment (FA) are the elements of Motivation. There is a significant positive correlation between Achievement Investment (Failure Avoidance) and achievement in reading.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1974
Russell H. Schmidt, Chairperson

AN ANALYSIS AND DEVELOPMENT OF A VOCAL MUSIC PROGRAM IN THE INTERMEDIATE GRADES

James E. Tyssen

This study investigated the singing program in the intermediate grades in terms of how to motivate children, what goals are practical, what the child's voice is like, and what negative aspects of a program can be avoided. Attention was given to the following areas: Posture, diction, breathing, phrasing, range, voice registers, tone quality, the teacher's voice, pitch, part singing, and seating.

Besides a review of the literature on the subject, interviews were conducted with nine teachers regarded as experts in the field of elementary vocal music. The interviews were recorded on tape and later transcribed and condensed by the writer.

The research showed that posture in singing must be erect and relaxed so that air flows from the bottom of the lungs. In the area of diction, vowel sounds should be sustained and consonants sung quickly in unison. Proper breathing in singing comes from good posture, breathing exercises, keeping arms and shoulders straight, and not holding the breath before singing. As for phrasing in singing, the children should help to place breaks where they are needed in songs, thus giving the children a sense of the meaning of the music. The range of most intermediate grade children was found to be from middle C to top line F, and care should be taken not to strain the voice in extreme range limits. Evidence showed that the head voice and not the chest voice should be used. The study of tone indicated that the tone of a song must be determined by the composer's intentions. An important factor is the teacher's voice, which should be simple, on pitch, and easily imitated. Research found that children can learn about pitch through pitch matching exercises. Uncertain singers can be helped by individual

attention and a realization of why they are hesitant about singing. A final point was that poor singers should not all be grouped together.

APPROVED BY RESEARCH COMMITTEE, JULY 1976

Russell H. Schmidt, Chairperson

HEALTH, PHYSICAL EDUCATION AND RECREATION

THE PHYSIOLOGICAL EFFECTS OF AN EXPERIMENTAL COURSE (AEROBICS) ON COLLEGE MALES

Jerome A. Dirkes

Twenty St. Cloud State College male students, with a mean age of 22.21, were measured to determine if any physiological and attitudinal changes had occurred because of their participation in an eight week aerobics course. The aerobics class met twice a week and consisted of a one half hour lecture on topics dealing with fitness and exercise. Following the lecture the subjects had one and one half hours in which they participated in a variety of endurance exercises. The content of the class was similar to Kenneth Coopers' program described in his book, *The New Aerobics*. The physiological and attitudinal variables that were measured to determine any change were: cardiovascular fitness, circumference measurements, body composition, body weight, recovery heart rate, maximum heart rate, smoking patterns, attitudes concerning preventive medicine, and attitudes concerning future exercise program. A pre-test was given a week before the exercise program started and the post-test on these variables was given during the last week of the program.

The following hypothesis was investigated: As a result of an eight week aerobic exercise program there would be no significant changes between the pre- and post-test variables used to evaluate the subjects' fitness. The *t*-ratio test was used to make the comparisons of the variables on the pre- and post-tests.

Significant differences were found in the maximum oxygen uptake, resting heart rate, and the one and one half mile run/walk tests. Therefore, the hypothesis was rejected because of the improved run/walk time and maximum oxygen uptake performances. The hypothesis was accepted in relation to skinfold and circumference measurements because no significant differences were found. An eight week exercise program with a frequency of twice a week is apparently too short for a significant change in these variables to occur.

The questionnaire, which was given on the last day of the class, revealed that the subjects did have an attitudinal change toward exercise and the knowledge of exercise. The responses to the questions were positive. The majority of the subjects liked to exercise more now and they wished to continue with an exercise program. The questionnaire also reported that the subjects had an understanding of the importance of diet and exercise in controlling weight. Also there was a twenty percent reduction in the number of smokers.

It appears that the class did satisfy a majority of its objectives. It would also appear that there is a need and justification for similar classes in the Health, Physical Education and Recreation Department curriculum.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1975

John M. Kelly, Chairperson

A SEASONAL STUDY OF THE BODY COMPOSITION AND ANTHROPOMETRIC MEASUREMENTS OF A UNIVERSITY WRESTLING TEAM

Blaine A. Gorney

in age from 18-23 years, were studied in four testings, pre-season (mid-September through mid-October), early-season (the first week of December), peak-season (the last two weeks of February), and post-season (mid-March through mid-April). Anthropometric measurements consisting of height, weight, thirteen body diameters, six body girth circumferences, and seven skinfold thicknesses were obtained. Body composition was determined by hydrostatic weighing with an accurate individual assessment of residual lung volume. Data were compared with other wrestling studies. A step-wise multiple regression analysis of the pre-season data on 19 wrestlers indicated that percent body fat, when predicted from anthropometric measurements, did not significantly increase the multiple correlation after the first independent variable was added ($R = 0.88$ to $R = 0.90$). It was, therefore, determined that this equation would be no more accurate in predicting percent body fat than the other equations examined in this study. Anthropometric and hydrostatic weighing data for the four testings were subjected to a repeated measures analysis of variance. Insignificant differences were determined at the 0.05 level of significance, F ratios ranging from $F = 0.004$ to $F = 1.462$. Six methods for predicting percent body fat and one method for predicting minimal wrestling weight from anthropometric measurements were correlated with true (densitometrically determined) values and subjected to a least squares regression analysis: (1) Wickkiser-Kelly equation 2, $r = 0.898 \pm 2.85\%$; (2) Wickkiser-Kelly equation 1, $r = 0.886 \pm 2.72\%$; (3) Forsyth-Sinning equation, $r = 0.872 \pm 3.83\%$; (4) Tcheng-Tipton equation, $r = 0.883 \pm 2.08\%$; (5) Tipton-Tcheng MWW equation converted to percent fat, $r = 0.629 \pm 3.56\%$; (6) Yuhasz equation, $r = 0.890 \pm 1.93\%$; and, (7) Tipton-Tcheng equation for MWW, $r = 0.936 \pm 3.54$ kg. Densitometrically determined optimal wrestling weight classes (LBW plus 5% fat) were correlated with each wrestler's and the coach's intuitive estimate of optimal wrestling weights. The wrestlers' estimate yielded a high correlation coefficient, $r = 0.973 \pm 2.59$ kg., and the coach's estimate also yielded a high correlation coefficient, $r = 0.962 \pm 3.55$ kg.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976

John M. Kelly, Chairperson

A SURVEY OF MINNESOTA HIGH SCHOOL BASKETBALL COACHES AND THEIR OFF SEASON DEVELOPMENT PROGRAMS

David A. Johnson

PURPOSE: The purpose of this study was to obtain an understandable view of the present status of Minnesota boys high school basketball coaches and their off season development programs. Physical qualities, fundamentals in basketball skills, mental development of the player, and various types of off season program alternatives were investigated.

LIMITATIONS: The study was limited to 150 secondary schools in the state of Minnesota. This study sought to gather and compile data on the existing off season development programs in Minnesota boys high school basketball.

PROCEDURES: The data from this study was obtained from a random sampling of secondary schools in the state of Minnesota. A questionnaire was sent to a total of 150 Class A and AA coaches. From the 150 selected schools, 116 returned the questionnaire and 115 were involved in the study.

TREATMENT OF DATA: The data was compiled from a rating scale on the questionnaire. Mean scores, standard deviations, and sampling errors were calculated for each item on the questionnaire. A "t" test was used to obtain the significance of difference between means of Class A and AA schools. Correlations were tabulated to check for the similarity in responses to questions at the junior and senior high levels of play.

FINDINGS: The findings of this study presented an overall look at the current status of boys off season basketball programs in the schools surveyed. The results indicated certain areas of significant difference between the programs of Class A and AA coaches. Significant differences were found in the following areas: (1) junior high attendance at basketball clinics in the

community, (2) recording the off season progress of junior high players by a post card system, (3) participation in soccer, golf, and tennis at the junior high level of play, (4) availability of clinics within the community for junior high players, (5) the use of the nautilus and universal weight machines for strength training at the senior high level of play, and (6) participation in soccer and tennis at the senior high level of play.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976

John Kasper, Chairperson

AN ANALYSIS OF STRENGTH CHANGES OF UNIVERSITY WRESTLERS AS MEASURED BY CYBEX II AN ISOKINETIC DEVICE

Kent Karl Kalm

Thirteen members of the 1975-76 St. Cloud State University wrestling team were selected by their coach based upon prior wrestling performance to determine the effect of weight upon muscular strength and muscular endurance. This population represented all of the weight classes according to the National Collegiate Athletic Association wrestling manual. Pre-, peak-, and post-season testing sessions were used to investigate whether or not changes occurred in muscular strength or muscular endurance during the wrestling season. The areas of muscular strength and endurance that were investigated in this study were shoulder horizontal extension and horizontal flexion, shoulder flexion-elbow extension and shoulder extension-elbow flexion, knee flexion and knee extension, hip flexion and grip strength. Muscular strength and endurance were measured by the isokinetic measurement device, Cybex II, with the exception of grip strength which was measured by the Narragansett hand dynamometer. Two groups were indicated in this investigation to study the effect of weight loss. Group one (1) consisted of those wrestlers (7) who either gained weight or lost no more than three percent of their pre-season weigh-in. Group two (2) consisted of those wrestlers (6) who lost more than three percent of their pre-season weigh-in.

The following hypotheses were investigated and rejected. (1) There would be no significant change in maximum muscular strength at thirty degrees per second during any of the testing sessions, (2) There would be no significant changes in maximum muscular strength at 180 degrees per second during any of the testing sessions, (3) There would be no significant change in muscular endurance at thirty degrees per second movement during any of the testing sessions, (4) There would be no significant change in muscular endurance at 180 degrees per second movement during any of the testing sessions, (5) There would be no significant change in maximum muscular strength at either speed of movement in those wrestlers who lost more than three percent of their body weight during the course of the study, (6) There would be no significant change in muscular endurance at either speed of movement in those wrestlers who lost more than three percent of their body weight during the course of the study, (7) There would be no significant change in grip strength in those wrestlers who lost more than three percent of their body weight during the course of this investigation, (8) There would be no significant change in grip strength in those wrestlers who lost less than three percent of their initial body weight during the course of the season. Pre-, peak-, and post-season testing values for muscular strength and endurance were compared using *t*-ratio tests to determine if any significant changes had taken place. The .05 level of confidence was used to indicate significance.

It was concluded that there were several significant changes between the two testing groups because of weight loss during the testing periods. Group one wrestlers (losing less than three percent of their initial body weight) appeared to have greater strength improvements in all areas than did Group Two (wrestlers losing more than three percent of their initial body weight). The largest increase in muscular strength occurred between the pre-season and post-season testing sessions. The incidence of increase was greatest at the slow movement speed (30 degrees per second). Muscular endurance appeared to decline the most between the peak-season and post-season testing periods for both groups. Loss of three percent or more weight appears to have an effect on muscular strength, most noticeable at slow movement of speed. As the season progressed it appears from this research that muscular strength decreased slightly while muscular endurance improved slightly. Those wrestlers losing more than three percent of their body weight (Group Two) appears to have greater significant decreases in muscular strength and muscular endurance than did those wrestlers that lost less weight (Group One).

It was recommended that further study is necessary in this area of weight loss and wrestling performance. A control group of non-wrestlers should be established to investigate

whether these findings are specific to this type of athlete or could be generalized to the total population. Further study utilizing a greater population would also add to the validity of the findings of this study. It was recommended that the type of conditioning utilized by St. Cloud State University wrestlers be continued using their present program.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976

John M. Kelly, Chairperson

THE EFFECTS OF SMOKING ON THE SIX-MINUTE PREDICTED MAXIMAL OXYGEN UPTAKE TEST

Philip R. Rogosheske

Thirty-five male high school smokers between the ages of 15 and 19 were tested submaximally on a bicycle ergometer. The 35 smokers were randomly divided into two groups of 18 and 17 respectively. During the first period of testing, Group A smoked a cigarette prior to exercise on the ergometer. Those from Group B who were tested during the initial testing did no smoking prior to or during the test. During the final period of testing, the groups were reversed. Group B smoked prior to ergometer riding, while Group A abstained prior to and during the test. Measurements taken included resting heart rate and blood pressure, exercise heart rate and blood pressure, and recovery heart rate and blood pressure. Predicted $\dot{V}O_2$ max values were also determined. When subjected to *t*-ratio tests, significant differences at the .01 level were found between all data compared except exercise blood pressure measurements both systolic and diastolic (level of significance $> .05$), and recovery diastolic blood pressure (level of significance = .05). The data indicate that smoking will negatively influence predicted $\dot{V}O_2$ max if smoking occurs immediately prior to testing.

APPROVED BY RESEARCH COMMITTEE, MAY 1976

John M. Kelly, Chairperson

THE EFFECTS OF AN EIGHT-WEEK ENDURANCE EXERCISE PROGRAM ON COLLEGE WOMEN

Valerie M. Chelgren Rogosheske

Twenty women between the ages of 18 to 25 years who were enrolled in Physical Education 120 (Aerobics) at St. Cloud State College were measured to determine the effects of an eight-week endurance exercise program on body composition and cardiovascular function. Initial and post-training measurements were taken for the following: weight, selected body girth and body skinfold measurements; percentage body fat; maximal pulmonary ventilation; blood pressure; time for a 1.5-mile walk/run; and resting, submaximal, and maximal heart rates. Subjective questioning concerning menstrual complaints was done before and after the exercise program, while attitudes towards exercise and dietary habits were assessed by a questionnaire following the program.

The following hypotheses were investigated: (1) There would be no change in a student's maximal oxygen uptake ($\dot{V}O_2$ max) at the conclusion of the Aerobics class, (2) There would be no change in a student's body composition following the Aerobics class, (3) There would be no difference in maximal oxygen uptake or body composition changes experienced by the high and low aerobic-point-scoring groups, and (4) There would be no change in the student's attitude toward exercise, menstrual complaints, dietary habits or smoking following the Aerobics class. Initial and post-training measurement comparisons were made using the *t*-ratio test and percentage responses to items on the Aerobics Questionnaire were used to indicate subjective changes in attitudes and habits.

It was concluded that there was a significant increase in $\dot{V}O_2$ max following the Aerobics program. Three of the six body girth measurements and three of the five body skinfold measurements also showed significant changes after training; however, neither the body weight nor percentage body fat changed significantly. In comparing the high (mean of 20 or more aerobic points per week) and the low (mean of 19 or fewer aerobic points per week) point-scoring-groups there was found to be no significant difference in $\dot{V}O_2$ max between the two groups either before or after training. There was also no significant difference between the

two groups in body weight and percentage body fat before or after training, although the high-point-scoring group was significantly lower than the low-point-scoring group in total body skin-fold measurements before training. This difference was not significant following training.

The students' attitudes and practices concerning diet and exercise changed following the Aerobics course. In responding to the Aerobics Questionnaire, 80 percent of the participants reported that they liked physical exercise better following the course than they had before and 80 percent stated that they plan to continue exercising on a regular basis. Fifty-five percent of the students noted a change in dietary habits. Only 30 percent of the participants experienced a lessening of menstrual discomfort following the exercise program but 45 percent of the students noted no discomfort either before or after training.

It was recommended that the Aerobics course increase the frequency of exercise by meeting for four one-hour sessions per week instead of the present two two-hour sessions. Because there were significant changes in maximal oxygen uptake and in the students' attitudes and practices concerning diet and exercise, the Aerobics course should remain in the curriculum at St. Cloud State College.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1975

John M. Kelly, Chairperson

AN ANALYSIS OF THE EFFECTIVENESS OF THE CENTRAL MINNESOTA DWI CLINIC IN ALTERING KNOWLEDGE, ATTITUDES, AND BEHAVIOR

John T. Rowe

Five hundred thirty-eight men and women who were charged with DWI or careless driving between March of 1974 and July of 1975 in the central Minnesota counties of Benton, Sherburne, Stearns, and Wright, with a few from Hennepin, Lake, St. Louis, Clay, Meeker, and Ottertail were examined to determine the effects of a 12-hour re-education program sponsored by the Central Minnesota Mental Health Center. A Knowledge Inventory and an Opinion Survey were given to 396 individuals prior to and after participation in the Central Minnesota DWI Clinic to determine changes in knowledge and attitudes with regard to drinking and driving. Driving behavior for the 396 individuals was assessed by examining their number of driving convictions for DWI and careless driving before and after clinic participation. A control group of 142, who were arrested during the same time period but for some reason chose to pay the court-ordered penalty, was also examined to determine changes in the number of DWI and careless driving convictions.

The following hypotheses were investigated: (1) There would be no increase in knowledge of drinking and driving upon completion of the Central Minnesota DWI Clinic, (2) There would be no change in the participants' attitudes toward drinking and driving after participation in the Central Minnesota DWI Clinic, and (3) There would be no change in driving behavior as measured by the number of convictions for DWI and careless driving after participation in the Central Minnesota DWI Clinic.

It was concluded that there was a significant knowledge acquisition after participation in the Central Minnesota DWI Clinic, however, the individuals could answer 54.6% of the answers correctly before participation in the clinic. Fifteen of the 20 Knowledge Inventory questions showed significant increases. Only one showed a significant decrease, while three showed no change. The individuals' attitudes concerning drinking and driving did not change significantly following clinic participation. There were two questions that showed significant changes, one a negative change and the other a positive change. The number of re-convictions for DWI and careless driving decreased significantly, at the .001 level of confidence, in both the experimental group and the control group. It was determined, however, that the control group had a significantly greater re-conviction rate, at the .05 level of confidence, for both DWI and careless driving. This indicated a lower recidivism rate for the experimental group.

Although significant changes were found in knowledge of drinking and driving and in driving behavior, further study was recommended to determine the clinic's long-term effectiveness and to evaluate other aspects of the clinic. Within the limitations of the study, the investigator recommended that the Central Minnesota DWI Clinic remain in operation as a court-ordered alternative or option to the "normal" court-ordered punishments.

APPROVED BY RESEARCH COMMITTEE, MAY 1976

Frank P. Osendorf, Chairperson

THE PRESENT STATUS OF GIRLS' ATHLETICS AT THE SECONDARY SCHOOL LEVEL

Karen D. Thompson

PURPOSE: The purpose of this study was to obtain a clear picture of the history of girls' athletics that has led to the present time, to discover the present status of girls' athletic programs at the secondary school level by gathering information as to what girls' athletic programs entail now, and to discover what implications there are for girls' athletics in the future.

LIMITATIONS: This study was limited to 150 public secondary schools in the state of Ohio. This study sought only to gather and compile data on the existing programs in girls' athletics to discover their current status.

PROCEDURES: The data for this study was obtained from a random sampling of public secondary schools in the state of Ohio. A questionnaire was sent to each of the fifty selected Class "A", "AA", and "AAA" schools. From the 150 selected schools, 103 returned the questionnaire and were involved in this study.

TREATMENT OF DATA: The data was compiled and then converted into frequency tables, figures, and graphs for each of the categories on the questionnaire. Percentages and means were calculated to determine the present status of girls' athletics in the public secondary schools in Ohio as analyzed by this study.

FINDINGS: The findings of this study revealed an overall view of the present status of girls' athletic programs in those schools sampled. The results indicated that there has been an increase in many aspects of the girls' athletic program from the 1973-74 to the 1974-75 school year. Increases were found in Class "A", "AA", and "AAA" in the mean percentage of participation in the various sports, length of practice time, number of days per week of practice, number of contests per season, length of season, and salaries of coaches. The mean total budget for the girls' athletic program was revealed for those schools providing data.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1975

Robert Waxlax, Chairperson

A DENSIOMETRIC AND ANTHROPOMETRIC BODY COMPOSITION EVALUATION OF A COLLEGE VARSITY FOOTBALL TEAM

John D. Wickkiser

Sixty-five candidates for spring football practice at St. Cloud State College, Minnesota, between the ages of 17 and 23 years were densitometrically and anthropometrically measured during the period from February to April, 1974. The densitometry involved underwater weighing with an accurate individual assessment of residual volume. The anthropometric measurements were: height; weight; seven skinfolds, including the pectoral, subscapular, triceps, chest, suprailiac, abdomen, and thigh; waist circumference; and wrist diameter. The data were subjected to computer analysis including condcriptive, regression, and analysis of variance procedures. A regression equation for the prediction of body density from waist circumference, triceps skinfold, and height was developed with $R = .96$ and a Standard Error of Estimate of $\pm .0041$ body density units. The team data were divided into five groups by position. When subjected to t -ratio tests, significant differences at the .01 level of confidence suggested that at least two separate groups, backs and linemen, be used in future body composition studies of football teams. The team data were compared with the data from one high school, four other colleges, and three professional football teams. The data by position was compared with a similar study of a professional team. The estimated optimal playing weights for each player as estimated by the player, the coach, and the densitometric evaluation were compared. For the entire team, the players and the coach estimated their optimal playing weights to be nine and six pounds heavier, respectively, than the densitometric analysis indicated as optimal.

APPROVED BY RESEARCH COMMITTEE, JULY 1974

John M. Kelly, Chairperson

INFORMATION MEDIA

CURRENT PERIODICAL LITERATURE USE PATTERNS IN OPEN AND CLOSED COLLECTIONS IN TWO MINNESOTA STATE UNIVERSITY SYSTEM LIBRARIES

Douglas George Campbell

PROBLEM: The study examined and described student use patterns for current periodical literature and the utilization patterns of selected periodicals at two Minnesota State University System libraries. One of the libraries chosen had a closed current periodicals collection, the other had an open current periodicals collection. Based on this examination and subsequent description, comparisons of the two access systems were made.

PROCEDURE: Two comparable Minnesota State University System libraries were selected for study. The closed access system was represented by St. Cloud State University (SCSU), the open access system by Mankato State University (MSU). Both universities and their libraries were examined and described. Data about students' current periodical use patterns was collected by a telephone survey questionnaire administered to one-hundred randomly selected students at each university. Crosstabulations were done to determine frequency distribution between the students' year in school and questionnaire response. Data was also collected on the use of one hundred randomly-selected current periodical titles at each university over a two-week period, and current periodical use was tabulated.

FINDINGS: At both universities students used current periodicals primarily to fulfill class assignments. Utilization of current periodicals for recreational reading, professional or informational reading, and browsing was of low priority at both schools. In open access current periodicals collections, students used current periodicals somewhat more for browsing-related use, and also had a higher incidence of problems with missing or mutilated current periodicals. Data collected from tagged current periodicals indicated a higher use rate in the open access system.

CONCLUSIONS: The results of the study indicated a need to plan access to current periodicals in the libraries under study so as to better serve user needs. On the basis of this study, it would appear students would benefit most from a closed access system which also provided for limited browsing.

*APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1977
Lawrence B. Smelser*

A STUDY OF PROFESSIONAL MEDIA PERSONS IN THE STATE OF MINNESOTA AS TO THEIR MEMBERSHIP IN AND ATTENDANCE OF PROFESSIONAL MEDIA ORGANIZATIONS

Rosamond C. Doty

PROBLEM: Minnesota public school media persons have not generally held membership in nor have attended the meetings of professional media organizations.

PROCEDURE: A literature search was made as to the goals and purposes of AASL/ALA, AECT, ASCD, NAEB, MLA, MASL, AVCAM, and MEMO.

Two questionnaires secured the essential data which would profile the Minnesota public school mediaists: (1) a pilot questionnaire, and (2) an amended questionnaire to 140 Area Six and thirty-four randomly selected media persons from the remaining ten areas of the Minnesota public schools.

FINDINGS: The analysis of the qualitative data gave the following profile of the media personnel in percentages: 69.9 percent were 19-49 years of age; 59 percent were women; 38.7 percent had worked 11-15 years and 35.7 percent for 6-10 years; 81.5 percent had spent 100 percent of time in media work; 73.2 percent disregarded job description titles; all school combinations of K-12 were held; 53.6 percent held Bachelor's Degrees with the field of study being library/audiovisual; 56 percent held membership in MASL, 44.6 percent in AVCAM, 7.7 percent in AECT, 4.8 percent in MLA, and 4.2 percent in AASL/ALA.

For meeting attendance of five years or more, 10.1 percent attended MASL regional, 6.5 percent AVCAM regional, and 5.4 percent AVCAM state. Attendance four times netted MASL region 7.7 percent, MASL state 4.8 percent, and AVCAM region 4.2 percent. Twice attended were MASL and AVCAM regional 8.9 percent each, MASL state 7.7 percent, and AVCAM state 6.5 percent. Once attended was MASL-Ruth Ersted for 15.5 percent, MASL region 11.9 percent, AVCAM state 10.7 percent with AECT trailing by 9.5 percent.

Non-attendance reasons most checked were: attendance based on own time and priorities, no communications received relative to meetings, no travel expense provided, not released from school, no transportation, non-supportive administration, distances, and private life prohibited meetings.

CONCLUSIONS: 1. Professional media organizations should make available information relative to each association's goals and purposes, publications, dues, and meetings.

2. Communication should be established between administrators and media personnel concerning professional media meetings.

3. Calendar time of certain state conventions should be studied.

4. The study should be pursued by the use of predictor and criterion variables in order to determine the extent that the profile characteristics of the media persons influence the membership in and attendance of professional media organizations and meetings.

APPROVED BY RESEARCH COMMITTEE, MAY 1977

Carl Savage, Chairperson

SEXISM IN 16mm FILMS OF THE CENTRAL MINNESOTA COOPERATIVE FILM LIBRARY

Gary Germundson

PROBLEM: The problem of this study was to explore the contents of a sampling of 16mm films to determine evidence of sexism.

PROCEDURE: The films in the study were a random sample of films used during a selected six-week period at Apollo High School and obtained from the Central Minnesota Film Library. The films were evaluated on a check list evaluation sheet by media specialists of Apollo High School.

The films were evaluated to determine if a) one sex dominated the main roles in films; b) one sex was shown more favorably in jobs, roles in the home, personal characteristics and achievements; and c) one sex was put in a secondary position through the use of language.

FINDINGS: The data collected showed that men appeared more often than women in main roles in the film. The data showed that men in the films were shown in sex-stereotyped roles ninety-four percent of the time; women were shown in sex-stereotyped roles eighty-nine percent of the time. Also, the language used in the films put women in a secondary position, although the fact was noted that language use was difficult to judge in one viewing of the film.

SUMMARY AND CONCLUSIONS: From the data collected, it was concluded that the sample of films shown at Apollo High School during a six-week period did show evidence of sexism.

It was recommended that the findings of the research be made available to teachers, the Central Minnesota Film Library, as well as to producers of the films. A recommendation was also made that additional studies be made to determine sexism in more recent non-print materials.

APPROVED BY RESEARCH COMMITTEE, MAY 1977

Lawrence B. Smelser, Chairperson

A SURVEY TO DETERMINE THE VIEWING HABITS AND PROGRAM PREFERENCES OF TODAY'S COLLEGE STUDENT

Bruce Hough

PROBLEM: It was the problem of this study (1) to survey the viewing habits of the college student of today, (2) to determine their program preferences and (3) to ascertain whether participation in the survey will be a beneficial learning experience for the students taking part. The participating students are mass communication majors at a private university.

PROCEDURES: The survey took place during a two week period a few weeks into the second semester. The participants were students in mass communication courses at Creighton University. They were asked to respond to the questionnaire before and after taking part in the survey, which required them to record their viewing habits for two weeks. This information was then tabulated and organized into all categories that applied.

FINDINGS: Movies and news were popular categories, with news being the most popular. The data showed that the single-most preferred program was *All In The Family*. The results also showed that much of the population's viewing took place in the evening hours. The population was able to estimate its viewing habits more closely after participation in the survey.

SUMMARY AND CONCLUSIONS: The results of the survey contain some interesting discoveries; there also are many areas of this study which could be explored in depth which might give additional insight into the program preferences and viewing habits of today's college students.

APPROVED BY RESEARCH COMMITTEE, JULY 1976
Lawrence B. Smelser, Chairperson

AN ALTERNATIVE FOR INSERVICING TEACHERS IN THE COMPUTER CURRICULUM USED IN THE BURNSVILLE ELEMENTARY SCHOOLS

Thomas W. Klausler

It was the purpose of this study to design an alternative inservice program for elementary teachers in the Burnsville Public Schools on the use of the computer terminal in conjunction with the computer curriculum for the fourth, fifth, and sixth grade students.

In the past, the Burnsville Schools have inserviced their teachers in the computer curriculum through the workshop method taught by specialists from within and outside the district. The present method has some shortcomings: the workshops are expensive to conduct; they must be held at least annually for new personnel; teachers are not always available to attend the sessions; many teachers would like a review of the material without attending the sessions; and some teachers do not wish to attend the workshops.

Important in the design of an inservice program is the selection of a medium of presentation. Factors that need to be considered include the audience, information to be presented, cost of production, research, availability of equipment, convenience, and skills of the producer.

In considering all the factors presented, it would seem that using the terminal in conjunction with slides and tape narration would be a viable format for this inservice program.

The topics to be covered in the inservice are: introduction, connection with the computer, programming the computer, using programs stored in the computer, and making a paper tape.

APPROVED BY RESEARCH COMMITTEE, MAY 1975
Lawrence B. Smelser, Chairperson

*PROFESSIONAL MEDIA CENTER SERVICES OF THE
LARGEST SCHOOL DISTRICTS
IN MINNESOTA*

Mavis A. Lee

PROBLEM: The problem chosen for this study was the determination of the scope of materials and services provided and the types of promotional methods employed by professional media centers in the largest school districts in Minnesota. The purpose of this study was to gather and compile information about established district professional media centers which would be useful to other districts initiating these programs or useful to the established programs interested in constructively comparing facilities.

PROCEDURES: Supervisors of school media programs in the thirty-two largest school districts in Minnesota were contacted by telephone and asked if their district had a professional media center. Sixteen districts had either district professional media centers or professional libraries. The supervisors from these sixteen districts agreed to participate in a survey. After the questionnaires were returned, a second telephone call was made to each supervisor to clarify and enlarge upon some of the items and answers on the surveys. Responses were studied, recorded, and summarized.

FINDINGS: Many of the centers surveyed were still considered professional libraries instead of media centers and did not include audio-visual materials as a part of the professional collection. Professional staff was minimal with only two centers having a full-time media person in charge. For the sixteen districts the mean of the annual budgets was \$2,732; the mean of the total book collection was 2,808. Facilities, curriculum materials, selected reference sources, and outside sources of information were tabulated.

All of the centers were open more than eight hours per day; seven were open nine hours. Extended hours of service evenings or on Saturdays were almost non-existent. Distribution of requested material by inter-school mail and assistance with college or university course work were the most commonly listed services. The most commonly practiced promotional measures were routing of materials to interested persons, providing lists of new holdings, and giving inservice orientation for new teachers in the system. Lack of professional personnel and inadequate budget were listed most often as detriments to good service.

CONCLUSIONS: For economy in the use of time and money and efficiency of service, the district professional media center should be centrally located with the district media services. Professional staff should be provided. Budget should be allocated to increase basic resource collections and keep materials current. An active in-service program is necessary in establishing a vital center.

APPROVED BY RESEARCH COMMITTEE, MAY 1976

Carl C. Savage, Chairperson

*DESIGNING INSTRUCTIONAL PACKAGES FOR INSERVICE OF NEW
POST-SECONDARY VOCATIONAL INSTRUCTORS
IN THE SERVICES OF A MEDIA PROGRAM*

Karen Andrea Lieser

PROBLEM: Many instructors teaching at the post-secondary vocational level are hired directly out of industry or a trade. Most are not familiar with the media concept as it relates to education. The topic of this field study deals with the in-service training of newly hired vocational school instructors at a post-secondary level in the services of a media program.

Specifically, it has been the problem of this study to review the literature pertaining to inservice education and designing instructional learning packages and to design for new teachers several instructional learning packages which explain the media services provided by the Resource Center at the St. Cloud Area Vocational Technical Institute at St. Cloud, Minnesota.

PROCEDURE: In addition to examining the relevant literature, this investigator wrote letters to a selected group of institutions which offered vocational training of some nature. These communications were an attempt to ascertain whether the institutions offered media services

to staff, and, if they did, whether they provided to staff any kind of inservice training dealing with a media program. The letters also asked what methods of presentation and what media were used in conducting this inservice training.

From the information gathered, the author designed two sample instructional learning packages which are included in Appendix B of this study.

FINDINGS: Self-paced instructional learning packages, which are a form of individualized instruction, are just one of the numerous methods for providing teacher inservice. In no case should packages be utilized as the total approach to inservice instruction. More flexibility and variety should be maintained. The primary reason this format was selected in this particular case was the problem of scheduling new teachers together at one time for group inservice. The St. Cloud Area Vocational Technical Institute operates on two separate and overlapping shifts which preclude group instruction of new teachers in standard groups.

SUMMARY AND CONCLUSIONS: With the Resource Center at the St. Cloud Area Vocational Technical Institute playing an increasingly important role in the total educational process, it becomes necessary for instructors at the school to become well-informed about the media program and about how the Resource Center facility, staff and services can be of assistance in the teaching-learning process.

The instructional packages designed as a result of this study should serve as an initial introduction to the Resource Center and its program for newly hired staff members. As an incentive for instructors to complete the packages, it is recommended that the administration offer clock hours toward vocational re-certification.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976

Lawrence B. Smelser, Chairperson

STUDENT ACCEPTANCE OF THE CLASSROOM TEACHER AND OF THE MEDIA SPECIALIST AS SOURCES OF INFORMATION IN MEDIA MATERIALS

Michael Mack

PROBLEM: The study was designed to compare the classroom teacher and the media specialist as sources of directions and factual information given in media materials related to course content which were used by students in the media center. The study was undertaken (1) to help local producers create more efficient learning activity packages; and (2) to investigate credibility of the teacher and media specialist as communicators in media materials.

PROCEDURES: One hundred eighth grade students viewed video tapes containing contradictory directions and factual information presented by a media specialist and a classroom teacher. Randomly assigned groups of twenty five students viewed each of four video tapes. The taped messages were the same except that order of presentation and message content were rotated between the two speakers. After viewing a tape, students completed a question sheet which required that they follow only one set of directions and choose between the two conflicting factual answers presented on the tape. Results were obtained by comparing the number of students completing the question sheet in the manner indicated by the media specialist and the number responding as directed by the classroom teacher. Some time after viewing the tapes, students' attitudes toward the teacher and media specialist were measured through an attitude survey.

FINDINGS: Nearly equal numbers of students followed directions given by the teacher and directions given by the media specialist. The same was true for student responses to factual information presented by the two sources. This was true regardless of the order or content of the speakers' messages. The attitude survey showed that the classroom teacher involved in the study was better known and probably more admired by the students than the media specialist.

CONCLUSIONS: The classroom teacher and the media specialist were equally accepted by students as sources of facts and directions given in media materials. Either source could be used equally effectively by producers of learning packages. Credibility of the two communicators was assumed to be equal because their messages were equally accepted by the audience. How-

ever, the difference in student attitude toward the two sources suggested a need for further investigation of that conclusion.

APPROVED BY RESEARCH COMMITTEE, JUNE 1976

Carl Savage, Chairperson

AN EVALUATION OF THE TECHNIQUES APPLIED TO SELECTED MANAGEMENT FACTORS OF THE EDUCATIONAL FILM LIBRARY OF THE ST. PAUL PUBLIC SCHOOLS

Robert H. Shager

PROBLEM: The problem for this study was the determination of the extent to which the management of the Film Library, i.e., the selection of the proper management techniques, as applied to a number of management factors, has resulted in film distribution and related film services needed by the teachers, and through these teachers, the students of the St. Paul Public Schools. The purpose of the study was to develop and use an evaluative instrument to survey a randomly sampled group of teachers, representing the major curriculum areas of the St. Paul Public Schools to determine if a number of management factors and the applicable management techniques which are presently employed in the management of the Film Library result in uniform offering of service to all curriculum areas. An additional purpose was to determine the manner and degree to which these factors provide teachers with needed services.

PROCEDURES: The study was formulated to offer teachers an opportunity to share in the evaluation of management factors of the Film Library of the St. Paul Public Schools rather than obtain this evaluation by applying traditional evaluative criteria as a self-evaluation exercise by the film library staff. In the development of the evaluative instrument titled *Teacher Evaluation of the Educational Film Library*, it was first necessary to isolate those management factors to which a variety of management techniques could be applied. In order to compare responses of teachers in the various subject areas, it was necessary to compile lists of teachers in each of these areas. These lists were numbered consecutively and, to obtain complete randomization, tables of random numbers were applied. In order to determine responses from teachers of various subject areas, coding of each form was required prior to mailing. Responses to each item were tabulated with numerical or percentage figures for all subject areas. A majority of positive or negative reactions was thus considered a mandate that would require a recommendation that the management factor covered by each respective item was either effective or was not effective and that a change was or was not necessary.

FINDINGS: The survey disclosed that the use of films ranged from none for an entire year as reported by 21 teachers, to ten per week on the part of one elementary teacher. In the majority of cases, teachers in areas in which most films were available used the largest number of films. Teachers in areas having fewest films were those indicating budget expenditures were unfair. Responses to the three parts of the cataloging item can be interpreted as a vote in favor of present cataloging procedures. It is evident that the majority of teachers prefer to use the telephone in booking films as 78% indicated they would prefer to use this method as opposed to 24% who would rather use a written order. The relatively low affirmative response and the failure of as many as one-third of Mathematics teachers to respond in any manner to the item indicates a problem in the booking periods as established. The 41% of teachers stating a need for 8mm films and the 56% of teachers indicating a need for video tapes are not to be considered an overwhelming endorsement for the inclusion of these materials, however, percentages are sufficient to warrant further study in this area. The overall percentage of affirmative responses to items dealing with service provided is indicative of the fact that the service as provided by the film library staff needs improvement.

CONCLUSIONS: In general, it can be concluded that all management techniques applied to selected management factors of the Film Library of the St. Paul Public Schools need study and revision. The areas of channels of communications, budget expenditures and service provided, however, must be given immediate attention in an effort to improve film service to all teachers.

APPROVED BY RESEARCH COMMITTEE, APRIL 1975

Lawrence B. Smelser, Chairperson

MEDIA USAGE FOR RELIGIOUS EDUCATION

Michael B. Winter

PROBLEM: The intent of this study was to assess the perceived educational needs of pastors and religious educators regarding competence in media communication.

PROCEDURES: Three hundred and ten questionnaires were distributed to pastors of Conservative Baptist Churches of Oregon and graduates of Western Conservative Baptist Seminary between May 1973 and June 1975 presently living in the U.S. The returned questionnaires were compiled for interpretation.

FINDINGS: One hundred and forty eight questionnaires were returned. The low rate of return (48%) made it difficult to draw conclusions about the entire population. The results indicate that media are being used regularly in church education. Training in the design and production of overhead projection transparencies was a priority need. Few responders expressed adequacy in the use of media and a large majority felt a need to know how to incorporate a variety of media into preaching and teaching. A large majority of responders also indicated that a course in media methods and materials should be incorporated into the seminary curriculum.

SUMMARY AND CONCLUSIONS: The results of this survey indicate that responders 1) wish to focus more attention on the role of educational media in the communication process; 2) feel the seminary curriculum should be expanded to include professional training in educational media; 3) feel a new type of ministerial staff person skilled in the field of media communication should be developed to meet the needs of larger congregations. The results suggest a need for more adequate education of the leadership of churches in using media.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976

Lawrence B. Smelser, Chairperson

PSYCHOLOGY

AN INVESTIGATION OF CORRELATION BETWEEN TOLERANCE OF AMBIGUITY AND VERBAL TEST OF THE TORRANCE TESTS OF CREATIVE THINKING

F. Eugene Wiener

The experimenter hypothesized that there would be a positive correlation between tolerance of ambiguity and the verbal test (Form B) of the Torrance Tests of Creative Thinking (TTCT). Subjects were 30 male and 30 female college students enrolled in introductory psychology courses. Subjects were scored on tolerance of ambiguity for total elapsed time (TET) spent working upon a battery of five solvable and ten insolvable anagrams. Subjects were scored for fluency, flexibility, originality and total composite score on the TTCT by the experimenter. Rank order correlations were calculated between TET and the four creativity scores. All correlations were negative. The only correlation significant at the .05 level was between TET and flexibility. The Mann Whitney U test was used to test differences between male and female subjects on each category of creativity scores and TET. Males scored higher at the .05 level of significance on the originality category. The hypothesis was not supported.

APPROVED BY RESEARCH COMMITTEE, JUNE 1974

Albert G. Luker, Chairperson

READING CONSULTANT

THE RELATIONSHIP BETWEEN CONTENT AREA READING INSTRUCTION AND AMERICAN HISTORY ACHIEVEMENT

Brian A. Bottge

PROBLEM: In the past, the content area teacher has not regarded the teaching of reading as an important aspect of his work. It has traditionally been the reading teacher's responsibility to teach secondary level students how to read effectively. There is evidence to show that the content area teacher is in the most favorable position to teach reading. The purpose of this study was to determine the effect reading instruction in an American history class had on academic and reading achievement.

PROCEDURE: Fifty-two ninth grade American history students participated in the study with one of the two classes serving as a control group. The history teacher who was involved in the study taught the reading skills he thought were necessary after having read a limited amount of material devoted to reading instruction in the content areas. The control and experimental groups were pre- and post-tested on reading and American history achievement to determine if the reading skills taught in the experimental group affected American history and reading achievement.

FINDINGS: The T-Test was used to measure the effect reading instruction had on American History and reading achievement. An analysis of co-variance was also employed as the pre-American history test showed significant differences between the control and experimental groups at the outset of the study. Although there was a correlation between reading ability and American History gain for both groups, the teaching of reading in the American history class produced no significant results as measured by the tests employed. The teacher interview at the conclusion of the study revealed that both the teacher and his students profited by the reading instruction in ways not measured by the test instruments.

CONCLUSION: Teaching reading in the content areas has merit. On the basis of non-statistical evidence, the fact that both teacher and students welcomed this type of instruction would warrant more research aimed at helping teachers teach reading in their classrooms.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1974

Roger L. Rouch, Chairperson

AN INVESTIGATION OF TEACHER ATTITUDES CONCERNING SUPPLEMENTARY READING PROGRAMS

Nancy Lee Koenen

PROBLEM: This study attempted to answer three questions: (1) What were the differences in the expressed attitudes of elementary teachers when compared with secondary teachers when questioned about supplementary reading programs? (2) What were the differences in the expressed attitudes of teachers in Right to Read districts when compared with teachers not in Right to Read districts when questioned about supplementary reading programs? (3) Did the writing of the questionnaire items administered to the teachers affect the responses given?

PROCEDURE: Two forms of a questionnaire were developed to survey teacher attitudes of supplementary reading programs. The fifteen items on each form attempted to express either a negative or positive tone. The items were randomly included on the forms so that both forms had negatively and positively toned items. The questionnaires were distributed to teachers of districts in the Special Educational Cooperative of Northeast Central Minnesota. The teachers were asked to respond to each item on one form of the questionnaire, on a continuum of strongly agree through undecided to strongly disagree. A t-test was done on each item of both forms to determine the results.

FINDINGS: Few differences were discovered when attitudes of elementary and secondary teachers were compared. In the differences that did occur, secondary teachers appeared to be more opinionated. The essentially non-existence of supplementary reading programs at the

secondary level of the districts involved in the study, could suggest a lack of experience. This lack of experience with supplementary reading programs may influence the opinions of teachers.

Teachers in Right to Read districts indicated similar opinions with teachers not in Right to Read districts. Seven more intense responses were indicated by teachers in Right to Read districts as compared to five of the twelve items which indicated significant differences by teachers not in Right to Read districts. This suggested that the Right to Read program may not have influenced the expressed opinions of teachers. The needs viewed by both groups may have come from personal experiences and insights.

When comparing the two forms of the questionnaire, eight out of the fifteen items exhibited significant differences between the items written in a positive or negative expressive tone. This suggested that the way a statement in a questionnaire is written has a major influence on the expressed opinion of teachers. Results further indicated that a negatively expressed item elicited a more opinionated response.

SUMMARY AND RECOMMENDATIONS: The writing of items in a questionnaire effect the responses given. This must be considered as a caution to the directors and promoters of supplementary instructional programs who assess the effectiveness of these programs by doing attitudinal surveys of teachers. The attitudinal questionnaire should be carefully evaluated and studied if assessments are to be valid.

Positive attitudes in teachers are mandatory for successful reading programs. All teachers must have positive involvement in development of each district's reading program.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1975

Roger L. Rouch, Chairperson

A STUDY OF CONCEPT ATTAINMENT AND READING READINESS

Patricia Ann Schwinghamer

PROBLEM: The purpose of this study was to investigate the relationship between reading readiness and concept attainment among kindergarten children living in two small rural school districts in Central Minnesota that are considered primarily language-disabled areas.

PROCEDURE: This study was conducted during the 1974-75 school year using forty kindergarten children as subjects in a control group and thirty-four kindergarten children as subjects in an experimental group, which received training in the basic concepts using the *Concept Understanding Program* which was designed in accordance with the *Boehm Test of Basic Concepts*. A test-retest design was followed, using the *Boehm Test of Basic Concepts* and the *Metropolitan Readiness Tests* as the measuring instruments. The tests were administered in early January and late May. The basic techniques that were used in the teaching of reading readiness skills, following a basal reading program, continued throughout the study in both kindergarten classrooms. The data were analyzed to see if any statistically significant correlations and differences could be found to exist between the variables and groups.

FINDINGS: High positive correlations (.001 level) were found to exist between scores on the *Boehm Test of Basic Concepts* and scores on the *Metropolitan Readiness Tests* when an inter-correlation matrix was set up between the variables. Statistically significant differences between pretest and posttest scores within groups showed that the experimental group grew in all areas of the *Boehm Test of Basic Concepts*, that is, Space Concepts, Quantity Concepts, Time Concepts, Miscellaneous Concepts, and Total Concepts, while the control group grew only in Quantity Concepts and Total Concepts. Statistically significant differences were found to exist between Quantity Concepts, Time Concepts and Total Concepts on the posttest scores between groups. Significant differences existed between pretest and posttest scores on the *Metropolitan Readiness Tests* for both groups. When analyzing values of the pre- and posttest scores between groups on the *Metropolitan Readiness Tests*, the difference between groups on the Copying subtest was statistically significant at the .05 level or higher.

SUMMARY AND CONCLUSIONS: From the analysis of the data it may be concluded that the *Boehm Test of Basic Concepts* and the *Metropolitan Readiness Tests* are related measuring instruments and that the *Boehm Test of Basic Concepts* is a useful tool for assessing growth on the *Metropolitan Readiness Tests*.

According to Klausmeier's conceptual learning and development model, it appears that the items on the *Boehm Test of Basic Concepts* and the *Metropolitan Readiness Tests* require children to operate at the identity level of concept attainment.

The growth made by the experimental group in all areas of the *Boehm Test of Basic Concepts* shows that the training program, based upon the *Concept Understanding Program*, was effective in teaching concepts on the *Boehm Test of Basic Concepts*. Even though the control group showed growth in Quantity Concepts on the posttest scores, the effectiveness of the training program enhanced the growth of Quantity Concepts in the experimental group. Although both groups showed growth in readiness skills, an analysis of pretest scores between groups and posttest scores between groups showed that Copying was significant for subjects in the experimental group. In addition to concept attainment, visual perceptual and motor skills were being taught in the kindergarten curriculum of the experimental group.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1975

Roger L. Rouch, Chairperson

SPECIAL EDUCATION

AN EVALUATION OF THE ST. CLOUD SPECIAL EDUCATION WORKSHOP FOR ELEMENTARY TEACHERS

Linda Jean Balko

PROBLEM: The purpose of this study was to provide data regarding the effectiveness of the St. Cloud Special Education Workshop for elementary classroom teachers in the Minneapolis Public Schools. The first part of the study compared the pre and post measurements of attitudes of the classroom teachers in regard to exceptional students. The second part of the study provided information on the attainment of knowledge in the area of learning disabilities. The third part of the study compared a group of classroom teachers who had not gone through the same program as to their opinions of appropriateness of their students' placement in mainstream education. The final part of the study provided an opportunity for the participants to evaluate the workshop.

PROCEDURE: The samples in this study consisted of elementary classroom teachers assigned to the Minneapolis Public Schools. The group of teachers who completed the program was included in all four parts of the study. This totaled 40 participants. An additional 20 teachers were randomly selected from the Minneapolis Public Schools who had not been included in any special training programs. This group was matched with 20 participants for data collected in part three of this study.

The instrument used to measure attitude change in part one of the study was the Rucker Gable Educational Programming Scale. To evaluate knowledge attained in regard to learning disabilities a multiple choice test devised by the St. Cloud State University Special Education Department was administered. The third part of the study used a form devised by the Minneapolis Special Education Division, Educational Services Options. This particular device was distributed to participating and non-participating teachers to compare opinions of both groups as to the appropriateness of student placement. Those who participated in the workshop were also asked to rank on a five point scale ranging from not effective to highly effective how the workshop helped them in development of use of resources for exceptional children, sensitivity to the needs of atypical students and acquired skills.

FINDINGS: There was no discernable change in the attitude of teachers in the project toward handicapped children. There was a significant difference between pre test and post test means on the test of knowledge of exceptional children. The participants in the project perceived the appropriate placement of their students in a manner more consistent with theoretical expectations than did either the teachers in the 1973 sample or teachers in the control group. The teachers in the project rate the results favorable in all respects.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976

Stanley C. Knox, Chairperson

THE RELATIONSHIP OF PREDICTOR VARIABLES AND CAMP PARTICIPATION WITH MENTALLY RETARDED YOUNG ADULTS

John W. Brennan

PROBLEM: The purpose of this study was to determine whether the level of participation achieved by mentally retarded persons in a residential camp experience related to motor test scores and demographic variables.

PROCEDURE: The sample consisted of 54 mentally retarded young adults who were ambulatory, had no severe auditory or visual impairment, and who remained at Camp Friendship the full 11 day camp session. Each subject was given a combination gross and fine motor test and a grip strength test on the second day of camp. Demographic information was obtained from camper applications and medical records. The 12 predictor variables used in this study were: (1) chronological age in years, (2) sex, (3) height in inches, (4) weight in pounds, (5) dynamometer grip strength average in pounds, (6) Wetzel Grid physique score, (7) gross motor test score, (8) fine motor test score, (9) total motor test score, (10) current residence, (11) previous camp experience in years, and (12) parental estimate of subject's retardation level.

Each subject was rated for camp participation on two sample days and for overall camp participation on the last day of camp by his or her cabin counselors.

FINDINGS: The results of a stepwise regression analysis showed two predictor variables, fine motor test score and parental estimate of subject's retardation level, to be significantly related to the overall camp participation scores. These two variables accounted for 29.0% of the variance. None of the remaining predictor variables were significant and none needed to be entered into the regression equation. The regression equation, based on the two significant predictor variables, produced a predicted overall participation score for each subject and this score was found to be effective as a decision tool for identifying a remedial group of campers (96.2% accurate at the 25th percentile).

CONCLUSIONS: There are a number of decisions which would have to be made by the Camp Friendship director concerning the feasibility of a remedial campership program; however, it is concluded that if such a program were to be established, the regression equation, based on the two significant predictor variables, would be useful for identifying a target group of campers who have a low overall participation level.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1977

Floyd W. Ayers, Chairperson

THE EFFECTS OF NONVERBAL CUES ON THE PERFORMANCE OF FOUR YEAR OLDS

Ruth Castle

PROBLEM: It was the purpose of this paper to determine if additional nonverbal cues effected the memory and retention in terms of performance for a four year old child as well as to determine if images are internalized at this age.

PROCEDURE: Forty-eight four year olds were tested under four different conditions with two levels of instructional difficulty. Twelve children were tested in each of these conditions. The conditions were verbal only, verbal-visual, verbal-visual-point, and verbal-visual-point-movement.

FINDINGS: The significant findings were:

1. The method of instruction effected performance in terms of levels of instruction and sex.
2. Females performed better than males in terms of method of instruction as well as levels of instruction.
3. No verbal rehearsal or visual orientation data was significant.

SUMMARY AND CONCLUSIONS: Since this research was limited to this group of four year olds, the statistical findings indicated that for this group as additional nonverbal cues were added these subjects showed a significantly higher level of performance. Additional research needs to be done to determine if other groups of four year olds would show this same performance as well as whether at other age groups this same significantly higher level of performance will be shown when using additional nonverbal cues for instruction.

APPROVED BY RESEARCH COMMITTEE, OCTOBER 1975

William Lovelace, Chairperson

THE EFFECT OF POSITIVE PEER CULTURE ON SPECIAL EDUCATION HIGH SCHOOL GIRLS

John Patrick Cronin

THE STUDY: This was a study of Positive Peer Culture (PPC) to determine its effectiveness and appropriateness as an intervening therapeutic technique for Educationally Mentally Retarded high school girls. Based on the experimenter's observations, anecdotal records, and statistical analysis, it seems evident that PPC has a positive effect on high school girls regardless of intelligence.

RECOMMENDATIONS: Recommendations are that the schools modify their calendar to maintain the therapeutic effect which was lost following any extended vacation period.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1974

Floyd Ayers, Chairperson

A STUDY OF THE EFFECTS OF A SEX EDUCATION PROGRAM ON INSTITUTIONALIZED TRAINABLE MENTALLY RETARDED STUDENTS

Catherine Cooksey Engler

PROBLEM: The purpose of this study was to determine if fifteen trainable mentally retarded individuals could make demonstrable gains in the comprehension of concepts and knowledge presented in a sex education program as compared to fifteen trainable mentally retarded individuals who did not receive a sex education program. A second purpose was to determine the extent of significance of the variables (1) age, (2) IQ, (3) sex, (4) residence in a state hospital, (5) residence at home, (6) age of commitment, (7) non-verbal, (8) hearing impaired, (9) visually impaired, had in relationship to the subjects knowledge of human sexuality.

PROCEDURE: Thirty TMR students were administered the Test of Sex Knowledge for Trainable Mentally Retarded. This test was used as the pre-test and the post-test. The test included 23 different questions which provided for a yes or no response or pointing to the correct picture upon verbal questions by the examiner.

RESULTS: The results indicated that the sex education program did provide a statistical significance gain at the .05 level in sexual knowledge for those students who participated in the sex education program. The results also suggested that the variables of (1) non-verbal, (2) visually impaired, (3) living at home, were significantly related to scores on the Test of Sex Knowledge for Trainable Mentally Retarded beyond the .05 level for both the experimental and control group.

CONCLUSIONS: A group of TMR individuals can learn sexual concepts and terminology when presented with a basic sex education program.

APPROVED BY RESEARCH COMMITTEE, APRIL 1977
James Lewis, Chairperson

THE EFFECT OF EDUCATIONAL BACKGROUND AND EXPERIENCE IN ELEMENTARY EDUCATION OR SPECIAL EDUCATION ON THE ATTITUDES TOWARD HANDICAPPING CONDITIONS

Barbara J. Gunderson

PROBLEM: This study investigated the effect of (1) educational background, special education vs. non-special education, and (2) experience, no experience vs. one or two years experience, on the attitudes of the subjects toward handicapping conditions.

PROCEDURES: This study was a follow up of 72 students who were randomly selected from 300 elementary education majors at St. Cloud State College. The subjects in this study consisted of 37 of these past students who were now teachers or prospective teachers who were located and who cooperated by filling out and returning the measurement device.

To obtain data on attitudes toward 15 handicapping conditions, the semantic differential technique was selected. Those who had minored in special education were compared with those elementary education majors who had other minors and were referred to as non-special education minors.

CONCLUSIONS: The following conclusions were determined from the data:

1. There were no significant differences in attitudes toward handicapping conditions between those subjects with a special education minor and those with a non-special education minor.
2. There were no significant differences in attitudes toward handicapping conditions between those subjects with no experience and those with one or two years experience.
3. An extensive analysis of the data was not warranted because of the selective factor of the original subjects and because of internal invalidity due to differential mortality.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1975
Floyd W. Ayers, Chairperson

LONG TERM FOLLOW-UP OF LEARNING DISABLED CHILDREN

Thad M. Kranz

This follow-up study is a correlational descriptive project that compares the status of third grade learning disabled children and a stratified random sample of third grade children with their academic status upon completion of their public school career. Specifically, it examines the correlation between diagnostic data and measures gathered by the School Neurological Project in the year 1963-64 with measures of educational outcome such as graduation from high school, grade point average, high school rank, days absent, and Iowa Basic Language and Arithmetic test scores.

Descriptors of the outcome of the individual's academic career were treated as dependent variables. The 1963-64 diagnostic and demographic data: sex, social economic status, Bender Gestalt Motor test scores, Porteus, Maze test score, Wide-Range Achievement test, WISC, ITPA, Neurological examination and EEG ratings were treated as independent variables.

Two analyses were made: first, the learning disabled children, called the "Clinical Group" and the stratified random sample called the "Control Group" were compared on the academic outcome variable. Second, a step-wise multiple regression analysis was conducted. The findings, on comparing these two groups were: (1) that the variables: graduation, grade point average, high school class rank, and days absent show no significant difference between the "clinical" and the "control" group. Except for days absent, the achievement in these variables might be attributed to the accommodations made by the school district to meet the

individual needs; (2) objective measures of school achievement such as grades in required subjects and the Iowa Basic Test scores consistently showed significant difference between the Clinical and Control Groups with the Control Group being considerably more successful.

Two statements can be made of the second analysis which examined the possibility of predicting secondary school careers on the basis of the diagnostic and demographic data available. First, on those descriptors of secondary school careers that have a restricted range, the amount of variance that can be accounted for by the third grade data is limited. Second, on the more objective measures of school achievement the predictive capacity of the third grade diagnostic and demographic variables was considerably greater.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976
Stanley Knox, Chairperson

DIFFERENCES IN MALE AND FEMALE TEACHERS RATING SPECIAL LEARNING BEHAVIORAL PROBLEM MALE AND FEMALE STUDENTS

Elaine M. Landrigan

PROBLEM: This study was concerned with the ability of teachers to make accurate assessments of pupils referred for an SLBP problem. Specifically, the study attempted to answer these questions:

1. Does the sex of the teacher have any relationship to the assessments made based upon the sex of the student referred?
2. Does the subject matter field of the teacher have any relationship to the assessments of students?

PROCEDURE: A behavioral and performance assessment, the Secondary Classroom Behavioral Assessment, was completed by 87 teachers, 58 males and 29 females in St. Cloud Public School District 742. The students in mathematics, English and social studies referred for Special Learning Behavioral Problem services were rated by the participating teachers. The sex of the teacher in relation to the assessment based on the sex of the student was analyzed by use of the t-test and analysis of variance.

RESULTS: A significant relationship was found on behavior and performance in social studies and on performance in mathematics when female teachers rating male students was compared to female teachers rating female students. Significance was found in social studies behavior between the different way male teachers rated boys than the way female teachers rated boys or girls. Other significance in social studies was found in comparing male and female teachers each rating the opposite sex on performance.

APPROVED BY RESEARCH COMMITTEE, JUNE 1976
James F. Lewis, Chairperson

AN EVALUATION OF THE ST. CLOUD GRADUATE INTERNSHIP PROGRAM IN SPECIAL EDUCATION

Nancy Jane Latini

PROBLEM: The purpose of this study was to provide some evidence regarding the effectiveness of the St. Cloud Graduate Internship Program in the Minneapolis Schools. The study compared a group of special education teachers who received intensive training and support during their first year of teaching experience with a group of special education teachers who had not gone through the same training program but who have been teaching for an equal number of years in the same school system.

PROCEDURE: The two samples in this study consisted of teachers in the Minneapolis Public Schools' Special Education Program. The first group consisted of all of those teachers who have completed the internship program within the last five years. This totaled twenty-five teachers. An additional twenty-five teachers were selected from the Minneapolis Special Education Program matched on years of experience in this school system with the interns. A field

questionnaire was developed and distributed to all fifty of these teachers. Comparisons were made with regard to advanced degrees and credits beyond degree, salaries, professional expectations, organizations, and activities. All fifty teachers also ranked, on a five point scale ranging from not effective to highly effective, how their first year helped them in development of teaching methods and materials, acquaintance with district and community resources, development of management skills, acquaintance with professional literature and organizations, and rating the supervision of the program. Interns will also be asked to respond with regard to their feelings on the financial arrangements of the internship.

FINDINGS: The results indicated significant differences between the Intern and Non-intern groups. A t-test yielded significant differences between the means on each item, except salary.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1975

Stanley C. Knox, Chairperson

ACCEPTANCE OF TRAINABLE MENTALLY RETARDED STUDENTS BY REGULAR ELEMENTARY STUDENTS IN AN ELEMENTARY SCHOOL

Richard E. Lubansky

PROBLEM: The purpose of this study was to explore the relationship between the regular elementary students' sex, exposure to TMR, age and reading achievement, and his acceptance of previously isolated TMR students in a regular elementary school setting.

PROCEDURE: A sociometric questionnaire, the Peer Acceptance Scale, was administered to 220 regular elementary school students in grades one through six to determine their acceptance of eight TMR students participating in a partial non-academic mainstreaming program. Subjects were stratified by age and reading ability, then randomly sampled. A group (10-12 students) questionnaire was administered to the intermediate grades and the same questionnaire was administered individually to the primary grades. The results were analyzed by use of the chi-square technique.

RESULTS: A significant relationship between acceptance scores and involvement in a tutoring program was found. The sex of the rater was also found to be significant. Areas not found to have a significant relationship with acceptance scores were: physical proximity to the TMR student, grade level of the regular student, reading achievement of the regular student, and the way the regular student rated other regular students in comparison to the way they rated the TMR students.

CONCLUSIONS: It was concluded that some attention should be made to the maximum utilization of a tutoring or similar self-selection program when attempting to integrate TMR students. The sex of the tutor or classmate assigned to work with the student should also be considered. It appears that acceptance of TMR students by regular elementary students can be achieved in a regular elementary school.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1975

James F. Lewis, Chairperson

A JUNIOR HIGH NEEDS ASSESSMENT OF LEARNING AND BEHAVIOR PROBLEMS

Gwen Hall Martinson

PROBLEM: The purpose of this needs assessment was first to identify those junior high age students with the most severe learning and behavior problems in the Minneapolis Public Schools. Secondly this study attempted to evaluate those students to determine what characteristics are associated with learning and behavior problems in this age population. Third this study determined how many students exhibit such characteristics and where they were located.

PROCEDURES: The population of this study consisted of all of the eighth grade students enrolled in the Minneapolis public and non-public schools during the 1975-76 school year. Using grades, teacher ratings, student ratings, achievement tests, attendance data, and referral information, all eighth graders were screened and the 15% exhibiting the most severe problems were selected for individual assessment. Cards containing the data for each of the needs assessment variables for each student were punched for computer processing. Scores on all variables were converted to standard scores and means and standard deviations were computed for each variable. All scores were summed for each student so that those receiving the highest scores had the most severe problems.

FINDINGS: The results indicate a mean academic performance at the fourth grade level. Students were receiving poor grades, mostly below C. Absences and suspensions were high. Teachers rated this group of students as having moderate to severe problems. Students rated themselves much the same as teachers in the learning area, but they rated their behavior as fair. The students do not have high anxiety and their opinions of school are varied. Lastly it appeared that 4.5 to 6.0% of the students have characteristics that could be described as severe in the areas of learning and behavior problems.

APPROVED BY RESEARCH COMMITTEE, MAY 1977
Stanley C. Knox, Chairperson

AN INVESTIGATION OF FUNCTIONAL WORD IDENTIFICATION AND PRACTICAL APPLICATION WITH TMR ADOLESCENTS

Mary Muir-Hay McLagan

PROBLEM: It was the purpose of this study to determine whether trainable mentally retarded students within the IQ range of 30-50 had the capacity to read a list of functional words in two stimulus mode situations and to employ the concept of the functional words in a third stimulus mode situation. A second purpose was to determine the extent of capacity to read the words and to employ the concepts of the words as related to (1) sex and (2) IQ.

PROCEDURE: Twenty TMR adolescents were administered the Stimulus Mode Slide Presentation, which included slides from three stimulus mode situations: (1) a functional word, (2) an environmental situation which included a functional word sign, and (3) an environmental situation minus a functional sign but where one would be appropriate. The eight functional words used in this study were hot, danger, men, RR, bus, stop, telephone and ladies. Subjects responses to the signs were recorded and an analysis of variance computed between the three stimulus modes and the subject's responses as related to sex and IQ. An analysis of variance was also computed between the three stimulus modes.

RESULTS: A difference beyond the .01 level of significance was found between IQ groups on their ability to respond to the three stimulus mode situations. In all cases, the 40-50 IQ groups obtained significantly higher scores than subjects from the 30-39 groups.

The results also suggested no significant difference in the ability of boys or girls to respond to the three stimulus mode situations. In addition, no relationship existed between subject responses to the slides and the mode of presentation.

CONCLUSIONS: IQ appeared to be a predictor of success in sign reading. A review of individual subject scores as indicated by responses to the stimulus modes, suggested that it may be realistic to teach TMR's, particularly those with IQ's under 39, to respond appropriately to and to protect themselves in the environment by a means other than reading.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1974
James F. Lewis, Chairperson

THE EFFECT ON SPELLING MASTERY OF INSTRUCTION EMPLOYING A MULTI-SENSORY STUDY TECHNIQUE

Judith I. Nelson

The purpose of this study was to determine whether seventh grade students would profit from instruction in a multi-sensory approach for studying spelling words.

PROBLEM: Will seventh grade students who have received instruction in the use of a multi-sensory method for studying spelling words achieve higher scores on spelling tests than students who do not receive this instruction? For analysis and testing the following null hypotheses were formulated:

Hypothesis I. There is no significant difference between the mean score of the group receiving instruction and the group which did not receive instruction.

Hypothesis II. There is no significant difference between performance in two points in time within the group receiving instruction in the study method.

PROCEDURE: Subjects for this study were four academically heterogeneous seventh grade English classes. Two were designated as experimental (those receiving instruction in the study method) and two as control. For purposes of analysis, the two experimental groups and the two control groups were combined.

The four spelling tests were constructed using *The New Iowa Spelling Scale* (Green, 1954) and had a mean level of difficulty of approximately 50 percent. Students were given a set amount of study time in each of three weeks, then Tests I, II, III were given. After a lapse of four weeks, study time was provided and Test IV, consisting of new and review words, was given. A one-way analysis of variance was used to test the effectiveness of the procedure.

FINDINGS: On the basis of statistical analysis, the null hypotheses for both *Hypothesis I* and *Hypothesis II* were accepted.

CONCLUSIONS: The results of this study indicate that a brief exposure of seventh grade students to a multi-sensory method of studying spelling does not result in higher mean scores on spelling tests. Informal observation indicates that seventh grade students have already established a pattern of study which is not easily altered. However, the multi-sensory approach could possibly be more effective if presented without the strict time limits imposed by this design. Students could then be brought up to a criterion level.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1975
William Lovelace, Chairperson

A DESCRIPTIVE REPORT OF THE CHERRY CREEK KINDERGARTEN SCREENING PROGRAM

Karen Jane Peterson

This study is a descriptive report of the Cherry Creek Kindergarten Screening Program. The program was designed by a committee of special services personnel in an effort to develop an efficient informal screening device. Its purpose is two-fold. It is intended for early identification of children with possible learning problems as well as for the development of performance norms for entering kindergarteners in the Cherry Creek District.

The population for this study consists of 311 children entering kindergarten. Four elementary schools volunteered to participate in the first pilot study that was conducted in 1975.

Three analyses of the study are described. First, an item analysis of the screening instrument is shown. The second analysis illustrates the possible difficulties found in the total population screened. The third analysis deals with the characteristics of the population receiving supportive help in addition to the regular classroom programs.

In the conclusions of the study it is cited that the population performed similarly to the normative expectancies of the test. Though it is questionable that the screening instrument can detect subtle, complex learning problems, it does appear to be an effective procedure for creating an overall picture of a child's strengths and weaknesses.

The program was a success if judged by these results: (1) early identification of children who may be in need of supportive help, (2) the establishment of baseline abilities of entering kindergarteners (3) the support of concrete data, (4) positive professional evaluations (5) and the community awareness of special education programs.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1977
Stanley Knox, Chairperson

HUMAN, PUPPET, AND CARTOON TEACHERS ON SIMULATED TV USING NO-READY/READY SIGNAL TECHNIQUES WITH AN ASSOCIATION LEARNING TASK

Barbara G. Pihlgren

This study examined the effectiveness of simulated TV instruction in a kindergarten setting. It attempted to answer whether or not 1) the format of TV instruction and/or 2) the technique of TV instruction effect(s) the acquisition of unfamiliar labels for common objects by kindergarteners.

This study used a list of words for common objects taken from the Peabody Picture Vocabulary Test (PPVT). These six words were translated into their Finnish equivalents. Drawings of these six objects were made on individual cards and on four-item-multiple-choice format cards. Corresponding concrete objects were also used. Three video productions and two audio productions were made. Each production was seven minutes long. Each video production was interchangeable with the other video productions, and each audio production was interchangeable with the other audio production so that the video and audio productions could be paired in every possible combination. The treatments were randomly assigned to each kindergartener and the tester was not aware of the treatment assigned to any kindergartener. The test consisted of 60 four-item-multiple-choice format cards. An analysis of variance was used to analyze the data.

FINDINGS: This study found that for Variable A: human, puppet, or cartoon teacher; the teachers differed at the .05 level of significance in their effectiveness in effecting the acquisition of unfamiliar labels for common objects by kindergarteners. For Variable B: no-ready/ready signal technique, the techniques did not differ at the .05 level of significance. The F for the A x B interaction was also below the .05 level of significance.

APPROVED BY RESEARCH COMMITTEE, JULY 1976

Floyd W. Ayers, Chairperson

EVALUATION OF A PROGRAM FOR SPECIAL NEEDS STUDENTS IN A CORRECTIONAL INSTITUTION

Gayland Ridley

PROBLEM: It was the purpose of this study to evaluate a program designed to meet the special educational needs of educationally deprived students conducted at the Minnesota State Reformatory for Men.

PROCEDURE: Fifty-two subjects were administered all subtests of the Peabody Individual Achievement Test (5), and the Wide Range Achievement Test (3). A correlation between the differences on these subtests were measured by pre- and post-tests administered four months apart. An analysis of variance was assessed to see if the Title I Program has had an effect on the academic and behavioral success of the subjects.

RESULTS: Significant gains in academic achievement, at the .001 level of confidence, was found between the pre- and post-test scores on all subtest of the Peabody Individual Achievement Test and the Wide Range Achievement Test over a four month period of time when used with a group of adjudicated adults.

There was no difference in the gains in academic achievement between those subjects who were incarcerated for crimes against persons and those who committed crimes involving property. Length of sentence was not a significant factor affecting academic achievement. The amount of time remaining until the next parole board hearing had no effect on gains in academic achievement, except possibly in the area of spelling. The amount of time a subject has spent in the institution was not a variable which is related to academic achievement. In general, there appears to be very little evidence that there is a relationship between academic achievement and behavior problems in this type of institution.

CONCLUSIONS: The results of the study show that the subjects gained in academic skills over a four month period. There were no significant differences on gains in achievement when adjudicated adults were grouped according to traditional institutional factors such as: 1) Type

of offense; 2) Time before next appearance before the parole board; 3) Time in the institution; and 4) Length of sentence.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1975

Stanley Knox, Chairperson

THE EFFECTS OF INSERVICE TRAINING ON ATTITUDES OF PRIMARY AND INTERMEDIATE TEACHERS TOWARD LEARNING DISABLED STUDENTS

Jerry W. Robicheau

PROBLEM: It is the purpose of this paper to determine if inservice training will have a significant effect on attitudes of primary and intermediate teachers toward learning disabled students. There were two null hypotheses examined. 1) There will be no significant differences between the pre and post mean on the attitudinal survey for either the primary or intermediate teacher groups. 2) There will be no significant differences between pre and post inservice administration of at least sixteen out of thirty statements on an attitudinal survey for either the primary or intermediate teacher groups.

PROCEDURE: One-hundred and seventy-six elementary teachers were involved in a thirty-hour inservice training. They were set up in two different groups. One consisted of primary teachers and one intermediate teachers. The inservice was structured to present a model for mainstream learning disabled students. Each participant was requested to respond to an attitudinal survey based on a Likert model at the start and conclusion of the inservice. A t-test was administered to each statement of the survey to determine any significant changes between pre and post inservice. A t-test was administered to the pre and post means to determine the significance of inservice training on attitudes toward learning disabled students by primary and intermediate teachers.

FINDINGS: Significant changes occurred on four of thirty statements for the primary teacher group, and eleven of thirty statements for the intermediate teacher group. There was no significant difference between pre and post inservice means for either the primary teacher group or intermediate teacher group. Both null hypotheses were accepted.

CONCLUSIONS: The study concluded that inservice training did result in some changes in attitude toward mainstreaming learning disabled students.

APPROVED BY RESEARCH COMMITTEE, MAY 1977

William Lovelace, Chairperson

AN ANALYSIS OF COMMUNITY ATTITUDES ABOUT THE PLACEMENT OF PERSONS WHO ARE MENTALLY RETARDED AS EVIDENCED BY A COMMUNITY SURVEY

Ronnie R. Rollins

The purpose of the study was to determine the general attitude of the community toward the mentally retarded, and to test the hypotheses that women are more tolerant of the mentally retarded than men, and that the young are more tolerant than the aged. The hypotheses were tested by way of a questionnaire administered to a representative cross section of fifty residents of St. Joseph, Minnesota.

The results suggest that the members of the community surveyed would be willing to accept the retarded into their community. The results further demonstrate that a significant difference in scores exists between people over and under sixty-five years old. No significant differences appeared between the scores of men and women. This particular community in central Minnesota would be willing to allow community based services and care facilities to develop in their area.

APPROVED BY RESEARCH COMMITTEE, MAY 1976

Floyd W. Ayers, Chairperson

DACTYLOLOGY AS A POSSIBLE STRATEGY FOR SPELLING ACQUISITION FOR SLBP JUNIOR HIGH SCHOOL STUDENTS

Sondra P. Rotenberg

This study investigated whether junior high SLBP students could learn another symbol system, namely dactylogy. The second aspect of this study investigated whether dactylogy can facilitate written spelling skills.

This was a matched pair design. There was one group of non SLBP students matched to the SLBP group on age, sex, school grade, and approximate I.Q. This plan of the experiment measured criteria delivery of 100% delivery of the entire alphabet three times. The rate of acquisition of the SLBP group was compared to the rate of acquisition of the non SLBP group.

When SLBP students learned dactylogy, the second phase of this experiment measured whether manual spelling facilitated acquisition of written spelling skills. The SLBP students were their own control. Before the manual spelling instruction was delivered, the SLBP students were instructed in traditional spelling treatments, and their rate of spelling achievement was measured. After the SLBP students acquired the manual signs, this symbol system was utilized as treatment for spelling deficiencies. The rate of spelling acquisition from dactylogy treatment was compared to the rate of spelling acquisition from traditional treatment.

FINDINGS: SLBP junior high school students learned dactylogy with significantly fewer errors to criteria at the 5% level than non SLBP students. Immediate recall was significantly higher at the 1% level than delayed recall. There was no significant difference between curriculum treatment for spelling acquisition.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1975

Floyd Ayers, Chairperson

HAS LOWERING THE READABILITY LEVEL OF THE MINNESOTA DRIVER MANUAL ENHANCED ITS EFFECTIVENESS AS A TEACHING TOOL?

Corrine B. Schommer

PROBLEM: The inability of students to read with comprehension at their grade level is a constant source of perplexity and frustration to secondary teachers. In Driver Education a prime concern has been how to teach the concepts contained in the Driver Manual so as to enable retarded or reading disabled students to obtain their permits, and ultimately their licenses to drive. Since the Official Manual appeared to be written in a style incongruent with principles of readability, a Special Manual with reduced readability was written. The purpose of the present study was to determine whether lowering the readability level actually enhanced the effectiveness of the Manual as a teaching tool.

PROCEDURE: Pre-and post-treatment scores of students using the Official Manual (readability level 11-12) were compared with scores of students using the Special Manual (readability level 7-8). Analysis of variance and analysis of covariance were employed as the statistical techniques.

FINDINGS: No significant difference between the scores were found, suggesting that factors other than readability influenced students' performance.

SUMMARY: Further evaluations of the Special Manual, compensating for errors in the present study are recommended.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1975

Floyd W. Ayers, Chairperson

A STUDY OF THE RESULTS OF REMEDIATION IN PUBLIC SCHOOL PROGRAMS

Mabel C. Schultz

PROBLEM: The purpose of this study was to determine if reading achievement scores of students who received remedial service differed from students who received no remedial service.

PROCEDURE: The sample for this study was drawn from a group of students scoring below the fiftieth percentile on the reading subtest of the Iowa Test of Basic Skills in the third grade, and enrolled in the tenth grade class at a senior high school in a predominantly rural community. Two groups were formed consisting of eighteen students who had received remedial service and fourteen students who received no remedial service. The third grade reading achievement scores were compared to the tenth grade reading achievement scores on the Iowa Test of Educational Development.

The Peabody Picture Vocabulary Test was administered to the remediated group and remediation time was determined. The classroom adjustment of the two groups was determined using a teacher questionnaire.

FINDINGS: The results indicated no significant difference in the reading achievement of students having received remedial service and students never having received remedial service when a t-test was applied. A t-test yielded a significant difference between the means on classroom adjustment. Chi square failed to yield that either the length of remediation time or the intelligence of the remediated student produced significant effect on student reading achievement results.

APPROVED BY RESEARCH COMMITTEE, MAY 1975

Stanley C. Knox, Chairperson

A SOCIOMETRIC STUDY OF THE SOCIAL ACCEPTANCE OF HANDICAPPED STUDENTS IN AN INTEGRATED SETTING

Barbara J. Stahl

PROBLEM: The purpose of this study was to determine whether contact with physically handicapped students improved their sociometric acceptance scores as judged by their peer group.

PROCEDURE: The sample for this study was drawn from the third and fourth grade children enrolled in Como Elementary School, St. Paul. A socio-metric survey was administered a few days after six physically handicapped students were integrated into the mainstream and again following eleven weeks of contact.

A free time activity was monitored in one class through use of photographs directly following the test, re-test sociogram.

FINDINGS: The results indicated no significant differences between test, re-test sociogram scores of the physically handicapped. A Chi-Square yield significant results between sociogram choices and actual free time activity choices.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976

Stanley C. Knox, Chairperson

MAINSTREAM TEACHER PERCEPTION OF CHILDREN IDENTIFIED AS LEARNING HANDICAPPED AND OF CHILDREN NOT IDENTIFIED AS LEARNING HANDICAPPED AS A FUNCTION OF ANECDOTAL RECORDING

Phillip M. Vaudt

cumulative file folder of a student identified as learning handicapped differed from the descriptors used in the cumulative file folder of a student not identified as learning handicapped and (2) if there was a difference between the descriptors, were the descriptors negative or positive.

PROCEDURE: The sample consisted of 34 elementary students from four grade levels, third grade through sixth grade inclusively. The students were divided into three groups of ten and one group of four. The groups were entitled: (a) Low Achiever Identified Learning Disabled, (b) Low Achiever and not Identified as Learning Disabled, (c) High Achiever, and (d) Retained. The fourth group was dropped from the study due to low incidence.

A content analysis was done on each student's cumulative file folder using a list of 20 descriptors, twelve negative descriptors and eight positive descriptors. The content analysis on the cumulative file folders was computed twice, one by a professional, the other by a non-professional to insure reliability.

FINDINGS: The content analysis indicated that the student previously and presently labeled SLBP had a greater number of negative descriptors and the negative descriptors were more frequently used in the cumulative files of this group than any of the other three groups. There were, also, less positive descriptors used with this group than any of the other three groups. However, the group entitled "Under Achiever Not Identified as Learning Disabled" received a greater number of positive descriptors than any of the other three groups.

CONCLUSIONS: Teacher impressions of the student identified as learning handicapped were different from and more negative than teacher impression of the student not identified as learning handicapped.

APPROVED BY RESEARCH COMMITTEE, MAY 1977

Floyd Ayers, Chairperson

COLLEGE OF FINE ARTS

ART

ALTERNATIVES TO THE LETTER GRADE SYSTEM IN JUNIOR HIGH ART PROGRAMS

Charles N. Demm

PROBLEM: Changes that have taken place in the student cannot easily be expressed by such symbols as letter or numerical grades. Due to the limitations imposed by traditional methods of assessment, new designs for evaluation have resulted. This study was concerned with the use of two methods for grading 7th grade art students in an attempt to discover student and parent attitude about grading. The following is the development and outline of this research.

1. The two methods of grading 7th grade art students over a period of two marking periods included the letter grade system and a personal self-evaluation system.
2. Students received a questionnaire after experiencing both marking systems. The purpose of the questionnaire was to provide the opportunity to make comments and possibly indicate a preference for one of the marking systems.
3. Parents also received a questionnaire after receiving the results of both marking systems. The purpose of the questionnaire was to provide the opportunity to make comments and possibly indicate a preference for one of the marking systems.
4. Responses from the questionnaires given to the students and the parents were reviewed to summarize student and parent reactions to the letter grade or personal self-evaluation system.
5. Recommendations and alternative methods for grading junior high art students are suggested, based on a review of the responses of this study.

SUMMARY: An analysis of the data researched indicates a definite need and natural interest on the part of students to participate in grading themselves. Pressures which result from being compared to other students eliminate the possibility for students to learn at their own rate, according to their own capabilities, thereby creating an atmosphere undesirable for sound learning.

Evidence also points to some parent dissatisfaction with present methods of reporting which do not provide them with enough information about student strengths, weaknesses or course involvement. Hopefully, this study may encourage other educators to re-evaluate their methods of reporting student growth and development, in art and in other disciplines.

APPROVED BY RESEARCH COMMITTEE, MAY 1977

Gerald Korte, Chairperson

A STUDY OF AESTHETIC VOCABULARY USED BY BOYS VERSUS GIRLS IN PICTURE JUDGMENT

Meredith Hawkins Henriksen

PROBLEM: The area of aesthetics is intriguing and elusive. Researchers have used the words "like best" to evoke an aesthetic response. The first aim of this thesis will be to determine whether the words "like best" receive the same aesthetic response as the words "most beautiful" when put to children. Secondly, with the concern of educators today regarding sex roles, this thesis will attempt to define differences in aesthetic responses of boys versus girls at three grade levels--first, third, and fifth.

PROCEDURE: The writer selected art reproductions and placed them into three groups according to traditionally used labels: Group A, ones depicting women, soft colors or things of traditional beauty (traditionally labelled feminine qualities); Group B, ones depicting men or boys or painted in bold colors (traditionally labelled masculine qualities); Group C, no people depicted, landscapes, cityscapes, middle range colors (labelled neutral). Four sets were then composed, each containing one Group A, one Group B and two Group C reproductions. Forty students at each of the three grade levels were shown the four sets and asked to choose first the picture they "liked best" and secondly the one they thought was the "most beautiful." The sets were selected eliminating previously researched reasons for aesthetic choice (color, style and content) within each set. The results were tabulated as a whole and according to sex.

FINDINGS AND CONCLUSIONS: The only results that were significant to the .05 level when submitted to t-tests seemed to appear randomly. The sets, therefore, did not seem to all test the same things. To the contrary, the results seemed to be either so personal to each child that his or her sex was not a factor or the results appeared to be wholly dependent on the particular pictures used in each set. Choices were either made with originality or with some pattern that was not tested here.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1975

Lee Gutteter, Chairperson

ART AS A THERAPEUTIC UNIT FOR CHILDREN WITH LEARNING DISABILITIES

Charles H. Henthorne

PROBLEM: The purpose of the study was to develop a trial program using art as a therapeutic means for working with a child with a learning disability. These children were of average I.Q., of a middle socio-economic background who have limited perception difficulties. These children also had a poor "Self-Concept".

PROCEDURE: Fifteen students, grades one through six, from Shirley Hills School in Mound, Minnesota, were the subjects in the study. All subjects were participating in the S.L.B.P. classes in the school. A series of perceptual pre- and post tests was given and a case study was made of each subject. Each student had at least thirty one-hour sessions of art therapy concentrating on the different areas of visual perception.

FINDINGS:

1. In all six grade levels, there was very little trouble with tactile ability.
2. There was very little improvement in the test group's visual perception difficulty.
3. In all six grade levels, there was very little change in the attention span of the subjects.
4. In all six grade levels, there was an improvement in the subjects' feeling of belonging to a group, during the time of the experiment.
5. In all six grade levels, there was improvement in the child's self-image.

SUMMARY AND CONCLUSIONS: In developing the experience for the experimental group, as many creative art processes as possible were used. While this helped build the child's self-image by accomplishment, perhaps perceptual difficulties could be better worked with by more simplified geometric shape projects. It would also suggest a longitudinal study to see if there would be any improvement in the visual perceptual difficulties the subject possessed.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1974

Lee J. Gutteter, Chairperson

A COMPARISON OF A DISCOVERY METHOD AND A TEACHER-DIRECTED APPROACH TO TEACHING COLOR FUNDAMENTALS TO SEVENTH AND EIGHTH GRADE ART STUDENTS

Kathryn Hovey-Kahlenbeck

The objective of this study was to compare a discovery approach and a teacher directed method of teaching color fundamentals to seventh and eighth grade art students.

One hundred students participated in the four week experiment. Fifty seventh and eighth grade students learned under a discovery approach while the other fifty seventh and eighth graders learned under a teacher directed approach. During the four weeks, four consecutive and parallel projects were given each group. The first project involved mixing primary and neutral colors. During the second project the emphasis was on color matching of flat colors. In the third project students worked with color relationships. During the fourth project, the same for both groups, students were asked to choose their favorite colors and paint a design using those colors. This set of 100 paintings was used to evaluate the two groups. Two junior high art teachers judged each of the 100 paintings in three areas (A-the use of mixed colors; B-the quality of mixed colors; and C-the relationship of mixed colors) and awarded the appropriate number of points, scaled to provide proportionately increased points for use of colors requiring an increased amount of planned mixing.

Four sets of two-sample T-tests were administered so that conclusive data could be established. In two sets of T-tests no significant differences existed between the two teaching methods. In the third set of T-tests the pooled scores of the judges in categories "A" and "C" of the discovery group's projects did not differ significantly from the pooled scores of the judges in categories "A" and "C" of the directive group's projects. In category "B" a significant difference did exist at the .05 level. In the fourth set of T-tests the scores of the two judges were compared in each of the three categories, and significant differences were found in each of three categories, each at the .01 level.

Other than category "B" in the third set of T-tests, no significant differences were determined between the discovery and the directive group's scores. The significant differences did occur between the overall scores of the two judges, indicating that the judges evaluated the paintings differently. This may indicate that the personalities of the judges or some other variable affected the judging of the paintings. If personality affects judgment this easily, it may be that teacher personality is a stronger aspect of teaching than the technique used.

APPROVED BY RESEARCH COMMITTEE, MAY 1977

Lee J. Gutteter, Chairperson

THE EFFECT OF DIRECT SENSE STIMULATIONS ON THE ART WORK OF ELEMENTARY STUDENTS

David J. Jacobson

Our knowledge is gained through our senses. This knowledge is contained within the schemata of children. With a sound knowledge of this schema we may be able to identify those children who are lacking in sense stimulation.

Two groups of children in the schema stage of development were given two drawing assignments. Group one had a discussion of their experiences with the objects of the drawings. Group two had a direct sense stimulation with the objects of their drawings along with the discussion. During the second drawing assignment the groups were reversed. Group one became the sense stimulation group and group two became the discussion group.

Through an analysis of the drawings a difference was identified that affected 83 percent of both groups during the direct sense stimulation drawings. This difference did not affect any students without the direct sense stimulation.

The judges, without having the chance to analyze the drawing, had no way of being aware of this particular difference. With the differences that the judges were able to identify there was significant agreement in their judging.

Children's art does show their knowledge which is the sum total of their sense stimulations. A direct sense stimulation affected the way this information was used to produce a drawing.

Through more testing and analysis of children's drawings a method of establishing norms to identify those deprived of sense stimulation could be developed. These children could then be treated avoiding maladjusted adulthood.

APPROVED BY RESEARCH COMMITTEE, MAY 1977

Gerald Korte, Chairperson

LANDSCAPING--AN ALTERNATIVE METHOD FOR THE STUDY OF THE DESIGN ELEMENTS IN SEVENTH GRADE ART

Jeff G. Johnson

PROBLEM: This research endeavors to discover whether the study of landscape architecture might provide seventh graders with a new avenue for understanding the design elements--color, line, shape, texture, and space.

PROCEDURE: Two classes of seventh graders from Fred Moore Junior High School served as the control (symbolic) and study (landscape) groups for this experiment. Both groups were taught the design elements, but each through a different method. For the symbolic group a new lesson was introduced to emphasize each element of design. The landscape group, however, prepared a front view of a house of their choice with the landscaping of these houses serving as the key to the instruction of all design elements. In place of individual projects relating to each element, the landscaping served as a design unit itself.

To compare the design capabilities of the symbolic and landscape groups, both were asked to create a found object collage with the results to be graded by three judges on a one to five basis for each design element.

The highest score possible on each element of design was five. Therefore, with five elements being judged, the highest possible total score on the collage was twenty-five.

FINDINGS: The results of the study indicated a total mean score of 18.79 for each student in the symbolic group, and a 19.12 for each student in the landscape group. Therefore, the hypothesis which stated that both groups would be equally informed and knowledgeable design students at the conclusion of their respective design units was accepted.

SUMMARY AND CONCLUSIONS: The results of the study indicate that the quality of art produced seemed more closely associated with the factor of the instructor rather than to the method of instruction. The intense interest of the instructor in this new material may have given an unfair advantage to the landscape group.

It appeared that daily involvement by the landscape group in just one project enabled

them to better transfer the use of the design elements to another project. It seems to have been more difficult for the symbolic group to combine and interact the different design elements, as is born out by their lower mean scores.

Finally, the results indicate that this study could be expanded to include more than one instructor, school, and population. It also points up a continuing need for the identification of the variables involved in the training of the design student, and the lack of reliable testing instruments for studies of this type.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976

Lee J. Gutteter, Chairperson

A LONGITUDINAL STUDY OF THE ARTS AND CRAFTS EDUCATIONAL PROGRAMS FOR THE MENTALLY RETARDED IN MINNESOTA STATE HOSPITALS

Evelyn Jensen Matthies

PROBLEM: This longitudinal descriptive study was concerned with the educational program of arts and crafts for the trainable and educable mentally retarded residents in the Minnesota State Hospitals. The first study completed in 1971 attempted to answer the following questions:

1. When was the educational program for the retarded residents begun?
2. What were the objectives of the arts and crafts program?
3. What type of residents were involved?
4. What media and methods were used?
5. What were the qualifications of the staff?

The second study completed in 1976 included the five original questions in the first survey plus two other questions.

1. What are the implications of art as therapy for the mentally retarded residents in Minnesota State Hospitals?
2. What are the changes that have taken place during the five year span?

PROCEDURE: A listing of the state facilities with mentally retarded residents was obtained from the *Minnesota Directory of Referral and Rehabilitation Resources*. A questionnaire was sent to the ten state facilities in 1971 and again in 1976. The results of the surveys were tabulated and discussed.

Other methods and procedures used during the progress of the study were: (1) review of literature related to the study to obtain opinions and ideas of others, (2) personal visits to the hospitals for the purpose of observing activities, and (3) interviews and discussions with supervisors.

ANALYSIS OF DATA: The data was tabulated in three categories: (1) background information including types of patients and types of staffing, (2) media and miscellaneous information, and (3) stated objectives in order of importance to the art program. Comparisons were made between survey results from the ten state facilities contacted in 1971 and 1976. Evaluations were made through utilization of criteria for appraisal of the arts and crafts program as recommended by the Wisconsin Public Welfare, Division of Mental Hygiene and the American Association for Mental Deficiency, American Educational Research Association.

SUMMARY AND CONCLUSIONS: All Minnesota State Hospitals with mentally retarded residents do not have an arts and crafts program. Those that do have such a program seem to stress an educative process with the most important result being modification of children's or residents' behaviors, intellectually, emotionally and socially. It seems the development of manipulative skills has taken precedence over joy of satisfaction in self-expression related to the state objectives. Numerous changes have taken place during the five year span.

RECOMMENDATIONS FOR FURTHER STUDY: The results of this study were used to determine the feasibility and content of a course in art education to be offered college students enrolled in a two year Child Development Course at Brainerd Community College, Brainerd, Minnesota. Further exploration and study in course content and objectives is recommended.

This study was not designed to include the total population of mentally retarded

in state hospitals. A study in the use of art media for the severe and profound mental retardates is suggested.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976
Gerald Korte, Chairperson

MUSIC

THE DEVELOPMENT OF A COURSE OF STUDY IN PIANO FOR A BLIND ADULT

Dorothy J. Simpson

PROBLEM: The purpose of this study was to design a method of teaching piano that would circumvent the need for print or music braille in attaining functional skills at the piano.

PROCEDURE: Weekly lessons of one hour in length were given to a blind adult who had requested them. Component parts of the course of study were suggested to the writer/teacher by a review of related literature, knowledge of basic piano methods, previous experience in teaching sighted and non-sighted students and conversations with others working with the blind in music.

FINDINGS: After ten weeks of study, there has been considerable progress in four major areas:

- (1) awareness of keyboard topography
- (2) knowledge of music theory
- (3) dexterity on the keyboard
- (4) relearning of previous repertoire

CONCLUSIONS: Although considerable progress was made through the use of varied materials and techniques, this method offered no opportunity for objective evaluation and comparison. To provide this opportunity, a course of study was designed by this writer to accompany and adapt an existing comprehensive piano instruction text. This course of study incorporated the techniques used in the experiment in a more structured approach.

APPROVED BY RESEARCH COMMITTEE, APRIL 1977
Shirley L. Schrader, Co-Chairperson
Stanley C. Knox, Co-Chairperson

AN ANALYSIS AND DEVELOPMENT OF A VOCAL MUSIC PROGRAM IN THE INTERMEDIATE GRADES

James E. Tyssen

This study investigated the singing program in the intermediate grades in terms of how to motivate children, what goals are practical, what the child's voice is like, and what negative aspects of a program can be avoided. Attention was given to the following areas: Posture, diction, breathing, phrasing, range, voice registers, tone quality, the teacher's voice, pitch, part singing, and seating.

Besides a review of the literature on the subject, interviews were conducted with nine teachers regarded as experts in the field of elementary vocal music. The interviews were recorded on tape and later transcribed and condensed by the writer.

The research showed that posture in singing must be erect and relaxed so that air flows from the bottom of the lungs. In the area of diction, vowel sounds should be sustained and consonants sung quickly in unison. Proper breathing in singing comes from good posture, breathing exercises, keeping arms and shoulders straight, and not holding the breath before singing. As for phrasing in singing, the children should help to place breaks where they are needed in songs, thus giving the children a sense of the meaning of the music. The range of

most intermediate grade children was found to be from middle C to top line F, and care should be taken not to strain the voice in extreme range limits. Evidence showed that the head voice and not the chest voice should be used. The study of tone indicated that the tone of a song must be determined by the composer's intentions. An important factor is the teacher's voice, which should be simple, on pitch, and easily imitated. Research found that children can learn about pitch through pitch matching exercises. Uncertain singers can be helped by individual attention and realization of why they are hesitant about singing. A final point was that poor singers should not all be grouped together.

APPROVED BY RESEARCH COMMITTEE, JULY 1976

Russell H. Schmidt, Chairperson

COLLEGE OF INDUSTRY

INDUSTRIAL EDUCATION

FUTURISM: POSSIBILITIES AND EMPHASIS FOR JUNIOR HIGH SCHOOL INDUSTRIAL ARTS EDUCATION PROGRAMS

Charles LeRoy Petry

PROBLEM: The researcher dealt with two basic concerns related to the future of industrial arts education at the junior high school level. These concerns were: 1) What possibilities may develop for the future of industrial arts education at the junior high school level? 2) In what span of time may the participants expect these events to occur?

PROCEDURE: The industrial arts teacher education institutions of Iowa and its contiguous states were surveyed by eliciting the participation of four department chairpersons from each state. This ordered selection of department chairpersons participated by establishing future possibilities and their expected time of occurrence.

The technique used for research was a Delphi probe which was administered in a survey from two mailings. They were: 1) Department chairpersons were asked to identify possibilities for the future. 2) The department chairpersons established a time span in which the event was expected to occur.

FINDINGS: A questionnaire containing forty-one unique items, generated by the department chairpersons, was mailed to the department chairpersons asking for a time expectancy on each item. Seven events attained an agreement of more than fifty percent. Five of these events were expected to occur within the next five years. They were: 1) There will be much more emphasis on serving girls in junior high industrial arts. 2) The junior high industrial arts will be expected to teach more general industrial arts education. 3) Students will make use of the American Industry Enterprise Experience wherein groups of students formulate a corporation and operate it as the delivery system used to teach industrial arts education. 4) The role of the industrial arts teacher will change from that of a dispenser of facts to that of a facilitator of learning. 5) Individual discovery of talents, interests, and potentials through industrial arts education. The remaining two of the seven events that attained an agreement of more than fifty percent were expected to occur within the next six to ten years. They were: 1) Industrial arts will develop content which will help change the attitude of people towards conservation of natural and human resources. 2) Emphasis will be on conceptual themes derived from science and which will find application in technology, industry and careers.

SUMMARY: The department chairpersons that participated in this study generated forty-one events, of which seven attained an agreement of a majority of the participants. These events may serve as an indicator of what the future will hold for industrial arts education at the junior high school level.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1977

Gerald E. Nestel, Chairperson

COLLEGE OF LIBERAL ARTS & SCIENCES

BIOLOGY

FISH POPULATIONS OF THE MISSISSIPPI RIVER NEAR BECKER, MINNESOTA

Brian L. Barelis

A total of 3,939 fish were collected with a direct current electro-fishing boat from a 3.6 km stretch of the Mississippi River near the Northern States Power Company Sherburne County Generating Plant at Becker, Minnesota during 1975. Species composition of this area, numbers, and habitat preference of the major fish species were determined.

The shorthead redhorse was the most frequently recaptured species and the Schnabel population estimates for June and August were 6,016 and 7,121, respectively. The September (Peterson) estimate was 4,920. The biomass was 157 kg/hectare and the catch per unit effort averaged 48 fish/hour. The shorthead redhorse was found in well-oxygenated, fast flowing riffle areas.

The carp had the greatest biomass (223.96 kg/hectare) of the major species. The August (Schnabel) population estimate of 5,327 was less than the June estimate of 18,040, probably due to increased recaptures since catch per unit effort was 29 and 21 fish/hour for June and August, respectively. The carp preferred slower moving water, backwaters, and protected areas.

The black crappie also had an average catch per unit effort of 24 fish/hour, but ranged from 45 fish/hour during June to 13 fish/hour during September. The June (Schnabel) population estimate was 11,670 while August was 1,581. During June the crappies were found spawning along the river edges and during August and September in the backwaters. The black crappie biomass was 17.70 kg/hectare.

The white sucker had a June (Schnabel) estimate of 839 and an August estimate of 254. They preferred slower moving water with a rocky substrate. The catch per unit effort was 5 fish/hour and they had a biomass of 8.12 kg/hectare.

One silver redhorse was recaptured during August (Schnabel) and September (Peterson) resulting in population estimates of 1,695 and 104, respectively. The catch per unit effort was 5 fish/hour and their biomass 83.94 kg/hectare. They were found in a habitat of slightly slower and deeper water than the shorthead redhorse.

A smallmouth bass was recaptured during September (Peterson) and resulted in an estimated of 895. This compared favorably to the Schnabel estimate combining the three months, of 897. They were found near large boulders just at the edge of the fast current. The average catch per unit effort was 3 fish/hour and the biomass was 6.14 kg/hectare.

APPROVED BY RESEARCH COMMITTEE, JUNE 1976

Alfred J. Hopwood, Chairperson

OLIGOTHERMAL DIATOM COMMUNITY BIOASSAY ON SULFATE TOLERANCE

James Vincent Bestick

A closed system bioassay apparatus was designed to test the effects of sulfate ions on an oligothermal epilithic diatom community. This research was conducted to determine the concentration of sulfate that inhibits community growth by 50% in a 6-day period. Sulfate as $MgSO_4 \cdot 7H_2O$ was used at concentrations ranging from 500 to 2500 mg/l.

A closed bioassay system, with a test and a control, was used to test sulfate concentrations. Identical light intensities of 450 foot candles, current speeds of 23 cm/sec, and temperatures of 10°C were maintained. Test organisms were naturally occurring benthic diatoms of the Mississippi River introduced by seed from river bed rocks. The diatoms that eroded off the rocks naturally colonized glass slides prior to spiking the system with magnesium sulfate.

After the sulfate spiking treatment, changes in community growth were recorded

over a 6-day period. In the tests system, growth was stimulated at lower concentrations and inhibited near the upper end of the range. By plotting community growth rate against sulfate concentrations, growth was shown to be inhibited by 50% at a concentration of 1650 mg/l.

APPROVED BY RESEARCH COMMITTEE, MAY 1977

Keith M. Knutson, Chairperson

Y CHROMOSOME LENGTH AND PERSONALITY TRAITS IN HUMAN MALES

Thomas J. Danzl

Since 1965 studies have shown that individuals with the XYY syndrome tend to be taller and more aggressive than normal males. More recent studies have shown that the same characteristics correlate highly with Y chromosome length in normal males. A group of 32 male college students were studied for Y chromosome length, height and scores on the fifteen scales of the Edwards Personal Preference Schedule. A slight, non-significant correlation was found between Y length and height. A significant negative correlation was found between Y length and achievement. All other correlations were small and non-significant. A brief survey of the literature is presented and the correlations are discussed.

APPROVED BY RESEARCH COMMITTEE, JULY 1977

Carol M. Pou, Chairperson

NESTING AND BROOD REARING HABITAT OF THE UPLAND SANDPIPER IN CENTRAL MINNESOTA

John C. Dorio

The upland sandpiper population breeding in central Morrison County, Minnesota was studied from 1975 through 1976. Upland sandpipers arrived on the study area on 1 May 1975 and 20 April 1976.

Twenty-one adults were marked with humeral wing-markers during 1975 and 1976 in order to follow their movements. Two of eight (25%) adults wing-marked in 1975 returned in 1976.

Mating behavior consisting of aerial and tail-up displays was observed. Agonistic behavior involving a pair and a single intruder were also observed.

Nesting began about 14 days after the first pairs arrived on the study area. All nests contained a clutch of four eggs.

Nests were found in old fields (73%), pastures (20%) and in a sedge-grass meadow (7%). At the time of discovery, most nests were in vegetation 22.5 to 35.0 cm tall. All nests were near an edge consisting of willow or aspen with an average distance of 13.2 m. The plant species composition of 14 nest-sites consisted of 7 grasses and 23 forbs.

Hatching success averaged 84 percent for the two year period. Nesting success declined from 66 percent in 1975 to 37 percent in 1976. Drought conditions in 1976 contributed to lower grass densities and probably caused an increase in predation.

Eggs in a given clutch did not pip or hatch simultaneously. The combined pipping and hatching period ranged from 36 to 71 hours. The peak hatching date was 10 June and a second hatching period in July indicated renesting.

Both adults accompany broods to six days of age. Broods over six days of age were accompanied by one adult. Broods remained in the natal areas during the pre-flight stage. All broods were gone from their natal areas by 26 July.

Using the Lincoln Index, the population was estimated to be 46 adult upland sandpipers occupying the 31.2 km² area.

All upland sandpipers left the study area by the end of the first week in August.

APPROVED BY RESEARCH COMMITTEE, MAY 1977

Alfred H. Grewe, Jr., Chairperson

SPAWNING ACTIVITIES OF MAJOR FISH SPECIES IN THE MONTICELLO AREA OF THE MISSISSIPPI RIVER

Lee W. Eberley

A total of 1,497 carp, *Cyprinus carpio* L., 765 shorthead redhorse, *Moxostoma macrolepidotum* (Lesueur), 531 silver redhorse, *Moxostoma anisurum* (Rafinesque), and 295 white suckers, *Catostomus commersoni* (Lacepede) were collected in the vicinity of a nuclear fueled electrical generating plant on the Mississippi River, near Monticello, Minnesota. From 6 April to 14 August, 1974, weekly changes in the mean condition factor, $K(TL)$, and the percentage of fish that liberated eggs or milt when light pressure was applied to the abdomen, were used to indicate time of spawning.

Carp spawned erratically throughout the late spring and summer in backwaters and inundated areas. Eggs in two distinct stages of development in the ovaries of some females suggested a split spawning period. Some of the females did not spawn all of their eggs in 1974. A few male carp matured at age I, but most at ages II-III. Females matured at age III. Mean fecundity for five females ages III-VII was 132,500 eggs.

Shorthead and silver redhorse spawned in early and middle May at water temperatures from 9 to 11 C. Spawning occurred on the upper reaches of riffles in 90-150 cm of water. Current velocities on the spawning grounds ranged from 0.45 to 1.00 m/sec. The substrate consisted primarily of pebbles 16-64 mm in diameter. Male shorthead redhorse matured at age III, females at age IV. Silver redhorse matured at age V. Mean fecundity of five female shorthead redhorse, ages IV-VIII was 34,200 eggs, while five silver redhorse ages VI-X+, averaged 30,300 eggs per female.

White suckers spawned in late April and early May when water temperatures reached 10 C. Spawning grounds were located at the base of riffles, where the substrate was fine pebbles and gravel. Current velocities from 0.85 to 1.65 m/sec were recorded on the spawning grounds. Depths varied between 50 and 105 cm. Male suckers matured at age III, females at age IV. Five IV and V year old females averaged 31,600 eggs per female.

Spawning of the redhorse and suckers was during periods of rising discharge. There was no indication that pre-seasonal spawning occurred for any of the four species studied.

APPROVED BY RESEARCH COMMITTEE, MAY 1975

Alfred J. Hopwood, Chairperson

THE ECOLOGY AND NESTING BEHAVIOR OF THE TREE SWALLOW IN CENTRAL MINNESOTA

Carol M. Fiedler

A study of the ecological factors affecting the nesting of the tree swallow and its colonizing tendencies was conducted from 1965 through 1975. The study area consisted of a scattered 10 square mile area containing 91 nest boxes and five ponds near which a total of 75 nest boxes were closely grouped. The study area consisted of open deciduous woods, pastured river bottomland, and openfield ponds.

Observations were made and data collected from spring to fall. All tree swallows were leg banded to study homing and longevity. Some adults were spray painted to facilitate trapping and the study of feeding patterns.

The average date for the first egg of the year was 16 May. The average date of the first egg in 318 clutches was 26 May. The male often guarded the nest box during incubation which was carried out primarily by the female. Both adults fed the nestlings. Nesting efficiency was about 65 percent.

Although tree swallows nested in isolated pairs, there was a strong tendency to nest as close as possible to previous nest initiations.

Many tree swallows returned each spring to the vicinity where they hatched or where they had previously nested. Two adults reached an age of at least seven years.

Nestling tree swallows remained in the nest box an average of 18.5 days and fledged with adult assistance. No evidence of last pair bonds among tree swallows was found.

Serious competition occurred between tree swallows and house sparrows and to a lesser extent, bluebirds and house wrens. Mammalian competition was negligible.

Non-fatal parasitic blow fly larvae and fleas were found on nestling tree swallows.

Predators destroyed 12 percent and 20.3 percent of the tree swallow nests in the widely scattered and concentrated study areas respectively.

Inclement weather and human disturbance had a minor effect on tree swallow nesting success.

Crowding nest boxes into the concentrated study area both attracted a greater number of tree swallows and increased predation and competition. The nesting efficiency, however, was similar for both study areas.

APPROVED BY RESEARCH COMMITTEE, MAY 1976

Alfred H. Grewe, Jr., Chairperson

THE ECOLOGY OF THE WOOD DUCK IN CENTRAL MINNESOTA

Donald J. Fiedler

A study of the ecological factors affecting the nesting of wood ducks was conducted from 1964 through 1975 on a 33 unit study area in Morrison County, Minnesota. A unit ranged in size from one to one hundred acres.

Ninety-three nest boxes were erected along streams, creeks, ponds, and the Mississippi River. Observations were made and nesting data recorded from spring to midsummer. Most adult female wood ducks were leg banded from 1967 to 1975 and, during two years, ducklings were web tagged to study homing and longevity.

The average date for the first egg of the year was 13 April. Sixty percent of all nests were started in April, 35.6% in May, 3.6% in June. Thirty-eight percent of all nests were dump nests. The average clutch was 15.8 eggs. Incubation was carried out by the female.

Of 278 nest attempts containing 3,603 eggs, 77% were successful in producing 2,711 ducklings, an average of 12.6 per successful nest.

In the spring, wood ducks tend to return to the vicinity where they nested previously. The highest mortality occurs the first year after banding but a few live to be seven years old. Hunters were the most reported mortality factor.

Nest site competition was primarily between wood ducks, kestrels, hooded mergansers and starlings. A small amount of mammalian and insect competition was also observed.

Raccoons were a major predator. Other reasons for egg loss were infertility, early embryo death, abandonment, squirrels, starlings, and human disturbance.

Pair counts and box occupancy both reflect a fluctuating population of wood ducks. High populations were recorded in 1967 and 1975 and low populations in 1972.

APPROVED BY RESEARCH COMMITTEE, MAY 1976

Alfred H. Grewe, Jr., Chairperson

EFFECTS OF A PROPOSED CHEMICAL EFFLUENT FROM A COAL-FIRED GENERATING PLANT ON INVERTEBRATE DRIFT

Ronald Gene Haupt

An artificial stream apparatus was designed to assay the effects on invertebrate drift of the proposed chemical effluent from the Northern States Power Company's Sherburne County Generating Plant located on the Mississippi River near Becker, Minnesota. Two artificial streams with controlled light, temperature, and flow rate were used. The proposed chemical effluent consisted mostly of CaSO_4 and MgSO_4 ; however, various heavy metal sulfates were also present. Chemicals simulating the effluent were added to the test stream two days prior to the beginning of a test. Invertebrate samples for the bioassay were obtained by allowing 1.5 in. x 8 in. x 16 in. cement blocks to colonize in the Mississippi River near the plant site for three weeks. After the colonization period, the samplers were transferred to the artificial streams. A drift net was attached to the end of each stream and changed at the end of 24, 48, 72, and 96 hours. Invertebrates, except for some Diptera, were identified to the genus level. Accumulated percent of drift versus time were plotted in terms of numbers and biomass for the orders Trichoptera, Ephemeroptera, Diptera, and for total organisms at 0%, 50%, 25%, 12.5%, and 6.25% effluent concentration.

Significant increases in % drift occurred in the 24-hour drift sample for the 50%, 25%, and 12.5% effluent concentrations. The % drift in the control stream was subtracted from

that in the test stream ($\Delta\%$ drift) for the 24-hour drift samples. When the $\Delta\%$ drift values were plotted against nominal proposed effluent concentration and linear regression analyses performed, prediction equations were obtained for each of the three orders considered. The slope of these prediction equations indicate the organisms' acute sensitivity to the effluent. The most sensitive organisms based on numbers of organisms were the Ephemeroptera, which had a slope of 0.94 ($R = 0.877$). Trichoptera was also very sensitive with a slope of 0.6 ($R = 0.998$). Diptera was the least sensitive of the three orders and is represented by a square root function ($R = 0.881$).

APPROVED BY RESEARCH COMMITTEE, JUNE 1976

Alfred J. Hopwood, Chairperson

THE EFFECTS OF THE PRE-EMERGENCE HERBICIDES CHLORAMBEN, ATRAZINE, AND ALACHLOR ON GROWTH AND DEVELOPMENT OF LEOPARD FROG, *Rana pipiens* (Schreber), LARVAE

Dean L. Hovey

Groups of 20 *Rana pipiens* larvae were exposed to Atrazine, Chloramben, or Alachlor in a 96-hour, static bioassay. Threshold lethal concentrations of 8.5 ppm and 250 ppm were determined for Atrazine and Chloramben, respectively, for larvae at Taylor-Kollros Stage I. The threshold lethal concentration of Alachlor was 1.5 ppm for larvae at Taylor-Kollros Stage III.

Determinations of growth inhibition, group variability, and examinations for external abnormalities were made 40 days after the termination of the 96-hour exposures at the lethal thresholds of Atrazine and Chloramben.

Atrazine and Chloramben did not significantly inhibit growth under those conditions, but did induce a greater degree of variability in weights, lengths, and developmental stages of the larvae. The larvae exposed to Chloramben showed no physical abnormalities. Thirty-two percent of the Atrazine exposure group showed a skin abnormality resembling warts.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1975

David C. Kramer, Chairperson

TERRITORY, NESTING, AND HABITAT UTILIZATION OF GREATER SANDHILL CRANES IN MORRISON COUNTY, MINNESOTA

Jay M. Johnson

Greater sandhill cranes, *Grus canadensis tabida*, nesting on privately owned lands in central Morrison County, Minnesota, were observed during the breeding seasons from 1973 through 1975. Aspects of life history studied included territory, nesting habitat, reproduction, and temporal selection and utilization of feeding habitat.

Cranes returned to study area and immediately occupied territories in early April. Mean territory size of four breeding pairs was 158 ha (395.5 acres). All territories were large open marshes with varied cover providing suitable nesting habitat and visual isolation.

Vegetation height was an important factor in the selection of all nest sites. Nest size, habitat and composition varied noticeable among crane pairs. First eggs appeared an average of 17.6 days after the cranes returned. All clutches contained two eggs. Average hatching date of eggs was 25 May and an estimated 77.2% of all eggs hatched.

Seventeen young were produced from 11 known nests in three breeding seasons. Of these, nine (52.95) were known to have reached flight stage. Two pairs apparently renested after hatching and the presumed loss of young from first clutches. They produced four young in July.

Cranes exhibited selectivity of feeding areas during the breeding season. Cultivated land, primarily corn and disced fields, were important feeding areas prior to nesting and after young fledged. Marshes were the principal feeding areas of breeding pairs during incubation, but were not utilized as frequently after hatching. Sedge-grass meadows, adjacent to or in

territories, were favored feeding areas during brood rearing. An unobstructed view of the surrounding area appeared to be the principal requirement of feeding cranes.

Cranes usually departed from the area in late September or early October, probably due to frequent disturbance caused by waterfowl hunting. The loss of habitat to agricultural and residential development and vegetation succession may result in extirpation of the cranes.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1976

Alfred H. Grewe, Jr., Chairperson

SWIMMER'S ITCH AT PELICAN LAKE (STEARNS COUNTY), MINNESOTA: THE EFFECTIVENESS OF PREVIOUS COPPER SULFATE TREATMENTS AS MEASURED BY SNAIL TRANSECT AND RESIDENT AWARENESS SURVEYS

Kenric M. Johnson

The swimmer's itch problem has both local and international significance. Locally, it has affected summer vacationers with a severe rash known as "schistosome dermatitis" and significantly reduced recreational activities in many waters of the north-central United States and south-central Canada. On a world-wide scale, a similar parasitic fluke larva is responsible for the dread disease of schistosomiasis, whose morbidity is only exceeded by malaria.

The significance of this study was in the assessment of the presently recommended control procedure of copper sulfate applications to reduce infected snail populations. This was achieved by snail transect analysis in treated and untreated areas and resident awareness surveys of Pelican Lake, Stearns County, Minnesota, a highly populated, eutrophic lake with numerous cases of schistosome dermatitis reported each summer.

From the snail transects, it was found that copper sulfate, if applied as directed at frequent intervals (two or three times per summer) significantly reduces both snail and weed populations. From the resident awareness survey, however, it was found that the problem persists due to cercarial drift brought about by wind migration.

It is concluded, therefore, that copper sulfate is only a temporary measure that must needs be succeeded by a more ecological and economical method of swimmer's itch, and possibly schistosomiasis, control.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1975

John McCue, Chairperson

NEST SITE SELECTION BY THE BROAD-WINGED HAWK IN NORTH CENTRAL MINNESOTA AND WISCONSIN 1971-1974

Douglas C. Keran

To evaluate the effects of forest manipulation on all forms of wildlife, the habitat requirements for nongame species must be known.

The broad-winged hawk, *Buteo platypterus*, is a summer resident of the forests of north central Minnesota and Wisconsin, but little is known about its nesting habitat requirements.

The major study area, in Crow Wing county, Minnesota, is glacial end moraine covered with second-growth mixed hardwoods and conifers. Twenty-eight % of the area is wetlands. Systematic searching of the forested areas was conducted to locate nests and observe the patterns of nest site placement.

A total of 29 nests in several parts of Minnesota and Wisconsin were observed and compared. The broad-winged hawk nests primarily in oak-aspen-birch sere forests which are 35 years old or older. Nesting density is about one pair per two square miles. Nests are located within 425 feet of an upland opening and within 500 feet of a wet area.

APPROVED BY RESEARCH COMMITTEE, MAY 1976

Alfred H. Grewe, Jr., Chairperson

*THE EFFECT OF A THERMAL DISCHARGE ON THE
MACROINVERTEBRATES IN THE MISSISSIPPI
RIVER NEAR MONTICELLO, MINNESOTA*

Thomas Michael Lager

This study examined the influence of the thermal discharge from a nuclear power plant on macroinvertebrate populations in the Mississippi River from 6 Sept. 1973 to 19 Sept. 1974. After subsampling, 262 thousand organisms were examined to determine the effect of elevated temperatures on benthic fauna quality, quantity, biomass, individual organism weight, and life cycles. The response of benthic fauna within the heated river zone at varying distances from the discharge canal was established and comparisons between the preoperative and operative studies were also made.

The quality of the benthic fauna was not changed by the thermal discharge, while the quantity, biomass, individual organism weight, and life cycles of the taxa comprising Trichoptera, Ephemeroptera, and Diptera were influenced significantly on 24 occasions. Macroinvertebrate abundance within the non-heated and heated zones were reduced by anchor and frazil ice scouring in winter. At the station most affected by the heated water, the abundance of *Psychomyia*, *Pseudocloeon*, *Stenonema*, and *Ephemerella* was drastically reduced in the 20 Aug. - 19 Sept. sampling period. A temperature elevation threshold of 4.5° C over ambient was established for these genera for the above sampling period. Abundance peaks and biomass and organism weight patterns in the preoperative and operative studies were similar.

APPROVED BY RESEARCH COMMITTEE, MAY 1976
Alfred J. Hopwood, Chairperson

*INVERTEBRATE DRIFT IN THE MISSISSIPPI
RIVER NEAR MONTICELLO, MINNESOTA*

William John Matter

Invertebrate Drift samples were collected from the Mississippi River near Monticello, Minnesota to determine the taxonomic composition, magnitude, seasonal fluctuation, and vertical distribution of the drift. The effect of heated water discharge from a nuclear fueled electrical generating plant on the measured drift parameters was also assessed. Sampling gear was designed to permit deep water sampling. The apparatus was used to collect samples from July 1973 through July 1974 at two sampling sites, one above and one below the nuclear plant site.

The sample population was made up of 28% Trichoptera, 37% Ephemeroptera, and 30% Diptera, based on the total number of organisms collected. Estimates of total drift through the river cross section in 24 hours ranged from 2.5×10^6 to 76.9×10^6 . Abundance peaks occurred in mid-August and early June. Significant differences from the expected even vertical distribution of drift density occurred for some taxa. The heated water effluent produced no measurable change in the taxonomic composition or magnitude of the drift.

APPROVED BY RESEARCH COMMITTEE, MAY 1975
Alfred J. Hopwood, Chairperson

*FOOD HABITS OF THE YOUNG-OF-THE-YEAR SMALLMOUTH BASS
(MICROPTERUS DOLOMIEUI LACEPEDE) IN A THERMAL PLUME
IN THE MISSISSIPPI RIVER NEAR MONTICELLO, MINNESOTA*

Frederick B. May

A food habit study of 666 young-of-the-year smallmouth bass (*Micropterus dolomieu* Lacpepe) from the Mississippi River near Monticello, Minnesota is reported. The percentage by numerical, gravimetric, and frequency of occurrence methods of analysis are presented. In the early summer dipteran larvae and Ephemeroptera nymphs are the main food items. Mayfly nymphs stay important throughout the summer along with Corixidae and Hydropsychidae.

Fish are not taken in abundance as food items. Feeding habits of the bass change over varying substrates. It was determined that the thermal plume from the nearby nuclear fueled electricity generating plant did not affect the food habits of the young-of-the-year smallmouth bass.

APPROVED BY RESEARCH COMMITTEE, DECEMBER 1975

Keith M. Knutson, Chairperson

THE METABOLIC REGULATION OF PHOSPHOENOLPYRUVATE CARBOXYLASE AND MALIC ENZYME IN *E. GRACILIS*

Kenton Stuart Miller

The specific activities of malic enzyme (EC-1.1.1.40) and phosphoenolpyruvate carboxylase (EC-4.1.1.31) from "wild type" and ultraviolet bleached strains of *Euglena gracilis* are determined for cells in early log phase growth. The cells are grown either as complete autotrophs or as photomixotrophs and heterotrophs with acetate, pyruvate or succinate as a sole carbon source. The cells are extracted by freeze-thawing and specific activities are determined both before and after treatment on a Bio-Gel P-10 column.

In all cases the enzyme activity is found to be higher in the treated cell extracts compared to the untreated extracts suggesting the presence of intercellular inhibitors. For malic enzyme a significant increase in activity is noted in cells grown with acetate as the sole carbon source. This is interpreted as an induction of enzyme production by some intermediate of early acetate metabolism. For phosphoenolpyruvate carboxylase, elevated activities in the photomixotrophic and autotrophic cells suggest enzyme induction by some early intermediate of photosynthesis.

These results are discussed in terms of the interrelationship between malic enzyme and phosphoenolpyruvate carboxylase as anaplerotic sequences ancillary to the Tricarboxylic Acid cycle.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1975

David P.S. Mork, Chairperson

PRIMARY PRODUCTIVITY IN THE MISSISSIPPI RIVER NEAR MONTICELLO, MINNESOTA

Michael William Mischuk

Measurements of primary production in a reach of the Mississippi River near Monticello, Minnesota, were done from September, 1973 through September, 1974. The purpose of this research was to determine the productivity of a reach in the Mississippi River from the Northern States Power Company nuclear electrical generating plant to the Highway 25 bridge, 4.8 km downstream. Secondly, to determine the effect of the heated condenser cooling water discharge upon primary productivity downstream. Thirdly, to compare existing periphyton research to the phytoplankton in the river.

Primary productivity in the ambient zone ranged from 1.18 g O₂/m²/day to 49.83 g O₂/m²/day, averaging 13.58 g O₂/m²/day, while that for the heated zone ranged from 0.49 g O₂/m²/day to 46.64 g O₂/m²/day, averaging 17.02 g O₂/m²/day. There was no statistical or significant difference in production between heated and ambient zone; however, there appeared to be some increase in productivity in the heated zone at certain times of the year.

The assimilation capacity of phytoplankton based on chlorophyll data indicates that this portion of the algae community could account for as much as 18 to 40% of the productivity of this reach in the river. Chlorophyll values ranged from 1.56 ug/l to 15.78 ug/l, averaging 7.6 ug/l for the ambient zone. The algae population in this section of the Mississippi River is about 85% diatoms which are basically benthic forms.

APPROVED BY RESEARCH COMMITTEE, JANUARY 1976

Keith M. Knutson, Chairperson

MOURNING DOVE PRODUCTION IN ARTIFICIAL AND NATURAL NESTS IN CENTRAL MINNESOTA

Gary M. Nelson

Mourning dove production, egg and nestling mortality, and nesting in artificial and natural nests was investigated in 1974 on seven study areas in central Minnesota.

Nesting success in artificial nests was greater than that in natural nests. Of 69 nesting attempts in artificial nests, 60.9 percent (42) were successful. Of 224 nesting attempts in natural nests, 44.2 percent (99) were successful. Fledglings averaged 1.1 and 0.8 per nesting attempt in artificial and natural nests respectively. Fledglings from the seven study areas totaled 247 (20.8 per acre).

Breeding pairs averaged 3.0 nesting attempts per season. An average of 2.5 young were produced per pair. Under these conditions, annual mortality may not exceed 56 percent if a stable population is to be maintained.

Over 60 percent of the causes of egg and nestling mortality were not determined. Predation and strong wind were most frequently recorded as causes of nest mortality. Feral cats and red squirrels were the most important nest predators.

Blue spruce, red cedar, and white spruce were the most important nest trees. Nest site selection with respect to nest height, distance, and direction from the tree trunk is discussed.

Sixty-nine nesting attempts were made in 59 of the 203 artificial nests installed. This represents a 34.0 percent rate of utilization. Of 222 nesting attempts in five study areas, 31.1 percent (69) were in artificial nests. Of the nesting attempts in natural nests, 14.7 percent (33) occurred in old common grackle nests. Nesting success averaged 57.6 percent in grackle nests.

Nesting began 16 April and ended 20 September. Nest initiation was greatest in late May. Peak production occurred in early June. No nests were initiated after 1 September. Eight percent (19) of the young fledged after 1 September.

APPROVED BY RESEARCH COMMITTEE, MAY 1975

Alfred H. Grewe Jr., Chairperson

AGE AND GROWTH OF THE MAJOR FISH SPECIES IN THE MISSISSIPPI RIVER NEAR BECKER, MINNESOTA

Lowell Neudahl

An age and growth study was conducted on six species of fish during the summer of 1975 from the Mississippi River 40 miles northwest of Minneapolis, near Becker, Sherburne County, Minnesota in the vicinity of the Northern States Power Company coal fueled generating plant to establish base-line preoperative data. Scale samples along with length and weight data were obtained from fish collected with boat mounted pulsed DC electrofishing gear to determine their age composition and physical condition. After age determination and scale measurements were made, a computer program was used to develop growth history information.

Sexual dimorphism in growth for male and female shorthead redhorse and carp was not apparent and a single length-weight regression for the combined sexes was considered adequate ($\log W = -4.3341 + 2.7453 \log L$ for shorthead redhorse and $\log W = -4.6110 + 2.8834 \log L$ for carp). Differential mortality does exist between sexes however, females of both species tend to live longer than males and attain greater size. The length-weight regressions for the other species studied were $\log W = -5.0430 + 3.0244 \log L$ for the silver redhorse, $\log W = -4.1346 + 2.6676 \log L$ for the white sucker, $\log W = -4.6651 + 2.8984 \log L$ for the black crappie, and $\log W = -4.9070 + 3.0245 \log L$ for the smallmouth bass. Growth of the shorthead redhorse, white sucker, and black crappie is allometric (asymmetrical growth of body parts) and because the slope of their length-weight regressions are less than three these species become lighter for their length. An isometric growth pattern (symmetrical growth of body parts) is exhibited by the silver redhorse and smallmouth bass. Results obtained for the carp were inconclusive, male and female length-weight regressions showed an isometric growth pattern, combined sexes an allometric pattern. Statistical error may have caused this discrepancy.

A simple linear regression model was found to be adequate in expressing the relationship between body and scale length. As in the length-weight analysis, separate body-scale

regressions for male and female shorthead redhorse and carp were not found to be necessary for back-calculation purposes and a single equation for combined sexes was used ($L = 29.2771 + 1.1855S$ for shorthead redhorse and $L = -37.0186 + 2.8865S$ for carp). Because the y-intercept of the body-scale equation for carp was negative an equation centered to the origin ($L = 2.6981S$) was used for length estimation. The simple linear body-scale regressions for the other species studied were $L = 61.4519 + 1.0288S$ for the silver redhorse, $L = 68.1482 + 1.5127S$ for the white sucker, $L = 31.6185 + 1.5284S$ for the black crappie, and $L = 40.4127 + 2.1120S$ for the smallmouth bass. A proportional body-scale length model may be appropriate for some species in future studies because of over prediction in the back-calculated lengths of older age groups. From the results obtained for the six species studied, the assumption that the annuli on their scales are true year marks appears to be a valid one.

Rate of growth in length and weight peaked somewhere between birth and age three for most of the species studied and gradually declined with age. Relative growth (G) was high early in life, dropped steadily thereafter, and declined linearly for the shorthead and silver redhorse and carp after age four.

APPROVED BY RESEARCH COMMITTEE, OCTOBER 1976

Alfred J. Hopwood, Chairperson

PROTOZOAN POPULATION FLUCTUATIONS AS INDICATORS OF ACTIVATED SLUDGE IMBALANCE, AT THE BLUE LAKE WASTEWATER TREATMENT PLANT, SHAKOPEE, MINNESOTA

Michael Thomas Sauer

Laboratory studies were conducted to assess the ability to predict functional imbalance of the activated sludge process using indigenous protozoans as indicators. Research was conducted at the Metropolitan Waste Control Commission's Blue Lake Wastewater Plant, Shakopee, Minnesota.

The chemical parameters determined daily on the influent and effluent of the aeration-clarification basins were biochemical oxygen demand, chemical oxygen demand, suspended solids, organic nitrogen, ammonia nitrogen, nitrate nitrogen, nitrite nitrogen, phosphorous (total), and total organic carbon. Parameters determined on the aeration tank were settleability, sludge volume index, mixed liquor suspended solids, and mixed liquor volatile suspended solids. Ratios were calculated to determine organic loading based on BOD/MLVSS and COD/MLVSS. Results from these show functional imbalance twice during the study.

Members of the class Ciliata were identified to species and enumerated daily. Organisms which had significant population fluctuations were *Vorticella aequalata*, *V. microstoma*, *V. campanula*, *V. convallaria*, *V. nebulifera*, *Trachelophyllum pusillum*, *Aspidisca costata*, and *Litonotus fasciola*. These indigenous organisms are euryoecious and able to respond rapidly to adverse environmental stimuli. The organisms which have the greatest reliability as indicators of functional imbalance are *Vorticella convallaria*, *V. nebulifera*, and *Aspidisca costata*, and these predictions can be made two to four days prior to recognition based on chemical parameters.

The population of Zoomastigophorea were enumerated daily. It showed little correlation to plant efficiency or imbalance. The population of filamentous bacteria and fungi were arbitrarily classified as slight, moderate, or excessive. They were present in excessive numbers prior to and during functional imbalance.

APPROVED BY RESEARCH COMMITTEE, APRIL 1976

Keith M. Knutson, Chairperson

THE ECTOPARASITES AND DIGESTIVE TRACT PARASITES INFECTING THREE SPECIES OF CATOSTOMIDAE IN THE MISSISSIPPI RIVER NEAR BECKER, MINNESOTA

William Myron Turner

The ectoparasite and digestive tract parasites infecting *Moxostoma macrolepidotum*, *Moxostoma anisurum*, and *Catostomus commersoni* were quantitatively and qualitatively determined to acquire preoperational data on the portion of the Mississippi River near the site of Northern

States Power Company's Sherburne County Generating Plant.

Eighty-eight fish were necropsied from 1 June 1975 through 13 November 1975. These fish were taken with electrofishing gear and were processed in the field. Gill arches, eyes, digestive tracts, and fins were removed and taken to the laboratory for examination.

Of the 88 fish examined, 95.4% were in some way parasitized with an average intensity of 54.6 parasites per host. Parasites were found infesting 95.6% of *M. macrolepidotum*, 100% of *M. anisurum*, and 90% of *C. commersoni*. Ectoparasites were present on 65.3% of the fishes examined with an average intensity of 30.4 parasites per host. Endoparasites were hosted by 79.5% of the fishes with an average intensity of 38.6 parasites per host.

The sixteen taxa of parasites found were *Actinobdella*, *Argulus appendiculosus*, *Lernaea cyprinacea*, *Anoncohaptor*, *Dactylogyrus*, *Pseudomurraytrema A*, *Pseudomurraytrema B*, *Archigetes sp.*, *Blacetabulum infrequens*, *Glaridacris laruei*, *Isoglaridacris A*, *I. folius*, *I. longus*, *Monobothrium ulmeri*, *Lissorhis attenuatum*, and Nematoda. Acanthocephala and eye parasites were not represented.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1977

Alfred J. Hopwood, Chairperson

INVERTEBRATE DRIFT OVER A FIVE DAY PERIOD IN THE MISSISSIPPI RIVER NEAR BECKER, MINNESOTA

David Roy Wefring

Drifting invertebrates were collected from the Mississippi River near Becker, Minnesota, at five stations for five consecutive days during July, 1975. Data was acquired on the drift fauna composition, magnitude, daily fluctuation, diel fluctuation and general distribution which included a statistical analysis of the horizontal and vertical distribution to provide a baseline of information on drift in this area. Deep water sampling gear was designed and used in conjunction with other drift samplers to permit sampling a cross-section of the river.

Sixteen orders of aquatic macroinvertebrates were represented in the drift samples. Trichoptera (28%), Ephemeroptera (15%) and Diptera (56%) were the dominant orders of organisms collected. The percentage composition of the entire drifting population remained relatively stable. Although the population composition differed between stations, each station remained fairly constant with respect to its composition. Daily drift rate estimates ranged from 27×10^6 to 33×10^6 no./24 hours. Day-to-day and diel fluctuations in the drift density were quite evident. A far greater number of organisms were collected during the night than during the day, with the exception of the midstream station where *Simulium* larvae were collected in large numbers, continuously throughout each of the five 24-hour periods. The distribution of the drifting organisms appears to be primarily influenced by current velocity and water depth. Drift densities of selected groups were rarely found to be horizontally or vertically uniformly distributed within the river cross-section.

APPROVED BY RESEARCH COMMITTEE, JUNE 1976

Alfred J. Hopwood, Chairperson

SEASONAL EVENTS IN THE INVERTEBRATE DRIFT IN THE MISSISSIPPI RIVER NEAR BECKER, MINNESOTA

Henry J. Zimmermann

Invertebrate drift was collected from the upper Mississippi River at approximately 30-day intervals during the ice-free months from July, 1975, through June, 1976. Samples were collected at five stations located along a horizontal transect, with deep water sampling gear used at three of the five stations. Quantitative analysis of the samples made possible the determination of the seasonal fluctuations in the taxonomic composition, diel periodicity, and horizontal and vertical distribution of the invertebrate drift.

Aquatic insects of the orders Trichoptera (30%), Ephemeroptera (28%), and Diptera (33%) dominated the drift in all months except April, when Plecoptera comprised 24% of the total number. Variations in relative abundance of the three major orders were observed both between sampling periods and within sampling periods, between stations. A nocturnal increase in the drift was most pronounced in the spring and early summer, and reduced in autumn. Be-

tween sampling stations, the nocturnal increase was least pronounced in the mainstream, especially near the bottom. Drift densities varied across the river and appeared to be dependent upon current velocity and water depth. The relative amount taken at each station varied between sampling periods and appeared to be dependent upon river discharge.

APPROVED BY RESEARCH COMMITTEE, MAY 1977

Alfred J. Hopwood, Chairperson

ENGLISH

THE HUMANISM OF IRVING BABBITT

Frederick Joseph Blonigen

Irving Babbitt was an important American critic and educator who is remembered today as the central figure in the New Humanism movement in literary criticism. This critical movement began in America in the first decade of this century. In 1904 Paul Elmer More (with Babbitt one of the twin pillars of the New Humanism) began publishing his *Shelburne Essays* and in 1908 Irving Babbitt published *Literature and the American College*. By the twenties Babbitt and More had gathered around them a respectable group of disciples. The group was eventually identified as the New Humanists.

The New Humanists believed that the primary approach to literature, and indeed to life, was the moral approach. They agreed with Mathew Arnold that literature is essentially a criticism of life. Literature, they held, was essentially ethical because man, the creator and the subject of literature, was by nature an ethical creature.

No one among the New Humanists insisted more vigorously on the ethical nature of man than Irving Babbitt. A deep concern with man's moral nature is at the heart of Babbitt's humanism. The principal purpose of his arduous intellectual labor was to convince students, teachers, and readers that at the center of man's being was man's ethical will and that the very future of human civilization depended, to a large extent, on whether or not man would use his higher will to control his appetites and impulses and to pursue the good life.

There was a considerable negative reaction among critics to Babbitt and the New Humanism. Distinguished critics like Edmund Wilson, Malcolm Cowley, and R. P. Blackmur attacked Babbitt and the New Humanists for various reasons. Some of these criticisms were valid (Babbitt's failure to appreciate modern literature and his moralistic tone) and some were not (personal attacks on Babbitt and charges that Babbitt was anti-science).

Despite criticisms levelled against Babbitt, he remains one of America's finest scholars and critics. He was a courageous defender of high standards in art, in criticism, and in human conduct. And his moral idealism has had a salutary effect on American life and letters.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976

Paul Cairns, Chairperson

COMMON NEEDS OF MINORITY GROUPS AND A DESIGN FOR AN ENGLISH COURSE IN HUMAN RELATIONS

Myrla M. Bower

PROBLEM: English classroom approaches to the study of human relations in the past have tended to emphasize one or more minority groups and their problems, the minority groups changing somewhat as popular attention shifted to other groups. A need exists, however, for a course in which students learn to apply sensible and sympathetic standards in their treatment of all human beings, including themselves and their families.

PROCEDURE: The historic practices that have established patterns of superiority-inferiority treatment have been studied. The emphasis has been on the conditions of the blacks as slaves, the early treatment of the Indians as subhuman savages, the history of the Chicanos as members of an occupied nation, the persecution of the Jews as guilt-ridden vagabonds, and the tradi-

tional role of women as the property of men.

Then the discriminatory attitudes and practices surviving in the twentieth century in America have been reviewed. Attention has been directed to discrimination in property and credit, education, citizenship privileges, hiring and promotion, and social activities.

Similar themes in group struggles for equal treatment have next been considered. The need for a better self-image as individuals and as members of groups, for legal protection with respect to property and credit, for fair treatment in hiring and promotion, and, also, in education, and for greater social mobility have been explored.

The common characteristics of the blacks, Indians, Jews, Chicanos, and women have been determined. Similarities in the Irish, Poles, Italians, Japanese, and Chinese have also been examined.

Finally, the subject of what a human relations course in the English curriculum should include has been investigated with an emphasis on awareness of common problems among the minorities that have been indicated by the research. Materials suitable for such a course, have, also, been suggested.

FINDINGS: Because of the advanced status of technology, mankind is in danger of annihilation. The need for the morals and compassion of human beings to keep pace with applied science for the preservation of the world is apparent. The place to begin, seemingly, is with the ignorance in the human heart.

CONCLUSIONS: To inspire greater understanding among people, the process of beginning with a broad base of history and continually narrowing that base through literature until a one-to-one relationship exists between the reader and the fictional character makes an English course in human relations vital for high school students. The ultimate objective is to promote the addition of such a course to the English curriculums of the secondary schools.

APPROVED BY RESEARCH COMMITTEE, JULY 1976

Dan H. Otto, Chairperson

A STUDY OF THE MORAL CLIMATE OF AMERICAN LITERARY CRITICISM FROM 1960 TO 1970

Woodrow Choate

PROBLEM: This thesis is an attempt to make some assessment of the intensity and range of the moral critical approach to literature in the United States from 1960 to 1969.

PROCEDURE: All of the available American criticism on James Baldwin's *Another Country*, Robert Lowell's *For the Union Dead*, and Edward Albee's *Who's Afraid of Virginia Woolf?* is used as a representative selection for the study. Each of these works is summarized in the body of the thesis and the criticism using a moral approach to the works is surveyed. Conclusions about the intensity and range of the moral critical approach also are drawn from the evidence presented in the survey of the criticism and in an appendix. The findings in the earlier chapters of the thesis are correlated and some personal observations are made in the conclusion.

FINDINGS: The study of this representative selection of criticism indicates that there is a broad range of emphasis and a varying intensity within the moral critical approach during the 1960's. The most prominent moral concern in the criticism is that literature should portray reality. By portraying reality critics mean such diverse things as destroying illusions, expressing truth, avoiding tricks, using ordinary people as characters, portraying the consequences of individual actions, rejecting sex as the solution to human problems, presenting a true account of the perverse side of life, balancing the negative and positive aspects of life, and portraying an accurate understanding of man and life. Other significant moral concerns include the positions that literature should correct the morals of society, that a literary work should be evaluated according to moral standards, that factual material may be distorted in literature to create ethical truth, and that literature should improve the morals of its audience.

The critics use three basic premises within the moral critical approach. First, there are the critics who advocate the classical concern that literature portray universal forms, order and harmony. Second, other critics subscribe to a realism in literature that focuses on the particular. Third, still other critics look to the individual as the source of moral authority.

The intensity of moral concern within the criticism varies in extent from a brief comment to a well developed essay, and is usually somewhere between these extremes. Something

of the intensity of the moral critical approach is also shown by the fact that 70% of the moral critical articles on the three works contain an identifiable moral concern.

Thus, the evidence in this representative selection of criticism indicates that the moral critical approach to literature holds a prominent place in criticism during the sixties.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1975

Paul E. Cairns, Chairperson

PHRENOLOGY IN SELECTED STORIES OF EDGAR ALLAN POE

Michael D. Engelhart

Edgar Allan Poe used terms and concepts of phrenology in his tales. This paper has a two-fold purpose: (1) to analyze these phrenological elements in several of Poe's tales and draw conclusions about the influence of phrenology on Poe's writing, (2) to impart some background in phrenology to the reader of Poe who knows nothing about phrenology.

Included in the background discussion of phrenological terms and concepts is a replica of George Combe's phrenological chart which gives the locations of the phrenological faculties discussed in relationship to Poe's characters.

The popularity of phrenology in the United States during the 1830's and later is reflected by the large number of books and magazine articles written on phrenology during this time. The fifth edition of George Combe's *The Constitution of Man* was printed in 1835, and *Poole's Index to Periodical Literature* (Volume I, 1802-1881) lists over one hundred and twenty articles on craniology and phrenology.

Poe's acquaintance with phrenology can be traced after 1836, but definite indications in "Berenice," "Morella," and "King Pest"—all written in 1835—suggest that Poe may have known about phrenology before 1836. The physical descriptions of Poe's characters in these tales hint of phrenological motivation.

Edward Hungerford, in "Poe and Phrenology," *American Literature*, March 1931, has indicated that Poe first became familiar with phrenology in 1836 when he reviewed for *The Southern Literary Messenger* a phrenology text written by Mrs. L. Miles. After this review, more varied uses of phrenological concepts appeared in Poe's writings, including his phrenologizing of several contemporaries in "The Literati of New York City;" his humorous uses of phrenology in "The Business Man," "The Imp of the Perverse," and "The Man That Was Used Up;" and his use of the depression on Dirk Peters' head in *The Narrative of A. Gordon Pym*.

Many critics have noted that Poe's buildings and characters often bear a striking resemblance to each other. The possibility to be explored here is that the buildings in certain Poe short stories may be symbolic descriptions in phrenological terms and concepts of the character's mental condition. Tales which reflect this building-mind relationship are "Ligeia," "The Fall of the House of Usher," and "The Masque of the Red Death."

It is hoped that this study may be a corrective influence on interpretations of Poe made by the twentieth century reader who is unacquainted with phrenology.

APPROVED BY RESEARCH COMMITTEE, JUNE 1974

Robert Coard, Chairperson

A SENSE OF COMMUNITY AS EXPRESSED THROUGH MOODY COUNTY ORAL TRADITIONS

Roger Headrick

The formal traditions found in literature about homesteading the Great Plains of the Dakotas, Minnesota, Nebraska, and Kansas from 1869 to 1915 and the oral traditions, primarily folk ideas expressed through personal reminiscences, family stories, local stories, and material lore and collected on a tape recorder from older residents of Moody County, South Dakota, express a world view that is based on unity, that is, people joining together and establishing a relationship with the land of the Great Plains and the elements of that land. This view of unity expressed through these traditions grew from the harsh circumstances of founding a new life in a new land. In Moody County Santee, Norwegian, Scottish, Irish, and Yankee neighborhoods developed a unified perspective that expressed itself more in terms of a group of people living

in the plains of Moody County than as separate peoples living according to the heritages of each neighborhood. It is this tradition of unity that is passed on through their stories. And it is this tradition that is reflected through the literature that has homesteading the Great Plains as its vehicle of expression.

The homesteaders of the Great Plains brought with them the determination to work hard and to wrest from the land its prosperity. However, they learned that if they could develop a sense of unity with the land and combine that with their creative energy, then they could enjoy the modest prosperity of the secure and independent life that the land offered.

The grass of the land instilled an anxiety in the homesteaders that evolved into a realization of the potential for good that the grass offered. This is expressed through the rather abstract view of the landscape in the formal traditions and through the more concrete view of a specific and limited area in the oral traditions.

The animals of the plains provided food and income and created a conflict between the wilderness and civilization. This conflict expressed in the traditions serves to remind an audience about the secure life lived close to the wilderness.

Life on the plains was simple and encouraged a sense of community that was based on mutual experience in a common place. The homesteaders joined together and established a relationship with this place that included an independent, austere, and hospitable life. This sense of community is expressed in the formal and oral traditions alike.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976

James K. Gottshall, Chairperson

BABBITT, THE GREAT GATSBY, AND THE AMERICAN DREAM

Margaret Ann Hennen

Although written during the same period, the works of Lewis and Fitzgerald are rarely considered together. Varying greatly in style, *Babbitt* and *The Great Gatsby* consider many of the same ideas, themes, and characterizations. Both works cut through the artificial surface covering the 1920s and look closely at America's life-style of growing decadence. Both authors see through the constant running and striving which leads nowhere for their characters, who are part of a success-worshiping generation in pursuit of the elusive American dream.

Both are business novels in which success is defined as money and possessions. And both show the restlessness and disorientation of a generation manifesting itself through loneliness and a need to be known and admired. For example, *Babbitt* and *Gatsby* create dream girls to provide the admiration the two businessmen crave. These dream girls and the searches for them provide the major motivations central to each work. These illusions are symbols of the youth and vitality each is trying desperately to cling to.

A further important consideration in comparing the two novels is the way the Midwest influences the characters. *Babbitt* and *The Great Gatsby* are stories of the Midwest and of Midwesterners because the cultural upbringing of the Midwest ties Lewis and Fitzgerald to their origins. Although they try to break away, they are defeated by ingrained restrictions which claim them.

APPROVED BY RESEARCH COMMITTEE, APRIL 1976

James Lundquist, Chairperson

THE TEACHING OF WRITING IN THE BEGINNING STANDARD RECOMMENDED ENGLISH COURSES OF MINNESOTA'S COMMUNITY COLLEGES

Val Renee Johnston

discover whether instructors of beginning SRE felt that any of the following were problems in their courses;

1. Lack of teacher training in writing skills.
2. Class size too large for effective writing instruction.
3. Student lack of writing skills necessary as the foundation for beginning SRE courses.
4. Lack of interdepartmental cooperation in encouraging good writing.
5. Student lack of interest in English and writing.
6. Student lack of self-confidence and/or fear of writing.
7. Extreme variation in student ability.
8. Student concentration on vocational courses to the exclusion of general preparation.

PROCEDURE: The survey method of research produced the most useful information for analyzing the beginning SRE courses, and for discovering whether the eight problems above were experienced by instructors in those courses. A two-part survey was designed to obtain needed information: a review of college catalog descriptions of the beginning SRE courses in Minnesota's community colleges, and a questionnaire to be filled out by instructors who teach writing in those courses. All of Minnesota's twenty-two community colleges were contacted in the survey; course descriptions were obtained for beginning SRE courses in twenty-one community colleges. Completed questionnaires were received from twenty-five instructors in fourteen of those twenty-one community colleges.

FINDINGS AND CONCLUSIONS: Analysis of course descriptions for beginning SRE revealed seven main emphases in the course: principles of logical thinking, rhetoric, the writing process in general, speech, reading, grammar and/or usage, and expository writing. Expository writing was the most common emphasis, with eleven community colleges using it in their beginning SRE courses.

Nine conclusions were reached concerning instructor qualifications, course supervision, texts, class size and teacher class load, objectives, and purposes in the beginning SRE courses. Five conclusions were reached concerning the amount of class time spent in teaching writing, the methods of class instruction, the kinds of writing assignments, the methods of evaluation of student writing progress, and the presence or absence of innovative teaching methods.

Based on responses to the questionnaire, the investigator found student lack of basic writing skills to be the most common problem in the beginning SRE courses of Minnesota's community colleges. The second most common problem appeared to be the extreme variation in student ability, and the third appeared to be the lack of teacher training.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976

Don H. Otto, Chairperson

GOING BEYOND ROLES: ENTRAPMENT, CONFLICT, AND FREEDOM IN DORIS LESSING'S SHORT STORIES

Carleen K. Rhodes Joseph

Doris Lessing draws attention to roles in her short stories, as she does in her longer fiction, to emphasize their destructive potential. Roles are only social frameworks, not total definitions that allow for a person's individuality. Of special concern here are the characters who have an awareness of self that goes beyond social roles.

The first group who perceive that there are alternatives to strict obedience to roles are the trapped characters. Though they confront such awareness, they are unable to act on the knowledge. They are either locked in by the limitations of their roles or have no idea what to do when they step outside the roles. Feeling trapped with something less than they have aspired to, they go on in frustration and unhappiness.

Some characters experience attractions in diverse directions. Conflicts of role occur for them when their opposing roles threaten the coherence of their self-image. Loyalties to two different ideas, people, age groups, or codes of morality confuse their perception of self. Though confused, they try to function in both roles or to make a transition from one to the other.

The last group are those characters who apparently live in roles and recognize the limitations of those roles but feel they are free. They find independence beyond the narrow limits of social definitions, and society's evaluation of them does not determine their own self-

evaluations. They are sensitive and allow expression of their emotions. As a result, they are more able than the characters in the other groups to attain a personal happiness.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1977
Marcia Summers, Chairperson

RUMI AND HAFIZ: THE SUFIC TESTIMONY

Daniel B. Kasten

Sufism, the mystical "Way" of Islam, has had an incalculable impact on the literature of the Islamic world. Even Western civilization has been touched in many ways by Sufic influence. Many details of the development of Sufism are legendary or unknown, but almost since the beginning of Islam, Sufism has provided a fertile climate for artistic expression.

The Sufic ideals of love, truth, humility, and union with the Eternal Spirit provided themes for such artists as Omar Khayyam, Attar, al-Farid, and Sa'di. Virtually every major Islamic writer from the eleventh to the fifteenth century was at least interested in Sufism.

The two writers with whom this study is primarily concerned, Jalal al-Din Rumi and Hafiz Shirazi, were perhaps the greatest of all the Sufi Poets. Rumi was primarily a theologian. His works, especially the massive *Mathnawi-yi ma nawl* (spiritual couplets), were not written solely for artistic reasons. Rather, the works of Rumi are theosophical treatises in poetic form. In contrast, Hafiz seemed unsure of his theological base but was fully committed to the worship and production of beauty through his poetry. He remains the acknowledged master of the Persian lyric and is widely acclaimed as one of the world's truly great poets. His work appears to present a contradiction between his Sufic faith and his enjoyment of physical pleasures. Nonetheless, the work of Hafiz, like that of Rumi and the other Sufi artists, is an eloquent testimony to the spiritual strength and influence of Sufism.

APPROVED BY RESEARCH COMMITTEE, MAY 1976
Elizabeth VanPelt, Chairperson

MELVILLE'S USE OF ZOROASTRIANISM IN MOBY-DICK

Dennis R. Nelson

It is highly probable that Herman Melville, who is known to have incorporated information from many and varied sources into his books, borrowed from the philosophy and symbols of Zoroastrianism when writing *Moby-Dick*. Melville shared the nineteenth-century interest in the religions of the East, and Zoroastrianism, an ancient religion founded in Persia, would have especially appealed to Melville because of its dualistic theology that professed the separate divinity of good and evil. Adequate proof exists to indicate that Melville had acquired a working knowledge of Zoroastrianism through reading such authors as Pierre Bayle, James Fraser, Thomas Maurice, and others.

An examination of Melville's use of Zoroastrianism is necessary for an accurate interpretation of the fire and sun symbolism in *Moby-Dick*. In Zoroastrianism, light is highly revered as the symbol of goodness, and opposed to darkness, the symbol of evil. Fire and the sun, sources of light, are venerated by the Zoroastrians as symbols of the principle of all good. Zoroastrians further believe that the two separate principles, good and evil, light and darkness, are in constant conflict in the universe. Melville, therefore, borrowed the symbols fire and the sun from Zoroastrianism to give visible representation to the conflict of good and evil which is so predominant in *Moby-Dick*.

Furthermore, an analysis of Melville's use of Zoroastrianism is necessary for an accurate interpretation of the role of the Parsee, Fedallah. As a Parsee, Fedallah is an orthodox follower of the ancient religion of Zoroaster. When Fedallah is examined from this perspective, he is not the evil influence many critics believe him to be, but he is a servant of goodness and a destroyer of evil. Because Fedallah is committed to the destruction of evil, he comes to realize the evil nature of Ahab and aids in his eventual destruction.

And finally, Melville used Zoroastrianism to further amplify the ambivalence in Ahab's personality. Melville borrowed directly from the legends of Zoroaster to create the "god-like" Ahab. He also invested Ahab with the Zoroastrian belief that man has the free will

to choose between good and evil, a belief which subsequently led to Ahab's inevitable self-destruction.

Melville's use of Zoroastrianism for the symbolism and characterization in *Moby-Dick* has contributed to the enduring popularity of this greatest of American classics.

APPROVED BY RESEARCH COMMITTEE, MAY 1977

Elizabeth S. VanPelt, Chairperson

HOGARTH'S USE OF LITERARY TECHNIQUES IN HIS ENGRAVINGS

Lois Arleen Sheppard

William Hogarth's use of the techniques of literature is apparent in his early engraved work, such as *A Harlot's Progress*. His tone, mood, and intention are those of a satirist, and his satire attacks many aspects of society and employs comic tools for satiric purposes. Details establish realism, aid in creating atmosphere, and function similar to literary allusion and some of the stylistic devices of literature. Dramatic setting indicates time and forms a reading structure. Often reflecting character in animals, costumes, and properties, Hogarth draws many kinds of characters. Although even the single engravings have a sort of plot, the series has a complex plot complete with details that operate as flashbacks and foreshadowings function in literature.

Hogarth also uses all of these literary techniques in *A Rake's Progress*, and an analysis of the series as a novel clearly reveals this use.

Hogarth fully develops literary techniques, such as plot, character, stylistic devices, and literary allusion in many later engravings. His most characteristic uses of literary techniques are important to his engravings because of their relationships to his satire: plot and character are often the vehicles by which he expresses the message of his satire; dramatic setting puts his satirical message in a readable form; stylistic devices make long statements in a minimum of space; literary realism gives authenticity to his fiction; literary allusion piles up layers of meaning and covers a wide range of life for the pointing finger of his satire. Hogarth's use of literary techniques gives a unique quality to his work and makes a major contribution to the success of his engravings.

APPROVED BY RESEARCH COMMITTEE, MAY 1977

Jonathan Lawson, Chairperson

A STUDY OF PROGRESSIVE REDUCTION IN SAMUEL BECKETT'S TRILOGY MOLLOY MALONE DIES AND THE UNNAMABLE

June M. Spychala

Samuel Beckett's trilogy, *Molloy*, *Malone Dies*, and *The Unnamable*, can be analyzed in terms of the progressive reduction of characters, language, and form. In each instance, the remaining irreducible elements produce a positive statement about man.

The four narrator-heroes regress from middle age to dying to beyond death. They become progressively immobile, from Molloy and Moran who travel to Malone who is bedridden to the Unnamable who is a limbless torso. Each, in turn, becomes more self-absorbed. Each narrator is both similar and dissimilar to the others; this complex relationship defies simple or dogmatic explanations.

The language is progressively stripped of the conventional elements of fiction. Molloy and Moran discard the convention of reliability in an effort to get at the core of fiction. *Malone Dies* and *The Unnamable* are fictional experiments in which the relationship between man and language is explored. What remains is a language paradox: language is useless as a medium for knowledge and communication, but it is the element that makes man human so he cannot stop attempting to use language to know and communicate.

The form is also progressively reduced. The traditional elements of plot, time and action are first parodied and then discarded. Remaining to the end, however, is a fine tonal balance between comedy and tragedy. Throughout the works, the heaviness is consistently alleviated by humor.

Though the four basic themes in the novels are pessimistic: man is ignorant and impotent, his life is a penum, he struggles with ambivalent feelings toward his mother, and his

God is malevolent, a basically positive vision of humanity remains. The irreducible elements of character, language and form all produce positive statements.

Despite their physical decrepitude, their unreliability and their inability to love, the characters are loveable. Even though language is proven useless as a device for knowledge and communication, the reader struggles to know and understand. He empathizes with the characters because their language is his language. Finally, though the form is stripped of conventional structure, the trilogy remains a work of art. Each narrator-hero displays through his writing that man is, despite his shortcomings, an artificer capable of, indeed driven to, produce beautiful art.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1976

Marvin Thompson, Chairperson

AN ANALYSIS AND COMPARISON OF THE SYMPATHETIC AND THE UNSYMPATHETIC CHARACTERS IN THE WORKS OF PAUL ZINDEL

Steven E. Walz

The purpose of this study is to analyze the characters in the novels and plays of Paul Zindel in order to determine whether or not a pattern of characterization exists in these works. If a pattern of characterization does exist in these works, a secondary purpose of the study is to determine whether or not the author consistently follows such a pattern of characterization in both those works written specifically for adolescents and those works written for a general audience.

This study examines first the major characters in each of the novels, then the major characters in each of the plays. It analyzes these characters by classifying each as mainly either an establishment character or an anti-establishment character. Also, the study determines whether each character is a flat character or a round character. Finally, the study evaluates each character to determine whether the character tends to be a sympathetic character or an unsympathetic character.

The study concludes that Zindel tends to create two distinct types of characters in his works: flat, unsympathetic, establishment characters and round, sympathetic, anti-establishment characters. It further concludes that Zindel quite consistently follows this pattern of characterization in both those works written for adolescents and those works written for general audiences.

Because Zindel consistently follows a pattern of creating round, sympathetic, anti-establishment characters and flat, unsympathetic, establishment characters, and because he follows this pattern in both those works intended for adolescents and those intended for general audiences, the author maintains integrity in that regard. However, a teacher who uses Zindel's works with young readers should help those young readers see the biased picture of the world this pattern of characterization tends to create.

APPROVED BY RESEARCH COMMITTEE, MAY 1976

Don H. Otto, Chairperson

VILLAINS IN THE GOTHIC NOVELS OF RADCLIFFE: A REVIVAL OF THE SHAKESPEAREAN VILLAIN

Joyce E. White

In her five Gothic romances--*Castles of Athlin and Dunbayne*, *A Sicilian Romance*, *Romance of the Forest*, *Mysteries of Udolpho* and *The Italian*--Ann Radcliffe uses the elements of the Gothic novel which were first exhibited in Horace Walpole's *Castle of Otranto*. A sentimental heroine, picturesque scenery, hints of the supernatural, a ruined "horrid" Gothic castle with vaults, grated dungeons, and secret passages, and a tyrant or villain who causes the suffering of the heroine are the five essentials and elements Radcliffe capitalizes on and improves. In the Radcliffean villain, such renowned scholars of the Gothic novel as Devendra P. Varma, Edith Birkhead and Clara MacIntyre have found traces of Shakespeare's Elizabethan villain and have linked them together through their usage of poison, swords, and their wicked designs upon

their own family members. However, the evolution of the Radcliffean villain from the Shakespearean villain is a more calculated one than these writers suggest.

Both villains, Radcliffean and Shakespearean, reside in an environment where their deception conceals the true identity of their characters. In such an environment, then, they are able to execute their demonic plans with almost assured success while the decayed, ruined castles in which they reside with ghosts and hints of ghosts reinforce the terror and pain they inflict, as they also depict an unnaturalness of the universe, one which can only operate harmoniously with the villains' defeat.

Whereas Radcliffe's villains are generally flat characters and Shakespeare's are round, fully developed ones, both are opportunists, preying upon others, even those related by blood, and using the failings and weakness of others for their own selfish advantages. Moody and endowed with a physical appearance equal to their demonic natures, the two groups of villains are perplexing creatures whose true natures are never fully known and whose physiognomies seem to appear in the characters and heroes of the Romanticists. Each Radcliffean villain, major and minor, can be paired on a one to one basis with a Shakespearean villain. Both are motivated by materialistic greed, Both are filled with sexual lust. Both are vindictive, and both Radcliffe's and Shakespeare's minor villains, as this analysis reveals, must submit to the more menacing, vicious villains when conflicts arise. Likewise, both villains eventually succumb to the goodness and harmony necessary for the existence of the universe.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1975

Alfred E. Leja, Chairperson

GEOGRAPHY

AN EVALUATION OF SCHOOL DESEGREGATION ON THE WITHDRAWAL PATTERN OF SCHOOLS IN THE JORDAN NEIGHBORHOOD OF MINNEAPOLIS, MINNESOTA

David L. Christopherson

PROBLEM: It was the purpose of this study to investigate the effect of desegregation on the withdrawals in K-8 of the public schools of the Jordan Junior High Neighborhood in North Minneapolis. This neighborhood is predominantly white and the plan called for the busing of both black students into the area and white students out of it.

PROCEDURE: The collection of data pertinent in this study was obtained in two ways: (1) the collection of withdrawal data for the five years of the study from the four elementary schools and the junior high involved in the study area and tested for its level of confidence at each school; and (2) a questionnaire to ascertain the reasons for withdrawing from students who were directly affected by the desegregation of Jordan Junior High.

FINDINGS: It was found in this study that desegregation did not lead to the mass exodus of whites from the neighborhood. There was, however, significant "flight" in two instances where white students were bused out of the neighborhood to former black schools. The level of confidence for both was .001.

The questionnaire found that 21.5 per cent of the respondents withdrew because of busing and another 21.5 per cent withdrew because of the desegregation of Jordan. About half, 50.8 per cent, of the respondents said it at least influenced their decision to leave.

SUMMARY AND CONCLUSIONS: Busing to achieve desegregation was found to be a major concern of whites in the Jordan Neighborhood. In instances where whites were bused, the highest and sharpest withdrawal rates were found. The rest of the neighborhood showed no signs of significant "flight," though some indicated that they left because of desegregation.

Because of the smooth implementation of the Plan and its operation since, it remains to be seen if the withdrawal curves will remain stable and if any of the ones who did leave will return.

APPROVED BY RESEARCH COMMITTEE, JULY 1976

Phillip L. Tideman, Chairperson

PRESENT AND PAST LAND USE IN EAST-CENTRAL MINNESOTA WITH AN EMPHASIS ON THE CURRENT CHRISTMAS TREE INDUSTRY

David A. Ellingson

The purpose of this research study was: (1) to determine the land usage since the arrival of the white man, (2) to ascertain the factors that influenced the changes in land use, (3) to investigate the Christmas tree industry which is concentrated in the area, and (4) to predict the land uses in the last quarter of the century.

Several methods of research were used to investigate the problem and to gather information. Although the history of the state of Minnesota is quite well documented, obtaining specific information about the study area caused some problems. Interviews with county agents, local historians, and Christmas tree growers provided additional data.

The study area encompasses the Anoka Sand Plain which was formed by sand deposits from melting ice from a glacial sublobe that covered the area. The original vegetation was a mixture of hardwoods, grasses and a few stands of pines. Two extensive areas of pines were along the St. Croix River and the Rum River in northern Isanti County.

After the land was ceded, farmers soon followed the logging industry. Subsistence farming characterized the agriculture of the frontier in the 1850's. Prior to the building of railroads in the years of 1870-1900 little commerce existed.

As the tillable acres increased and the number of livestock and poultry grew, the farmer began to produce more than he could use. The surplus, sold in the nearby trade centers, represented the beginning of commercial agriculture. By the turn of the century, railroads were the main mode of transportation. Wheat and potatoes were extremely important cash crops.

The late 1940's brought an interest in the growing of Christmas trees as a crop. Foresighted growers planted seedlings on marginal land, especially in Sherburne County. Through cultural practices, these trees and the subsequent plantings established the roots of the Christmas tree industry.

After World War II ended farmers in the United States were producing surpluses of grains, milk products and eggs. The Agricultural Act of 1956 was passed as an aid in reducing surpluses and in preventing overproduction of grains by keeping land out of production. The effects of the act had many implications, such as the closing of farm related businesses and the planting of millions of seedlings.

Three current crops deserve special emphasis. One of these crops is the return of potato growing industry to Sherburne County. High yields are attained by heavy fertilization and irrigation. In acreage, corn and soybeans led all other crops. The corn is fed as a grain to animals in the study area. Soybeans are shipped out of the study area and then processed into numerous products.

Many factors influence the current use of land and will continue to play a significant role.

Christmas tree farming requires considerable knowledge into the establishment, the application of culture practices and the marketing of trees. Keith Jacobs is a typical grower and provides a case study.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1975

Philip L. Tideman, Chairperson

THE ECONOMIC EFFECT OF THE OROGENIC AND GLACIAL LEGACY OF LAKE COUNTY, MINNESOTA

Michael T. Stacey

The economy of Lake County, Minnesota is unique. It is tied directly to the natural resources found in the county itself or in the adjacent counties. These resources are associated with only two of the geologic eras that affected the remainder of the earth; the Pre-Cambrian and the Pleistocene.

The Pre-Cambrian and its orogenic forces created the rugged and scenic shoreline of Lake Superior in Lake County. The intrusions and the volcanism of those orogenic forces and the subsequent weathering formed massive deposits of iron ore to the west in neighboring St. Louis County and could have caused the formation of copper-nickel deposits in Lake

County.

The Pleistocene and its glaciers scoured the county and left its tracks in the form of hundreds of lakes. The sandy soils deposited by the glacier enhanced the growth of pine forests. The glacial deposits of clay at the present site of Two Harbors created a natural and stable harbor that would not require substantial maintenance.

The forces of these two geologic eras have had a pronounced effect on Lake County's economy. The iron ore deposits of the Mesabi and Vermilion ranges in St. Louis county were shipped to the eastern ports from Duluth in St. Louis County and from Two Harbors. The depletion of the high grade iron ore gave rise to the taconite industry and the birth of the city of Silver Bay. At Silver Bay, the processing of low grade iron ore into high grade pellets has given new impetus to the county's economy.

The Norway and white pine forests were cut in the early 1900's but have been reforested with the quicker growing birch, aspen, spruce and jack pine. These trees now provide the basis for a lumber industry and the future possibility of a pulp processing plant in Two Harbors.

The forests, lakes and rugged scenery along the shore of Lake Superior provide the basis for a tourist industry. State and federal forests and the Boundary Waters Canoe Area occupy about 65% of the county with the intent of maintaining their areas as close to the natural state as possible for recreational and environmental purposes.

These three industries, Mining and its associated industries, Lumbering, and Tourism account for the vast majority of the economical conditions in Lake County.

APPROVED BY RESEARCH COMMITTEE, JULY 1975

Phillip L. Tideman, Chairperson

HISTORY

THE EDITORIAL REACTION OF ALVAH EASTMAN TO THE EVENTS AND ISSUES OF WORLD WAR I IN THE ST. CLOUD JOURNAL-PRESS, 1914-1918

Thomas E. Gambrino

This thesis attempts to state, analyze and interpret the editorials of Alvah Eastman, editor of the *St. Cloud Journal-Press* during World War I, 1914-1918, concerning the significant issues of neutrality, preparedness, and loyalty written in the milieu of a predominantly German-American community.

Eastman opposed American intervention in the war from 1914 to 1917 out of personal conviction and in response to community sentiment. Although an advocate of neutrality, he criticized Germany more strongly and more often than England for violations of American neutral rights. At the same time he reprimanded the Administration for approving loans to the Allies and for acting more strictly toward Germany than England regarding neutrality issues.

Eastman initially opposed non-defensive preparedness but political considerations and the worsening state of German-American relations led him to support varying degrees of preparedness until he finally advocated universal military training on the eve of American intervention in the war.

The conspiratorial Zimmermann Note, German's renewal of unrestricted submarine warfare, and the Administration's more aggressive tone led Eastman to become an interventionist between March 1 and March 29, 1917.

Eastman encouraged all-out support for the war. He attempted to defend and reinforce the loyalty of his German-American readers by urging them to conform to the law, join war service organizations, attend loyalty meetings and support the activities of the Stearns County chapter of the Minnesota Public Safety Commission, which he helped organize. In ensuring loyalty Eastman condoned restrictions on civil liberties.

As a Republican-Progressive he opposed such radicals as Socialists, International Workers of the World and Non-Partisan Leaguers. He and other Republicans campaigned successfully against the League and its candidate for governor, Charles A. Lindbergh, Sr., in the 1918 campaign for the Republican nomination by claiming that the League and Lindbergh were disloyal to the war effort. Eastman and the Republicans also condoned the dirty campaign tactics, physical abuse and civil rights' violations that occurred during the campaign.

In the peace settlement after the war Eastman objected to the Versailles Treaty and the League Covenant because it contained no safeguards for American sovereignty and freedom of operation. Here as in previous instances, he reflected Republican Party thinking.

APPROVED BY RESEARCH COMMITTEE, MAY 1977

Edward J. Pluth, Chairperson

THE SIEGE OF HERAT 1837-1838

John Carl Nelson

A condition of economic exhaustion and political anarchy prevailed in Iran by 1800. The great empires of the 1600's had collapsed and in the wars that followed the prosperity of the area was destroyed. The city of Herat was a microcosm of the general conditions. After 1797 the Kajar dynasty tried to restore the Persian empire to its former limits but their efforts met with only limited success and Herat remained their goal in the east. Afghanistan was torn apart by tribal tensions in 1818 and Herat became more vulnerable. The Russian empire achieved a position of dominance in Western Asia after 1828. The British felt that this was a threat to their own empire in India and tried to erect a buffer to guard against Russian influence. They saw Persian efforts to take Herat in the 1830's as an extension of Russian influence and a threat to India.

After 1835 Russia encouraged Persia to take Herat. The Russians perhaps hoped to provoke a break between Britain and Persia thus displacing British influence which had been growing. The Persian army laid siege to Herat in 1837 but its efforts to take the city were ineffective. The Russian ambassador to Persia sent agents into Afghanistan to arrange a coalition of states against Herat. The British saw this as a direct intrusion into their buffer area and when Kabul sided with Persia the British decided to send an army into Afghanistan. The Persians failed to take Herat but the British still considered it necessary to occupy Afghanistan. Their occupying army was destroyed in 1842 but since the Persian and Russian threat had abated no further action was necessary.

Each of the parties involved failed in their immediate objectives but as a result the relations in this area were defined until 1906. Persia and Afghanistan lost the freedom to act independently. Russia's dominant position in Persia was maintained but the British could not be excluded. Afghanistan was firmly made part of the Indian imperial system and the city of Herat became its outermost limit.

APPROVED BY RESEARCH COMMITTEE, MAY 1976

Marjorie J. Morse, Chairperson

THE ATTITUDE OF MINNESOTANS TOWARD THE SOVIET UNION: 1917-1933

James G. Robak

PROBLEM: The central thesis of this study is that Minnesotans were aware of and had opinions about the Soviet Union from 1917 to 1933. Those attitudes were many and varied considerably. The purpose of this study is to show what some of those attitudes were and why they existed.

PROCEDURE: The research for this study was conducted in the University of Minnesota library, the St. Cloud State University library, the Minnesota Historical Society and at various locations within the state where interviews were conducted or surveys taken. Not surprisingly, newspapers yielded the most abundant amount of information on this specific topic and were used extensively. Considerable background material on the issue of diplomatic recognition was obtained through the National Archives and Records Service of the Franklin D. Roosevelt Library in Hyde Park, New York.

SUMMARY OF FINDINGS: Between 1917 and 1933, Minnesotans were concerned about many matters, among which was the Soviet Union. They were aware of that country's existence and how it affected their lives. Although often confused, nonetheless there was evidence

of interest. That interest may have been directed toward the Russian people, the Russian government, or any other of a number of related affairs. Curiosity and thought were developed into definite feelings; feelings that were sometimes silent and at other times rather vocal depending on what was taking place both here in Minnesota and around the world. At times those feelings or attitudes remained strong and intact; at other times, they weakened or shifted. The important fact, however, is that those attitudes were present in the lives of many Minnesotans.

APPROVED BY RESEARCH COMMITTEE, MAY 1977
Dale W. Peterson, Chairperson

SPEECH SCIENCE, PATHOLOGY & AUDIOLOGY

A STUDY OF THE EFFECT OF RESPONSE-CONTINGENT POSITIVE REINFORCEMENT UPON THE DISFLUENT VERBAL BEHAVIORS OF ADULT STUTTERERS

Janice L. Gritti

This study investigated the effect of response-contingent reinforcement upon stuttering in two adult males over a ten-day period. Subjects spoke spontaneously to the experimenter in the same room for seven 30-minute sessions. Session I consisted of a 30-minute No Treatment Condition, Session II of a 10-minute No Treatment Condition followed by a 20-minute Contingent Stimulus Control Condition. Sessions III through VII consisted of a 10-minute No Treatment Condition followed by a 20-minute Positive Reinforcement Condition.

During the No Treatment Condition the experimenter counted stuttering frequency. During the Contingent Stimulus Control Condition, a red light in front of the subject was activated by an experimenter-operated handswitch contingent upon stuttering. Following Session II, the subject chose the items to be received during the Positive Reinforcement Conditions. Items were purchased and placed in front of the subject during the Positive Reinforcement Conditions. Prior to the Positive Reinforcement Condition the subject read instructions regarding response contingencies involved in receiving items. During the Positive Reinforcement Condition, a red light was activated contingent upon stuttering and the experimenter moved a chip forward one space on a game board. The subject received an item each time the chip reached a predetermined space on the board.

A correlation coefficient of .97 for stuttering identification was obtained between the experimenter and a second listener.

The major finding of this investigation was that the attempt to positively reinforce stuttering affected the frequency of stuttering differentially for Subjects 1 and 2.

In conclusion, the results of this study in conjunction with previous studies (Corcoran, 1971; Schoenfelder, 1974) indicate stuttering has not been effectively manipulated by "reinforcing" consequences as would be predicted from an operant model, thereby confounding the issue of stuttering as operant behavior. However, as Corcoran (1971, p. 66) suggested, "a past history of aversive consequences may be an important determinant of how stuttering behavior will respond to rewarding events;" knowing the unique reinforcement history of a given stutterer, the greater the probability will be to systematically manipulate stuttering behaviors within the operant paradigm. Finally, length of time subjects participate in experiments can have direct bearing on the results.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1975
Joseph F. Germono, Chairperson

A SPEECH AND LANGUAGE SCREENING TEST FOR SIX YEAR OLDS

Geraldine M. Gustafson

of a large number of young children. A short speech and language screening test is needed to aid in recognizing the young child needing a more complete speech and/or language evaluation to determine whether observed differences are developmental. The purpose of this study was to see if a test designed for preschool children could be revised and used to identify six year old children with speech and/or language developmental delay.

PROCEDURE: Sixty children, age 6-0 to 6-10 years were referred by classroom teachers and tested on standardized speech and language tests. Each teacher selected two children with low communication skills and two with adequate communication skills. The testing speech clinician did not know the teacher's evaluation of any child. On the basis of their performances on the standardized speech and language tests the children were placed into two groups, adequate speech and language skills, and below adequate speech and language skills. Within two months all the children were retested with the short speech and language screening test.

The data represented categories rather than specific scores. A pass/fail dichotomous measure was used to separate the groups. A chi-square statistical analysis of the data was done, and a phi-coefficient for each chi-square was done to obtain the correlations between the standardized tests and the sections of the Fluharty Test.

FINDINGS: The results indicated that the short speech and language screening test was highly correlated with the standardized speech and language tests in the three areas of articulation, expression and vocabulary skills. In the comprehension area there was a lower correlation. All correlations were positive.

CONCLUSIONS: The revised Fluharty Screening Test could be used as a fast screening test with six year olds. The screening test separated the two groups, adequate and inadequate, by two areas, the articulation and expressive sections of the test. The expressive section of the screening test does not evaluate a child's spontaneous speech and language. The area of emerging linguistic structures needs more study.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1976

Martin A. Kammermeier, Chairperson

THE INCIDENCE OF SPEECH AND HEARING DISORDERS IN A CORRECTIONAL INSTITUTION

Richard Ralph King

PROBLEM: It has been suggested that individuals with speech and hearing problems and inmates of prison populations can be described in many of the same terms. The purpose of this study was to investigate and determine the incidence of speech and hearing disorders in a correctional institution.

PROCEDURE: Inmates at St. Cloud State Reformatory, St. Cloud, Minnesota, were interviewed. During the interview a sample of the inmates' speech was elicited a determination was made as to the acceptability of his speech. Each inmate was also given a pure tone audiometric screening test. The results of the hearing test were categorized according to frequencies failed. The results of the speech and hearing screening tests were compared to the incidence of speech and hearing disorders among persons in the general population.

FINDINGS: Test results reveal that of the 412 inmates screened 15 percent failed the speech evaluation. The most common speech disorder was articulatory in nature followed by disorders of voice and fluency.

The results of the hearing screening revealed that 80 percent of the inmates passed the hearing screening test. Of the 20 percent that failed 54 percent experienced problems in the high frequencies. The remaining 46 percent failed to respond to one or more frequencies in the speech range.

CONCLUSIONS: The data collected in this study show that inmates at St. Cloud State Reformatory have an incidence of speech disorders three times that of persons in the general population.

The nature of the hearing screening evaluation was such that inmates with possible hearing disorders were detected. To effectively determine the number of inmates with hearing

disorders serious enough to interfere with communication was impossible due to the lack of sophisticated equipment and trained personnel.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976

Martin A. Kammermeier, Chairperson

A STUDY OF THERAPY TECHNIQUES USED WITH STUTTERERS IN MINNESOTA

Richard M. Ogren

It was of interest to determine which therapy practices were being used in the treatment of stuttering in school clinical speech programs. A questionnaire was sent to 283 school speech clinicians asking them to provide information about their training and experience, the techniques they used with stutterers and how many stutterers they treated during the current year.

One hundred seventy-five, or 62 percent, of the clinicians responded. Their responses were used to establish subgroups according to type and level of training and years and place of experience. Therapy techniques used by subgroups were determined through a computer program. Comparison of techniques was made among the groups. The number of stutterers treated was also considered in relation to subgroups.

It was concluded that treatment of stutterers in the public schools during the 1969-70 school year was not effective; no great difference in therapeutic procedures existed regardless of training or experience; clinicians with five to ten years of experience, varied experience, and a masters degree are most effective in alleviating stuttering; clinicians with a masters degree work with a larger number of stutters than those with an undergraduate degree.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1976

Martin A. Kammermeier, Chairperson

THE EFFECTS OF A SPEECH IMPROVEMENT PROGRAM ON THE ARTICULATION ERRORS OF KINDERGARTEN CHILDREN

Gretchen Louise Peel

The purpose of this study was to determine the effects of a speech improvement program on the articulation errors of kindergarten children. Twenty-eight subjects, each of whom scored at least one error on an articulation screening test, were drawn from a population of 53 kindergarten children. Fourteen were randomly designated as the experimental group and 14 as the control group. The experimental group was presented a video-tape speech improvement program consisting of eleven tapes and accompanied by clinician-directed activities. The program emphasized correct production of 13 speech sounds and was presented over a seven week period. All subjects were administered the Templin-Darley Tests of Articulation prior to, immediately following, and three months following the presentation of the program.

An analysis of covariance was done on three measures: 1) the number of errors on the 141-item test of articulation, 2) the number of errors on the 35 items testing single consonant sounds included in the program, and 3) the number of errors on the 22 items testing single consonant sounds not included in the program.

There were no significant differences between the groups for any of the measures analyzed. Both groups made significant decreases in the number of articulation errors on all three measures across the testing periods. It was concluded that the speech improvement program was not effective in improving articulation skills and that the improvement shown by the subjects was due to maturation.

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Gerald L. Powers, Chairperson

A STUDY OF THE EFFECTS OF TWO RESPONSE-CONTINGENT PROCEDURES ON THE SPONTANEOUS SPEECH OF CHILDREN WHO STUTTER: POSITIVE REINFORCEMENT ALONE AND POSITIVE REINFORCEMENT IN COMBINATION WITH PUNISHMENT

Gail Mastenbrook Schoenfelder

The purpose of this study was to compare and clarify the relative effects of two response-contingent procedures on the stuttering behavior of children: positive reinforcement of fluency alone, and positive reinforcement of fluency in combination with the punishment of stuttering. Four male children spoke spontaneously during three 32-minute sessions. Session I consisted of a 16-minute No Treatment Condition followed by a 16-minute Contingent Stimulus Control Condition. Sessions II and III consisted of a 12-minute Contingent Stimulus Control Condition followed by a 20-minute period in which either a Positive Reinforcement Condition, or a Combined Positive Reinforcement and Punishment Condition was in effect. The latter two conditions were counterbalanced across subjects.

During the No Treatment Condition, no response-contingent stimuli were delivered. During the three Contingent Stimulus Control Conditions, a red light was activated whenever the subject stuttered. During the Positive Reinforcement Condition, the experimenter moved a chip forward three spaces on a game board whenever the subject spoke fluently for a pre-determined interval of time. In addition, a red light was activated whenever the subject stuttered. During the Combined Positive Reinforcement and Punishment Condition the same response-contingent stimuli were delivered except the chip was also moved back one space on the game board whenever the subject stuttered. Prior to the Positive Reinforcement Condition and the Combined Condition, the subject was allowed to choose the rewards he would like to earn during these conditions. He was also given instructions concerning the response contingencies involved in earning these rewards.

The major finding of this study was that each of the three response-contingent conditions resulted in different patterns of change in the stuttering of the four subjects. This finding suggests that general statements concerning the absolute or the comparative effects of various response-contingent procedures on stuttering appear to obscure rather than clarify the applicability of response-contingent procedures to the treatment of individuals who stutter. Therefore, if positive reinforcement of fluency alone, or combined positive reinforcement of fluency and punishment of stuttering are to be considered as viable approaches to the treatment of stuttering, a diagnostic assessment of the effects of these procedures on the stuttering rates of individual stutterers becomes crucial in determining those who might or might not benefit from them.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1974

Joseph A. Corcoran, Jr., Chairperson

INTERNAL AUDITORY DISCRIMINATION AND ARTICULATION ABILITY

Janet Venneberg

PROBLEM: Although much research has been done in the area of auditory discrimination, little has dealt specifically with a subject's ability to discriminate the correctness of his own production. This study was interested in self-judgement of subjects' own production in three areas: sounds which were produced by the subjects consistently incorrectly, sounds which the subjects produced correctly inconsistently, and sounds articulated correctly. Of particular interest was whether discrimination was better for sounds misarticulated correctly than for sounds misarticulated.

PROCEDURE: Thirty subjects each of whom had at least one sound produced consistently incorrectly (Group I), at least one sound which was produced inconsistently correctly or was stimuable (Group II) and several sounds which were always produced correctly (Group III) were used.

The words identified for each subject were used to make up test word lists for each group. The experiment consisted of the subject repeating the words read by the examiner and then judging his own production as being right or wrong. Discrimination ability for each list was inferred from the number of correctly judged productions.

RESULTS: An analysis of variance showed that the discrimination among groups was significant at a .01 level. A Scheffe Multiple Comparison revealed an F score greater than the critical value in the comparison of Group I with Group III and Group II and Group III.

CONCLUSION: It is concluded from this study that children do not discriminate as well those sounds which they misarticulate when the task is one of judging their own production.

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Martin A. Kammermeier, Chairperson

SPECIAL STUDIES

THE RELATIONSHIP BETWEEN FOUR INSTRUCTOR VARIABLES, AS PERCEIVED BY STUDENTS, AND STUDENT ATTITUDE CHANGE IN PRE-SERVICE HUMAN RELATIONS CLASSES

Jean Alvarez

This study was designed to determine whether Gerard Egan's model of the helping relationship is applicable to pre-service human relations classes. The Stage I skills of this three-stage model have been shown to be positively correlated with progress in a number of helping situations, and it was hypothesized that similar correlations would be found in this situation.

Ninety subjects were given pre- and post-tests on an Attitude Questionnaire dealing with human relations concepts. The pre-test score was subtracted from the post-test score to yield an attitude change score. In addition, each subject rated his/her instructor on the four Stage I skills of Egan's model—level of regard, empathic understanding, congruence and unconditionality of regard—using the Barrett-Lennard Relationship Inventory.

The subjects' change scores for each of the 16 items on the Attitude Questionnaire, as well as their mean change scores across all 16 items, were correlated with each of the four instructor variables. These correlations were computed for the total group of subjects, and also for seven subgroups: those subjects working with each of the seven instructors. Of 68 correlations for the total group, 15 were significant at the .05 level (ten positive and five negative), while one, a negative correlation, was significant at the .001 level. The analysis by instructor groups yielded higher correlation coefficients, but, like those for the total group, they were a mixture of positive and negative, and no clear pattern emerged.

It was concluded that, while the four instructor variables may have some influence on student attitude change, they are not a major factor in this change. For the most part, the highest correlations were found for those items on which the least amount of change had occurred. This indicates that factors other than the Stage I skills must account for major attitude change. In addition, variations in the correlations obtained for different instructors indicate that these variables may be of greater importance for some instructors than for others. For those instructors whose correlations yielded negative or low positive relationships, it is likely that attitude change is facilitated by variables other than the four studied here. It was recommended that studies be undertaken to explore the relationships between attitude change and Egan's Stage II and Stage III skills.

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Douglas F. Risberg, Chairperson

*POWER, THE TOOL OF CAPITALISM: ITS DEFINITION, IDENTIFICATION,
AND EFFECTIVE UTILIZATION BY BLACK AMERICANS AS A
MEANS TO FULL PARTICIPATION IN AMERICAN SOCIETY*

Stanley R. King

This paper presents a theoretical study of power, its many subtle and obvious forms, the various power concepts and relationships as the means to the end of authority, control, wealth, and its dominant role in the American capitalistic society. It proposes that wealth and power are synonymous, and are the means by which full participation in American society is achieved. It supports the "Power Elite," position of C. Wright Mills, and thereby concludes that power and wealth is not shared equally, but is rather concentrated into the hands of a "ruling elite," who ultimately acts in its own best interest. Based on this same concept, it takes the position that power is derived through social and economic institutions, and that those who wield power, do so from positions within those institutions. It contends that Black Americans do not fully participate in American society because their access to power through conventional, traditional American social and economic institutions are blocked by "institutional racism." It concludes, therefore that blacks must develop power for themselves by first understanding its place and function within American society, and thereby using the American capitalistic system as a model. It further contends that blacks must identify, and utilize existing power resources within the black community such as their social and economic institutions, in order to gain power, and ultimately full participation in American society. It finally proposes a theoretical "Composite Plan" by which this end power and participation can be achieved most effectively, basically derived from the American power-dominated capitalistic system.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1975
Douglas Risberg, Chairperson

*A FIELD STUDY DETAILING THE DEVELOPMENT AND
IMPLEMENTATION OF A HUMAN RELATIONS COURSE*

Margaret McCormick

This study was designed to determine if the balance theory was applicable to human relations training. No attempt was made to test the theory itself. The hypotheses was that application of the theory to human relations instruction would cause the subjects to develop a more accepting attitude of persons of another race and/or attitude of acceptance of non-traditional sex roles.

Sixty subjects were given a pre- and post-test on Martin R. Wong's Minnesota School Personnel Inventory which attempts to measure teacher's tolerance and acceptance of individual differences. The groups' pre-test score was subtracted from the post-test score to yield an attitude change score for the group. The race and sexism scales were the only two examined in this study.

Although the results showed a consistent move to a higher level of tolerance for differences there was no pre post significance. Self reports from participants of change accuracy contradicts the test results.

It was concluded that individual change scores rather than a group score would have been a more appropriate means for determining significant change. The instrument itself may not have measured the amount of attitude change that took place. Instructor observation suggested positive behavioral change in the areas of sexism and racism on the part of most participants.

It was recommended that studies be undertaken which would repeat the study examining behavioral change and/or a different means for measuring attitude change.

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Douglas F. Risberg, Chairperson

*A STUDY OF THE CHANGES IN SELF-ACTUALIZING VALUE
AND INTERPERSONAL MODE AMONG PARTICIPANTS IN A
HUMAN RELATIONS COURSE FOR EDUCATORS*

Nancy J. Smith

This study was designed to examine whether human relations training would affect the interpersonal mode of the subjects as it was measured by a self-actualization scale. Self-actualization theory correlates positively with many of the basic tenets and ideas of human relations training for educators. The hypothesis stated that the subjects of the study would show measurable changes at the end of their human relations course.

The forty-four subjects were administered pre- and post-tests on the Personal Orientation Inventory. To obtain higher scores on any of the Inventory's twelve scales from pre-test to post-test, indicated a movement toward greater self-actualization.

The statistical analysis yielded significantly different scores on all twelve scales, from the pre- to the post-test. The pattern was for all subjects on all scales to move in a positive direction toward greater self-actualization. The range of the positive change exhibited in the post-test scores was measured by probability factors of .000 to .010 and .016 on various scales of the Inventory.

The conclusions were that there was movement among the group which indicated a significant trend toward more self-actualization as it is measured by the POI, and the time factor indicates there may be a relationship between the course materials and the change which occurred. The combination of human relations and self-actualization materials may be very important as an evaluative instrument for human relations courses. The POI, in particular, was found in this study to have some validity outside a therapeutic setting. It was recommended that several statistical methods be changed for future studies and that more research should be undertaken on the Personal Orientation Inventory and other similar measures to determine their usefulness as evaluative measures on human relations training.

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Douglas F. Risberg, Chairperson*

