

## DOCUMENT RESUME

ED 105 634

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EA 007 073

TITLE Model for Educational Accountability--Development of a Planning Programming Budgeting Evaluation System. Final Report. Research Series No. 11.

INSTITUTION Fargo Public Schools, N. Dak.

SPONS AGENCY North Dakota State Board for Vocational Education, Bismarck. Research Coordinating Unit.; Office of Education (DHEW), Washington, D.C.

REPORT NO RS-11

PUB DATE 15 Aug 74

NOTE 42p.

EDRS PRICE MF-\$0.76 HC-\$1.95 PLUS POSTAGE

DESCRIPTORS Academic Achievement; Adult Education; \*Cost Effectiveness; \*Educational Accountability; Elementary Secondary Education; Expenditures; Instructional Materials; Models; Objectives; Planning; \*Program Administration; \*Program Budgeting; \*Program Effectiveness; Program Evaluation; Program Planning; State Departments of Education; State Federal Aid; Teacher Attitudes; Vocational Education

IDENTIFIERS \*Fargo; North Dakota; \*Planning Programming Budgeting Evaluation System; PPBES

## ABSTRACT

The Fargo Public School System has completed a three-year project on a Planning-Programming-Budgeting-Evaluation System (PPBES). The two major purposes of this project were to develop a model for PPBES and to implement this system in the school district operation. Project activities included work in all four of the PPBES phases. The planning stage was considered the foundation of the system. Several administrators and teachers were involved with various tasks in this phase. The project staff developed a multilevel program structure outline to encompass and relate all activities that take place in the Fargo district. In the programming phase, the staff sought to select the best route to achieve goals and objectives developed in the first phase. An innovation in the budgeting stage was the assigning of expenditures to specific school programs. The evaluation phase is used to enable school districts to determine the extent to which their objectives are achieved. The project staff feels that the system has many merits, can be very useful in providing important information to decision-makers, and can be very efficient in assisting districts to provide educational accountability. (Author/IRT)

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# Model for Educational Accountability— Development of a

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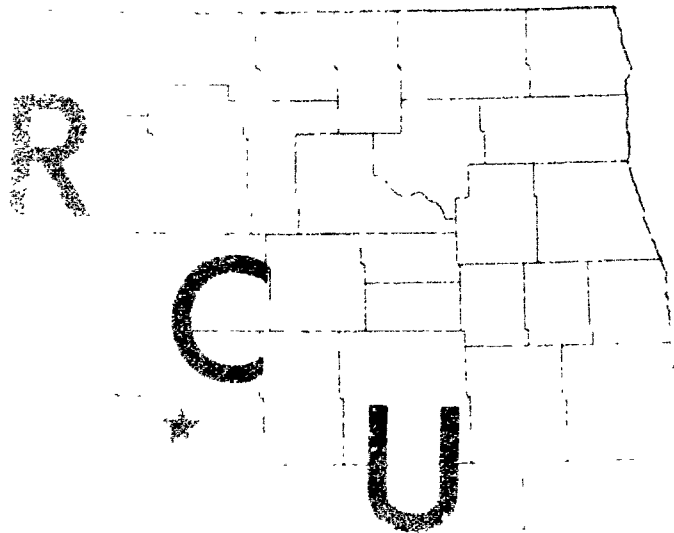
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The research reported herein was performed pursuant to a grant with the Office of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

FINAL REPORT

PPBES - PLANNING, PROGRAMMING, BUDGETING, EVALUATION SYSTEM

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August 15, 1974

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## ABSTRACT

The Fargo Public School System has completed a three year project on PPBES (Planning-Programming-Budgeting-Evaluation System). The two major purposes of this project were (1) to develop a model for PPBES and (2) to implement this system into the school district operation.

The project was funded by the North Dakota State Board for Vocational Education and was conducted entirely within the vocational department of the Fargo Public Schools. School officials believed that a model could be completely developed in one academic area. They felt that it could be expanded to the entire school system after it had been refined in the vocational area.

Project activities included work in all four of the PPBES phases. The planning stage was considered to be the foundation of the system. Several administrators and teachers were involved with various tasks in this phase. Project personnel identified needs and problems. They also identified and evaluated the resources that were available to aid in the solution of these problems. The staff developed educational goals that were broad in nature. Selected groups of local teachers developed specific program objectives. Each of these objectives was written clearly and explicitly to facilitate program evaluation.

The project staff developed a multi-level program structure outline to encompass and relate all activities that take place in the Fargo School District. The first level breakdown included the three broad categories of general instruction, operational support, and instructional support. These three categories were subdivided. The general instruction category was broken at level two into communication skills, mathematics, vocational

education, etc. At level three one of the classifications under vocational education was business and office education. The latter was subdivided at level four to include typewriting, office practice, accounting, shorthand, business machines, and keypunch.

In the programming phase, the staff sought to select the best route to achieve goals and objectives. This selection was made after the staff had identified and evaluated several alternative programs.

The staff members developed and organized instructional materials for use in each of the school courses. They revised and updated educational learning packages that had been previously developed by local teacher groups.

An innovation in the budgeting stage was the assigning of expenditures to specific school programs. This program budgeting replaced the traditional budgeting in which costs were assigned to categories such as administration, instruction, and transportation. Budgets could be calculated for any program and at any level in the program structure.

Evaluation is the fourth phase in the PPBES cycle. This process is used to enable school districts to determine the extent to which their objectives are achieved. Districts also have the opportunity to examine and assess various alternative techniques. Ultimately, the evaluation process enables the district to collect data and information that aids in the educational decision making process. After these decisions have been made, the PPBES process moves to the planning stage and the cycle begins again.

Activities in the evaluation phase included the comparison of performance to objectives and the relationship of student achievement gains to program costs. Achievement was measured by pre- and post-testing with tests that were developed locally to assess the degree of objective attainment. The cost/benefit

ratio was calculated for each program to relate the achievement to the financial costs.

The Fargo staff members recognized the magnitude of the job in this project. They realized that all of the tasks in the overall job have not been completely finished. However, they do believe that very much progress was made in the three years of the project.

The PPBES model has been developed in the vocational area. It may now serve as a guide and stimulus for other schools and agencies who are beginning to move in this direction.

Many states have suggested, and even mandated, that districts develop some type of accountability system. Since North Dakota is now studying this problem, the Fargo project has assumed increased importance. The model could aid in the statewide decision making process and would certainly be a guide if the state chooses to require this type of system.

Many side benefits have been derived as a result of the project, especially in the area of curriculum. The teacher groups have written course objectives, selected instructional materials, and ultimately strengthened the instructional process. In addition, teacher morale has generally been improved as a result of their increased involvement.

In conclusion, the project staff members realize that the PPBES is not a panacea. However, they do feel that the system has many merits, can be very useful in providing important information to decision makers, and can be very efficient in assisting districts to provide educational accountability.



## PROJECT FUNDING

The Fargo PPBS Project application was approved on March 16, 1971. The State Board for Vocational Education approved the application for a research grant in the amount of \$27,700. The purposes of the grant were to (1) assist the Fargo School District in the development of a PPBS Model for use in Vocational Education and (2) to implement this system in the Fargo Schools operations

The original proposal outlined a three year project with proposed budgets as follows:

|                    |          |
|--------------------|----------|
| 1st year (1971-72) | \$45,250 |
| 2nd year (1972-73) | \$46,520 |
| 3rd year (1973-74) | \$48,230 |

The first year's proposal was funded at \$27,700 or at 61% of the original request. Because local monies were not available to fund all of the balance needed, some modifications were necessary. It was originally proposed to develop program elements, program budgets and develop curricula for all Business Education subjects. A re-examination of this goal in light of reduced funding resulted in a first-year concentration on Typewriting courses in both senior high schools.

The second year's (1972-73) proposal was approved at \$27,700, but amended and finally funded at \$16,325 or at 35% of the original request. Again the concentration was in the Typewriting courses in both senior high schools and in Ben Franklin Junior High School.

The third year was funded at \$13,000 or at 27% of the original request. The scope was extended to include other Vocational subjects. These subjects

were Accounting I and II, Shorthand I and II, Key punch, Business Machines and Office Practice.

The total amount of approved funding during the three project years was \$57,025. This was 41% of the proposed budget total of \$140,000.

## METHODS

### Planning -

Project activities included work in all four of the PPBES phases. The planning phase was considered to be the foundation of the system. Several administrators and teachers were involved with various tasks in this phase.

A group of teachers and administrators was organized to develop goals and objectives. These were developed separately for each of the subject areas. The goals and objectives were developed for typewriting during the first project year. Goals and objectives for the other subjects were developed in the subsequent years.

Goals were stated in broad and general terms. They identified ideals at which the course activities could be directed. An example of the typewriting goals is given in Appendix A.

The objectives were developed in the same time sequence. Typewriting objectives were written during the first year and other objectives were written subsequently. Sets of objectives were developed for each program by the classroom teachers. The performance criteria in the objectives were stated clearly and explicitly to facilitate the program evaluation with respect to the objectives. The performance standards were set at a level that is attainable, yet challenging. Because these standards were set without the benefit of statistical data, it was necessary to make some changes

after actual classroom usage. An example of course objectives is given in Appendix A. This is the revised list of objectives for Typewriting III.

One of the tasks in this phase was the development of a program structure. This structure included all of the activities that are a part of the school district operation. Categories in the structure were broken down in succession to produce a series of different levels. The first program level included the three broad categories of general instruction, operational support, and instructional support. All three of these categories were subdivided. The general instruction category was broken at level two into communication skills, mathematics, vocational education, etc. At level three, one of the classifications under vocational education was business and office education. The latter was subdivided at level four to include typewriting, office practice, accounting, shorthand, business machines, and keypunch. The level five divisions showed the individual courses such as Typewriting I, Typewriting II, etc.

The planning stage work that has just been described was done in various meetings and workshops. Teachers met periodically during the project years. A summer PPBES Workshop was held in June, 1973. Six vocational teachers met with school administrators for four weeks. Much of the above work, and work in the other phases, was done at this time.

#### PROGRAMMING

In the programming phase the staff sought to identify alternative programs. They attempted to evaluate each of the alternatives and to, ultimately, select the best program for achieving the program objectives.

The staff members examined several pieces of curriculum materials. Eventually they chose to use the locally developed educational learning packages as the curriculum base. These materials had been developed locally on the basis of local educational needs.

The vocational teachers developed sets of packages for each of the courses. Some of this package development had been done before the start of the PPBES project. These packages were continuously revised and updated throughout the project. In the other subject areas package development was begun and some revision was completed.

The learning packages were designed to help achieve the program objectives. Each learning package was directed toward mastering one basic course skill. Thus, the first step in the package construction was the identification of basic skills. This was done for all courses. Skills were identified and sequenced. A copy of the skill sequence in Typewriting I is given in Appendix B.

The physical format was the same for all learning packages. Each package contained a general content description, prerequisites, a behavioral objective, pre-test, instructional experiences, and a post-test. A copy of one typewriting learning package is shown in Appendix B.

#### BUDGETING

This phase (budgeting) of the PPBS cycle is one that received major emphasis in this project. Development and implementation of an acceptable accounting system were the basic considerations.

Two alternative methods of developing an accounting system were considered:

1. To locally develop a complete system in the accounting and data processing departments.
2. To determine if any cost accounting systems for program budgeting in school districts had already been developed.

The first alternative was within the capability of the Fargo School District staff. However, starting from "ground-zero" was determined to be a method that would take a great deal of time to develop. This was particularly true because the time spent on this project by regular staff must be classified as "borrowed time." The staff members already had full-time jobs with the regular business of the school district. For this reason, the first alternative was set aside pending an investigation of the second.

The project director had been following the development of program budgeting for the past five years. He had attended two national conferences sponsored by the Research Committee of the Association of School Business Officials on the subject. One of the projects that appeared to have a great deal of promise was sponsored by the Minnesota ASBO and the Hopkins, Minnesota, School District, working closely with a consulting firm, the Aries Corporation of Minneapolis. After a full year of work with the Hopkins School District, a cost accounting system to support program budgeting was developed. The entire program was conceived and developed in a computerized format. After a thorough examination of the results of their research, it was the decision of the Fargo staff to purchase the basic system from the Aries Corporation and to retain their services for the necessary modifications to fit their package to our needs in the Fargo School District. This decision was approved by Mr. Ben Doult, Research Director, State Board for Vocational Education. A

line item transfer between two budget items was also approved to make this arrangement possible. A contract was signed between the Fargo Public School District and the Aries Corporation on July 1, 1971.

The cost accounting system developed by the Aries Corporation was named Program Oriented Budgeting and Accounting System (POBAS). It is estimated that one full year's time was saved by selecting this alternative instead of attempting to develop a local system.

The POBAS System was developed for use in school systems in Minnesota. While both Minnesota and North Dakota accounting systems follow the general format of the U.S. Office of Education Handbook II, there are many significant variances between the two systems. A considerable amount of modification of the original system was essential.

The request to the consulting firm for program modifications originated with the Fargo School District Accounting and Data Processing staff. It was necessary to run a series of programs, analyze the results and determine the necessary modifications. This process continued during the entire period of the project. Final program modifications were completed about July 1, 1972.

Program modifications were requested to conform to North Dakota Accounting Regulations. Additionally, the local staff suggested several modifications that considerably improved the quality and capability of the entire system.

The staff arbitrarily selected July 1, 1972, as the date for starting the POBAS technique. This system was used in addition (or parallel) to the original traditional system.

Obviously, the operation of two systems simultaneously created some problems. There was a great increase in the amount of staff working time and

a corresponding increase in the demands on the various machines. The traditional system had been kept current throughout the years. However, there had been a lag in the updating of the POBAS system. In addition to the problems mentioned above, there have also been difficulties in adapting the system to the local Fargo situation and in modifying the program to run on the local computers.

The complexity of the POBAS technique has already been noted and the materials in the appendices should substantiate this technique. A partial listing of the codes is given in Appendix C. A twelve digit code is used for each entry. Three digits in the code are used for each of the following: department, source of funds, organizational units, and object.

A reproduction of a computer printout is shown in Appendix D. This gives an example of the output that is received and illustrates the intricate breakdowns that are possible with this system.

The vocational teachers were involved in calculating costs for each of the programs. They compiled the costs for repairs, new equipment, supplies, etc. Samples of the forms that were used are shown in Appendix E. The machine repairs were pro-rated to each program on the basis that was proportional to class time. The percentages of class usage were determined by the teachers. These figures are given in Table I in Appendix E.

## EVALUATION

Evaluation is the fourth step in the PPBES cycle. The evaluation process enables school districts to see if they are achieving their objectives. It also permits districts the opportunity to examine and assess various alternative techniques. Ultimately, the evaluation process enables the school to collect data and information that aids in the educational decision making process. After these decisions have been made, the entire process moves to the planning stage and the PPBS cycle begins again.

The activities in this phase include the study of (1)relationships of performance to objectives, (2)student achievement gains and (3)relationships of achievement gains to program costs.

The relationships of performances to objectives were calculated by counting. The percentages of students who achieved the stated performance criteria were compared to the percentages specified in each objective.

Student achievement gains were calculated on the basis of pre- and post-tests in all classes. Most of the test instruments were locally developed. However, a change was made in January, 1973, to use a nationally standardized test in typewriting. The test is the "Students Typewriting Test" prepared by the National Business Education Association. The test comes in four levels one for each of the typewriting courses. This test met all of the local requirements and facilitated the measurement of all typewriting objectives. The standardized test had the advantages of national norms and proven reliability and validity. Tests that were constructed locally by the teachers are still being used in all other courses.

The relating of achievement to cost was done by calculating a cost/benefit



ratio. The format for making these calculations was developed and the actual calculations were made for the typewriting classes during the third project year.

### RESULTS AND FINDINGS

#### Typewriting Classes -

The third year performances were evaluated in the manner outlined above. The relation of performance to objective is illustrated in Table II in Appendix F.

It is noted that about half of the groups achieved the speed performance standard (objective 1). It is also seen that about one-third to one-fourth of the groups achieved the production standards (objectives 2, 3, and 4). A look at the performances of the total Fargo group in each class indicates performances that were generally very close to the specified standard. This would seem to imply that the standards specified in the objectives are realistic, yet challenging.

The student achievement gains are shown in Tables III and IV in Appendix F. The figures for the first semester are shown in Table III and scores for the second semester are shown in Table IV. Gains are shown separately for each section. The gain was assumed to be the difference between pre- and post-scores and was calculated by subtracting. In some classes (Typewriting I and Business Machines), no pre-test was given because of the nature of these skill classes. In these cases the pre-scores were assumed to be zero and the gains were the actual post-scores.

Cost/benefit ratios were calculated to relate student achievement to financial costs. These figures are also shown in Tables III and IV in

Appendix F. The ratio reflects the average amount of money needed for an increase of one objective per student.

Some caution should be used in comparing any two of these ratios. There should be no attempt to compare ratios of two different programs. There should also be no attempt to compare ratios in the same program when the numbers of students are small in both (or either one) of the groups. It is noted that the ratios in all programs were generally very close when the numbers of students were normal (about 20 to 30 per class). There was one exception to this similarity in each semester. Some differences were noted in the Typewriting III and IV classes.

#### Teacher Attitude Survey -

The project staff felt that there had been an improvement in teacher attitude toward the project and the PPBES concept. Originally, the teachers seemed to be negative and somewhat defensive. They felt that the system might be used to evaluate individual teachers and to be used subsequently as a base for merit pay. However, there seemed to be a noticeable attitudinal change as the project developed. Teachers learned that the evaluations were used to improve curriculum and student achievement. Teachers seemed to become more positive and cooperative.

An attitude survey of the vocational teachers was conducted during the third project year. The results are given in Table V in Appendix G. These results tend to substantiate the staff's subjective feelings that were mentioned above.

A locally developed instrument was used to assess the teacher attitudes on a pre- and post-basis. Attitudes were assessed in seven sub-areas and with

respect to the total project. On these surveys, scores may range from 0 to 42.

It is seen in Table V that the teacher attitudes were positive on both the pre- and post-surveys. Part C of Table V indicates that there was no overall change from pre- to post-testing. However, there was a significant improvement with respect to two of the sub-areas. The teacher attitudes toward Fargo Public Schools' and 'Vocational Education' was more positive in May than in September.

There were some differences with respect to the attitudes toward the sub-areas. In the post-survey teachers tended to view (Table 5b) 'Vocational Education' very favorably while 'Testing Program' and 'Innovative Projects' were less favorable.

#### CONCLUSIONS AND RECOMMENDATIONS

##### Problems Encountered -

The project staff members encountered many problems in different areas of the project. The project director began in May, 1973, to compile a list of these problems. It is felt that knowledge of the problems may be helpful to the staff members. Further, it is believed that this list of problems would be beneficial to any other school that would be attempting such a project in the future.

The list of problems is given below:

1. There is a considerable amount of time required to do all of the work. Most of the people do this work in addition to other school duties.
2. Many modifications and revisions were needed to adapt the POBAS system to fit the local situation.
3. Modifications were needed to adapt the computer program to run

- efficiently on the local computer.
4. The documentation for the computer program materials was very brief.
  5. The consultants for the system were headquartered in Minneapolis. The distance factor discouraged regular communications.
  6. The new system closes all accounts on June 30. The Fargo District has several projects that do not end on that date. This necessitated extra bookwork by the accountant.
  7. The maintenance of two systems adds to many of these problems. The Fargo staff decided to continue to use their traditional system until the new POBAS system was proven and workable.
  8. The fine breakdown of programs makes it difficult to assign supply costs, teacher costs, etc., to specific programs.
  9. The curriculum work must be done by the teachers in addition to their regular classroom assignments. It is difficult, and probably not desirable, to do this work at the end of a typical school day.
  10. A method must be devised to pro-rate machine costs when adult education classes and other groups use them. Similarly, methods must be used to pro-rate supply costs in these situations.
  11. A satisfactory method must be devised for pro-rating costs of machine repairs. In this regard, it was felt that the beginning classes are harder on machines and should be assessed a greater proportion of the repair costs than the advanced classes.
  12. A plan must be developed for the way to pro-rate expenditures in the case of class dropouts. The average per pupil cost may vary

with the different ways of handling this problem.

13. Decisions must be made on how to handle the students who move into the class during the term. Previously, consideration was made of only those students who took both the pre- and post-tests.
14. The need to requisition supplies by classes may tend to increase costs.
15. The system is quite different and unique. There was some resistance to change on the part of the staff.
16. The basic project purpose of enabling the district to evaluate all possible alternatives seemed to threaten the teachers at first. The teachers viewed it as a chance for the administration to evaluate individual instructors. However, they now have a positive feeling after involvement in the project and after repeated assurances from the project staff regarding this project purpose.
17. There was a chance to overemphasize costs. This could make the education process more materialistic.
18. Most of the people did not have previous training on PPBES.
19. Since the process is relatively new in education, there is a shortage of trained people to use as resource person..
20. Because a very limited number of school districts have worked with PPBES, there is a shortage of models to examine and use as comparisons.

#### Benefits and Advantages -

The PPBES technique has many strengths and advantages. The Fargo project

has shown the local educators many of these strong points. Some of these have been recorded and are enumerated below.

1. The system provides a way for a school district to be accountable.
2. The system provided a means for the more efficient answering of questions posed by taxpayers, school boards, and other community groups.
3. It promotes staff involvement in problem solving and planning.
4. The system provided means for improving staff communication.
5. The system provided means for increasing uniformity throughout the school district with respect to curriculum materials and instructional methods.
6. The system places an emphasis on developing goals and objectives, examining alternatives, and establishing priorities.
7. The system permits the allocation of costs to the individual programs.
8. The system permits the relating of inputs and outputs.
9. The organization and coordination of activities can reduce overlap.
10. The system permits the gathering of more and better information for use by the decision making administrators.
11. Since very little work has been done on PPBES in education, the project allows districts and individuals to make important contributions to the development of this concept.
12. The system provided an opportunity for districts to base their educational systems on local needs and resources.
13. The project staff has developed a 25 minute slide-tape presentation on PPBES. This is the type of presentation that is used as

a basic introduction to the concept of PPBES. The first part of the presentation deals with the basic concepts; the second half relates these concepts to the precise activities that were performed in Fargo. This presentation has been shown several times locally and has been distributed for review to some national agencies.

#### Conclusion -

The project staff members believe that a great deal of progress was made during the three project years. The overall job has not been completed, but much worthwhile work was done.

One of the most important developments was in the area of improved instruction. The construction curriculum materials and the course development have strengthened the instructional process.

Another important aspect is in the actual development of the PPBES model. The work done in Fargo could be helpful to other districts and agencies that are beginning this type of work. The Fargo personnel have gained some knowledge about the system and they could serve as resource persons for these developing districts.

In general, the staff members are satisfied with the progress that was made during the three project years. They are also optimistic about the possible contributions that PPBES can make to the educational process.

# Appendix A

## TYPEWRITING GOALS

1. To achieve typewriting skills required to obtain basic job entry level employment in the business and office occupations.
2. To achieve typewriting skills that will improve personal development and enhance personal living.



## TYPEWRITING I

### OBJECTIVES:

1. In order to demonstrate an ability to typewrite by touch, 75% of the students will be able to score at least 18 points per minute on one of two five-minute writings scored by the NBEA test.
2. In order to demonstrate an ability to center horizontally and vertically, 80% of the students will be able to set up and type a 95 word exercise in ten minutes scoring at least 30 points on the NBEA test.
3. In order to demonstrate an ability to type business letters, 75% of the students will set up and type a 150 word letter in ten minutes scoring at least 28 points on the NBEA test.
4. In order to demonstrate an ability to type a one page long-hand theme, 80% of the students will type a half page in five minutes scoring at least 10 points on the NBEA test.

SEQUENCE OF SKILLS

## Typewriting I -

1. Introduction to the Keys: a, s, d, f, j, k, l, ;, e, g, r, right shift key, and left shift key.
2. Introduction to the Keys: o, t, comma, m, c, colon, w, y, v, n, x, p.
3. Introduction to the Keys: b, z, diagonal, g, hyphen, question mark.
4. Introduction to Skill Drives.
5. Introduction to Centering.
6. Introduction to Numbers: 1, 2, 3, 4, 7, 8, 9, 0, 5, 6, fraction  $\frac{1}{2}$ ,  $\frac{1}{4}$ .
7. Skill Drive.
8. Introduction to Symbols: hyphen, underscore, apostrophe, exclamation, parenthesis, quotation mark, dollar sign, asterisk, percentage sign.
9. Display Reports: Centered Reports with Indented and Hanging Paragraphs.
10. Introduction to Business and Personal Letters.
11. Introduction to Tabulation.
12. Introduction to One Page Reports.
13. Introduction to Envelopes, Postal Cards, and Advanced Letters.
14. Introduction to Long Reports.
15. Skill Drive - Improvement in Typing on Straight Copy and Production Copy.
16. Introduction to Printed Business Forms.

LEARNING PACKAGE NUMBER: OE 601-090.00

GENERAL CONTENT DESCRIPTION: Senior High Typewriting III  
Business Checks - Voucher & Standard

PREREQUISITES: Post Test: OE 601-085.03

BEHAVIORAL OBJECTIVES: In order to demonstrate the ability to type a voucher check, the student will correctly arrange and type a voucher check with 95% accuracy, within 10 minutes. The student will be given a check form.

SAMPLE TEST ITEMS: Job 17A, page 158, basic text.

PRETEST: None

INSTRUCTIONAL EXPERIENCES:

1. Type lines 1-8, page 156, basic text, each twice, working for speed development.
2. Take a 5-minute writing, page 157, basic text. Score your writing. Five error cut-off.
3. Type lines 9-14, page 156, basic text, according to SP. 5.AC. Type each line three times.
4. Read the directions to each problem and type Jobs 17A, 17B, 17C, and 17E, pages 158-159, basic text.
5. POST TEST: OE 601-090.03 Job 17D, page 159, basic text.
6. POST TEST KEY: OE 601-090.04 Page 158, basic text.

## LIST OF PROJECT MATERIALS

List of basic skills, objectives, and sets of learning packages for:

Typewriting I, II, III, and IV

Accounting II

Key Punch

Office Practice

Business Machines

Shorthand I and II

List of basic skills and objectives for:

Accounting I

Slide-Tape Presentation on basic concept of PPBES

## ORGANIZATIONAL UNITS

|     |                                     |
|-----|-------------------------------------|
| 005 | District Wide                       |
| 030 | District Office                     |
| 070 | Warehouse                           |
| 105 | Secondary Schools                   |
| 205 | All Senior High Schools             |
| 210 | North Senior High School            |
| 220 | South Senior High School            |
| 305 | All Junior High Schools             |
| 310 | Agassiz Junior High School          |
| 320 | Ben Franklin Junior High School     |
| 405 | All Elementary Schools              |
| 410 | Carl Ben Eielson                    |
| 420 | Clara Barton                        |
| 430 | Hawthorne                           |
| 440 | Horace Mann                         |
| 450 | Jefferson                           |
| 460 | Lewis & Clark                       |
| 470 | Lincoln                             |
| 480 | Longfellow                          |
| 490 | McKinley                            |
| 500 | Madison                             |
| 510 | Roosevelt                           |
| 520 | Washington                          |
| 530 | Woodrow Wilson                      |
| 605 | Summer School - All                 |
| 610 | Summer School - Senior High Schools |
| 620 | Summer School - Junior High Schools |
| 630 | Summer School - Elementary Schools  |
| 705 | All Adult Education Programs        |
| 710 | Adult Education                     |
| 805 | All Other Programs                  |
| 810 | Evaluation and Training Center      |
| 850 | Stadium                             |
| 870 | Maintenance Building                |

SOURCE OF REVENUE

REVENUE FROM LOCAL SOURCES

110 Property Tax  
 111 Property Tax-Curr  
 112 Interest & Penalty  
 114 Taxes-Prior Years  
 115 Per Prop Repl Tax  
  
 120 Tuition from patrons  
  
 130 Trans fees patrons  
  
 140 Other Revenue from local sources  
 141 Other Interest Income  
 142 Other Receipts-Clearing  
 143 Other Inc-Rent & Leases  
 144 Other Gifts & Bequests  
 145 Other Miscellaneous Revenue  
  
 150 Sheet Metal Workers  
 151 Carpenters Union  
  
 155 Cafeteria Sales  
  
 160 Milk Sales

REVENUE FROM COUNTY SOURCES

210 County Equalization Fund  
 211 Cty Share Tuition  
 212 Cty Share-Trans  
  
 230 Misc County Revenue

REVENUE FROM STATE SOURCES

310 State Tuition Apport  
  
 320 State Equalization Fund  
 321 State Share-Tuition  
 322 State Share-Trans  
 325 Special Education  
  
 331 North Dakota DVR Tuition  
  
 340 Agri-Business-Voc Ed  
 342 Ironworkers-Voc Ed  
 343 Carpenters-Voc Ed  
 344 Sheet Metal-Voc Ed  
 345 Office Ed Sp Needs-Voc Ed

REVENUE FROM FEDERAL SOURCES

410 Vocational Education  
  
 419 ESEA TITLE III PSP 71-2  
 420 ESEA TITLE III PSP 72-3  
  
 425 ESEA TITLE III RBSP 71-2  
 426 ESEA TITLE III RBSP 72-3  
  
 430 COP 72-3  
  
 435 ESEA TITLE I 71-2  
 436 ESEA TITLE I 72-3  
  
 440 ESEA TITLE II 71-2  
 441 ESEA TITLE II 72-3  
  
 445 EHA TITLE VI-13 72-3  
 446 ESEA TITLE VI  
  
 449 EPDA TITLE V - TTP 70-1  
 450 EPDA TITLE V - TTP 71-2  
  
 454 EPDA TITLE V - TATP 71-2  
 455 EPDA TITLE V - TATP 72-3  
  
 459 ESEA TITLE III - ABE 71-2  
 460 ESEA TITLE III - ABE 72-3  
  
 465 Emer Employment 71-2  
  
 470 Public Law 864  
 471 Public Law 874  
  
 475 Vocational PPBS 71-2  
 476 Vocational PPBS 72-3  
  
 481 Federal Receipts  
 482 Misc Federal Receipts  
  
 485 MC - Prescriptive 71-2  
 486 MC - Inservice 71-2  
 487 MC - Dropout Prev 71-2  
 488 MC - Voc Council 71-2  
  
 490 Other Revenue from Federal Sources

DEPARTMENT  
GENERAL INSTRUCTION

- |  |   |
|--|---|
| <p>110 <u>COMMUNICATIONS PROGRAM</u></p> <ul style="list-style-type: none"><li>111 Reading</li><li>112 Spelling</li><li>113 Handwriting</li><li>114 Language Arts</li><li>115 English</li><li>116 Developmental English</li></ul><br><ul style="list-style-type: none"><li>121 French</li><li>122 German</li><li>123 Spanish</li><li>124 Latin</li></ul><br><ul style="list-style-type: none"><li>131 Advanced Placement</li><li>132 Creative Writing</li><li>133 Speech</li><li>134 Oral Interpretation</li><li>135 Drama</li><li>136 Journalism</li><li>137 Debate</li><li>138 Humanities</li></ul> <p>150 <u>SCIENCE PROGRAM</u></p> <ul style="list-style-type: none"><li>151 Science</li><li>152 Life Science</li><li>153 Earth Science</li><li>154 Physical Science</li><li>155 Biology</li><li>156 Intermed Science</li><li>157 Chemistry</li><li>158 Physics</li><li>159 Chem Study</li></ul> <p>170 <u>MATHEMATICS PROGRAM</u></p> <ul style="list-style-type: none"><li>171 Mathematics</li><li>172 Algebra ID</li><li>173 Algebra I</li><li>174 Occup Related Math</li><li>175 Algebra II</li><li>176 Plane Solid Geometry</li><li>177 Trigonometry</li><li>178 Analytic Geometry</li><li>179 Calculus I</li><li>180 Calculus II</li><li>181 Computer Programming</li></ul> | <p>190 <u>SOCIAL STUDIES PROGRAM</u></p> <ul style="list-style-type: none"><li>191 Social Studies</li><li>192 World Geography</li><li>193 Regional Geograpy</li><li>194 World Geography</li><li>195 US History to 1920</li><li>196 World History - 1920</li><li>197 US World History<br/>After 1920</li><li>198 American History<br/>Adv. Placement</li><li>199 Government</li><li>200 Sociology</li><li>201 Psychology</li><li>202 Economics</li><li>203 Social Science<br/>Survey</li></ul> <p>220 <u>HEALTH-PE-REC-SAFETY</u></p> <ul style="list-style-type: none"><li>221 Health</li><li>222 Physical Education</li><li>223 Safety</li><li>224 Drivers Education</li></ul><br><ul style="list-style-type: none"><li>230 Athletics</li><li>231 Football</li><li>232 Track</li><li>233 Basketball</li><li>234 Hockey</li><li>235 Swimming</li><li>236 Tennis</li><li>237 Golf</li><li>238 Wrestling</li><li>239 Cross Country</li></ul> <p>270 <u>AFT PROGRAM</u></p> <ul style="list-style-type: none"><li>271 Art</li></ul> <p>280 <u>MUSIC PROGRAM</u></p> <ul style="list-style-type: none"><li>281 Vocal</li><li>282 Instrumental</li><li>283 Instructional Music</li></ul> |
|--|---|

OBJECT

|     |                           |     |                          |
|-----|---------------------------|-----|--------------------------|
| 100 | <u>SALARIES AND WAGES</u> | 160 | Counselors               |
| 101 | Superintendent            | 161 | Guidance Counselors      |
| 102 | Asst Superintendent       | 162 | Visiting Counselors      |
| 103 | Administrative Asst       | 163 | Voc Counselor            |
| 104 | Supervisory Staff         | 164 | Social Worker            |
| 105 | Director                  | 165 | Consultants              |
| 106 | Coordinator               | 166 | Evaluation               |
| 107 | Department Head           | 167 | Vocational Eval          |
| 108 | Dean of Boys              | 168 | Asst Voc Evaluator       |
| 109 | Dean of Girls             | 170 | Student Salaries         |
| 110 | Principal                 | 171 | Trainee Salaries         |
| 111 | Asst Principal            | 173 | Teacher Assistants       |
| 112 | Research Analyst          | 174 | Graduate Assistants      |
| 113 | Training Supervisor       | 176 | Cafeteria Workers        |
| 114 | Work Exp Coordinator      | 177 | Admin Salaries           |
| 120 | Teachers Reg              | 180 | Student Act Sal          |
| 121 | Special Teachers          | 181 | Act Speech & Cong        |
| 122 | Therapists                | 182 | Act Dramatics            |
| 123 | Diagnosticians            | 183 | Act Publs & Radio        |
| 124 | Reading Teachers          | 184 | Act Debate               |
| 125 | Summer School Teachers    | 185 | Substitutes              |
| 126 | Special Tutors            | 186 | Sabbatical Leave         |
| 127 | Prescriptive Teachers     | 187 | Emergency Leave          |
| 128 | Curriculum Personnel      | 188 | Sick Leave - Sec'y       |
| 129 | Training Supervisor       | 190 | Overtime                 |
| 130 | Instructor                | 191 | Admin Appraisal          |
| 131 | Related Instructor        | 192 | Teacher Bonus            |
| 132 | Instructor I              | 193 | Teacher Salary Adj       |
| 133 | Instructor II             | 194 | Teacher Award            |
| 134 | Team Leaders              | 195 | Curr. Council            |
| 140 | Sec'y and Clerical        | 196 | Study Committee          |
| 141 | Teacher Aides             | 199 | Other Salaries           |
| 142 | Paraprofessionals         | 200 | <u>EMPLOYEE BENEFITS</u> |
| 143 | Librarians                | 205 | Social Security          |
| 144 | Study Hall Supvr          | 210 | Teach Ins & Retire       |
| 145 | Security Guards           | 215 | State Retirement         |
| 146 | Summer School Sec'y       | 220 | OASIS                    |
| 147 | Typists                   | 250 | Group Health & Life      |
| 150 | Plant Engineers           | 260 | Income Protection        |
| 151 | Custodians & Matrons      | 270 | Workmen's Comp Ins       |
| 152 | Upkeep of Grounds         |     |                          |
| 153 | Repair of Buildings       |     |                          |
| 154 | Repair of Equip           |     |                          |
| 155 | Truck Driver              |     |                          |
| 156 | Warehouse Personnel       |     |                          |
| 157 | Tool Clerk                |     |                          |
| 158 | Printer                   |     |                          |



321 TYPEWRITING III

210 NORTH SR. HIGH

|                          |        |       |          |          |          |  |  |  |         |
|--------------------------|--------|-------|----------|----------|----------|--|--|--|---------|
| 000                      |        |       |          |          |          |  |  |  |         |
| 330 SUPPLIES             | 0.00   | 0.00  | 200.00   | 200.00   | 200.00   |  |  |  |         |
| 461 REPAIR OF EQUIP      | 154.00 | 45.00 | 400.00   | 400.00   | 201.00   |  |  |  |         |
| 580 REPLACEMENT OF EQUIP | 0.00   | 0.00  | 2,000.00 | 2,000.00 | 7,000.00 |  |  |  | -----50 |
| TOTAL                    | 154.00 | 45.00 | 2,600.00 | 2,600.00 | 2,401.00 |  |  |  | 08      |
| TOTAL NORTH SR. HIGH     | 154.00 | 45.00 | 2,600.00 | 2,600.00 | 2,401.00 |  |  |  | 09      |

220 SOUTH SR. HIGH

|                          |        |       |          |          |          |  |  |  |         |
|--------------------------|--------|-------|----------|----------|----------|--|--|--|---------|
| 000                      |        |       |          |          |          |  |  |  |         |
| 330 SUPPLIES             | 0.00   | 0.00  | 300.00   | 300.00   | 300.00   |  |  |  |         |
| 461 REPAIR OF EQUIP      | 173.25 | 0.00  | 400.00   | 400.00   | 226.75   |  |  |  |         |
| 580 REPLACEMENT OF EQUIP | 0.00   | 0.00  | 2,500.00 | 2,500.00 | 2,000.00 |  |  |  | -----43 |
| TOTAL                    | 173.25 | 0.00  | 2,700.00 | 2,700.00 | 2,526.75 |  |  |  | 06      |
| TOTAL SOUTH SR. HIGH     | 173.25 | 0.00  | 2,700.00 | 2,700.00 | 2,526.75 |  |  |  | 06      |
| SECONDARY SERIES TOTAL   | 327.25 | 45.00 | 5,300.00 | 5,300.00 | 4,927.75 |  |  |  | 07      |
| TOTAL TYPEWRITING III    | 327.25 | 45.00 | 5,300.00 | 5,300.00 | 4,927.75 |  |  |  | 07      |

PERMINT EXPENDITURE (CONTINUED)  
10-10-50-40-50-60-70-80-90-100

C-FAASD  
BUDGET BALANCE

|                      | A            | H              | C          |                |    |  |  |  |  |  |  |
|----------------------|--------------|----------------|------------|----------------|----|--|--|--|--|--|--|
|                      | YTD EXPENDED | YTD INCUMBERED | BUDGET     | BUDGET BALANCE | C2 |  |  |  |  |  |  |
| 330 005              | 23.60        | 0.00           | 1,332.92   | 1,369.22       | 02 |  |  |  |  |  |  |
| 330 005              | 3,977.96     | 2,458.41       | 4,774.15   | 2,357.62       |    |  |  |  |  |  |  |
| 330 005              | 0.00         | 0.00           | 300.00     | 300.00         |    |  |  |  |  |  |  |
| 330 005              | 374.34       | 306.32         | 1,319.57   | 1,138.01       |    |  |  |  |  |  |  |
| 330 005              | 17.64        | 0.00           | 0.00       | 17.64          |    |  |  |  |  |  |  |
| 330 005              | 57.91        | 0.00           | 0.00       | 57.91          |    |  |  |  |  |  |  |
| 330 005              | 18.49        | 0.00           | 0.00       | 18.49          |    |  |  |  |  |  |  |
| 330 005              | 399.42       | 3,243.79       | 0.00       | 3,643.27       |    |  |  |  |  |  |  |
| 330 005              | 0.00         | 0.00           | 0.00       | 0.00           |    |  |  |  |  |  |  |
| 330 005              | 0.00         | 0.00           | 0.00       | 0.00           |    |  |  |  |  |  |  |
| 330 005              | 0.00         | 0.00           | 500.00     | 500.00         |    |  |  |  |  |  |  |
| 330 005              | 0.00         | 0.00           | 0.00       | 0.00           |    |  |  |  |  |  |  |
| 330 005              | 0.00         | 0.00           | 0.00       | 0.00           |    |  |  |  |  |  |  |
| 330 005              | 9.04         | 3,239.29       | 8,000.00   | 4,751.47       |    |  |  |  |  |  |  |
| 330 005              | 0.00         | 169.83         | 8,000.00   | 7,830.17       |    |  |  |  |  |  |  |
| 330 005              | 0.00         | 0.00           | 0.00       | 0.00           |    |  |  |  |  |  |  |
| 330 005              | 1,376.60     | 7,040.79       | 13,300.00  | 5,482.61       |    |  |  |  |  |  |  |
| 330 005              | 476.05       | 1,248.48       | 15,000.00  | 14,275.47      |    |  |  |  |  |  |  |
| 330 005              | 330.68       | 1,733.43       | 7,900.00   | 6,535.89       |    |  |  |  |  |  |  |
| 330 005              | 1,041.81     | 247.31         | 7,400.00   | 6,090.89       |    |  |  |  |  |  |  |
| 330 005              | 26.75        | 822.72         | 13,000.00  | 12,150.53      |    |  |  |  |  |  |  |
| 330 005              | 346.89       | 196.73         | 5,250.00   | 4,706.35       |    |  |  |  |  |  |  |
| 330 005              | 0.00         | 259.00         | 4,000.00   | 3,741.00       |    |  |  |  |  |  |  |
| 330 005              | 884.92       | 5,411.97       | 11,000.00  | 4,703.11       |    |  |  |  |  |  |  |
| 330 005              | 61.34        | 330.23         | 4,400.00   | 4,008.43       |    |  |  |  |  |  |  |
| 330 005              | 18.75        | 2,291.10       | 11,680.00  | 9,370.15       |    |  |  |  |  |  |  |
| 330 005              | 0.00         | 0.00           | 822.00     | 822.00         |    |  |  |  |  |  |  |
| 330 005              | 0.00         | 306.00         | 1,600.00   | 1,294.00       |    |  |  |  |  |  |  |
| TOTAL 005            | 9,530.25     | 24,921.10      | 127,543.54 | 89,092.19      |    |  |  |  |  |  |  |
| SUPPLIES 337 205 222 | 0.00         | 2,148.14       | 4,200.00   | 2,051.86       |    |  |  |  |  |  |  |
| TOTAL 205            | 0.00         | 2,148.14       | 4,200.00   | 2,051.86       |    |  |  |  |  |  |  |
| SUPPLIES 330 210 321 | 0.00         | 0.00           | 200.00     | 200.00         |    |  |  |  |  |  |  |
| 330 210 322          | 0.00         | 0.00           | 200.00     | 200.00         |    |  |  |  |  |  |  |
| 330 210 323          | 0.00         | 0.00           | 100.00     | 100.00         |    |  |  |  |  |  |  |
| 330 210 324          | 0.00         | 0.00           | 100.00     | 100.00         |    |  |  |  |  |  |  |
| 330 210 325          | 0.00         | 0.00           | 100.00     | 100.00         |    |  |  |  |  |  |  |
| 330 210 326          | 0.00         | 0.00           | 500.00     | 500.00         |    |  |  |  |  |  |  |
| 330 210 327          | 0.00         | 0.00           | 400.00     | 400.00         |    |  |  |  |  |  |  |
| 330 210 328          | 0.00         | 0.00           | 400.00     | 400.00         |    |  |  |  |  |  |  |
| 330 210 329          | 0.00         | 0.00           | 100.00     | 100.00         |    |  |  |  |  |  |  |
| 330 210 421          | 0.00         | 0.00           | 100.00     | 100.00         |    |  |  |  |  |  |  |
| 330 210 422          | 0.00         | 0.00           | 100.00     | 100.00         |    |  |  |  |  |  |  |
| 330 210 423          | 0.00         | 0.00           | 100.00     | 100.00         |    |  |  |  |  |  |  |
| 330 210 424          | 0.00         | 0.00           | 100.00     | 100.00         |    |  |  |  |  |  |  |



COURSE \_\_\_\_\_

SCHOOL \_\_\_\_\_

SCHOOL YEAR \_\_\_\_\_

FISCAL YEAR \_\_\_\_\_

SEMESTER \_\_\_\_\_

REPAIRS \_\_\_\_\_

RENTAL \_\_\_\_\_

NEW EQUIPMENT \_\_\_\_\_

REPLACE EQUIPMENT \_\_\_\_\_

CONSUMABLE SUPPLIES \_\_\_\_\_

TEACHER COSTS -

| Teachers name | (A)<br>Total<br>Number of<br>School<br>Classes | (B)<br>Number of<br>Sections<br>in Specified<br>Subjects | (C)<br>Enrollment<br>in each<br>section<br>of this<br>subject | (D)<br>% of<br>time devote<br>to this<br>subject<br>$(B) \div (A)$ | (E)<br>Salary<br>+<br>Benefits | (F)<br>Amount of<br>salary<br>allocated<br>to this<br>$(E) \div (D)$ |
|---------------|--|--|---|--|--------------------------------|--|
|               |  |  |   |  |                                |  |
|               |  |  |   |  |                                |  |
|               |  |  |   |  |                                |  |
|               |  |  |   |  |                                |  |
|               |  |  |   |  |                                |  |
|               |  |  |   |  |                                |  |

TABLE I

The following percentages were determined by the teachers as the appropriate percentage of machine use by various classes in various rooms.

| Class \ Room        | TYP  | Business Machines | Classroom | Dictaphones |
|---------------------|------|-------------------|-----------|-------------|
| Typ I               | 100% |                   |           |             |
| Typ II              | 100% |                   |           |             |
| Typ III             | 100% |                   |           |             |
| Typ IV              | 100% |                   |           |             |
| SH I                | 10%  |                   |           |             |
| SH II               | 25%  |                   |           |             |
| OFF Practice        | 30%  | 20%               |           | 50%         |
| ACCT I              | 0%   |                   | 100%      |             |
| Acct II             | 0%   | 20%               | 100%      |             |
| Record Keeping      | 0%   |                   | 100%      |             |
| Business Machines   |      | 100%              |           |             |
| D. E.               |      |                   | 10%       |             |
| Keypunch            |      | 100%(simulation)  |           |             |
| Adult TYP           | 100% |                   |           |             |
| Adult ACCT          | 0%   | 20%               | 100%      |             |
| Adult Key Punch     |      | 100%              |           |             |
| Adult Bus. Machines |      | 100%              |           |             |

Divide the cost of the "resource centers" as follows:

|              |         |                        |
|--------------|---------|------------------------|
| TYP I        | Total N | } 100% of repair costs |
| TYP II       | Total N |                        |
| TYP III      | Total N |                        |
| TYP IV       | Total N |                        |
| OFF PRACTICE | Total N |                        |
| Student Body | 10% • N |                        |

TABLE II

A LIST OF THE PERCENTAGES OF STUDENTS WHO ACHIEVED THE CRITERIA ASSOCIATED WITH THE VARIOUS OBJECTIVES (POST-TESTS, MAY 1974)

| CLASS             | NUMBER OF STUDENTS | OBJ 1 | OBJ 2 | OBJ 3 | OBJ 4 |
|-------------------|--------------------|-------|-------|-------|-------|
| TYPEWRITING I     |                    |       |       |       |       |
| FARGO             | 114                | 68%   | 68%   | 70%   | 67%   |
| North High School |                    |       |       |       |       |
| Per 8             | 13                 | 62%   | 77%   | 77%*  | 62%   |
| South High School |                    |       |       |       |       |
| Per 7             | 34                 | 79%*  | 68%   | 76%*  | 76%   |
| Per 8             | 35                 | 83%*  | 86%*  | 89%*  | 83%*  |
| Per 1             | 32                 | 41%   | 44%   | 41%   | 41%   |
| TYPEWRITING II    |                    |       |       |       |       |
| FARGO             | 117                | 83%*  | 50%   | 44%   | 71%   |
| North High School |                    |       |       |       |       |
| Per 9             | 21                 | 67%*  | 67%   | 57%   | 29%   |
| South High School |                    |       |       |       |       |
| Per 2             | 35                 | 80%*  | 46%   | 40%   | 74%   |
| Per 3             | 28                 | 96%*  | 50%   | 46%   | 86%*  |
| Per 5             | 33                 | 85%*  | 42%   | 36%   | 82%*  |
| TYPEWRITING III   |                    |       |       |       |       |
| FARGO             | 30                 | 47%   | 63%   | 53%   | 80%*  |
| North High School |                    |       |       |       |       |
| Per 7             | 21                 | 43%   | 71%*  | 76%*  | 76%*  |
| South High School |                    |       |       |       |       |
| Per 9             | 9                  | 56%   | 44%   | 0%    | 89%*  |
| TYPEWRITING IV    |                    |       |       |       |       |
| FARGO             | 56                 | 68%*  | 66%*  | 59%   | 50%   |
| North High School |                    |       |       |       |       |
| Per 3             | 16                 | 56%   | 81%*  | 81%*  | 63%   |
| Per 5             | 14                 | 86%*  | 79%*  | 86%*  | 79%*  |
| South High School |                    |       |       |       |       |
| Per 7             | 10                 | 60%   | 30%   | 30%   | 40%   |
| Per 4             | 16                 | 69%*  | 63%   | 31%   | 19%   |

\* Indicates the classes that achieved the objectives.

| TABLE III<br>RESULTS OF 1st SEMESTER, 1973-74 SHOWING PRE-TESTS, POST-TESTS, GAINS, COSTS AND COST/BENEFIT RATIOS |       |                    |                     |                             |             |                            |                               |
|---|-------|--------------------|---------------------|-----------------------------|-------------|----------------------------|-------------------------------|
| CLASS   | (n)   | (A)<br>PRE<br>MEAN | (B)<br>POST<br>MEAN | (C)<br>AVERAGE<br>GAIN(B-A) | (D)<br>COST | (E)<br>COST PER<br>STUDENT | (F)<br>*COST/BENEFIT<br>(E÷C) |
| FARGO TYPING I  | (456) | ....               | 99.62               | 99.62                       | \$20,791    | \$45.59                    | \$ .46                        |
| South Typing I  | (232) | ....               | 95.22               | 95.22                       | \$10,094    | \$43.51                    | \$ .46                        |
| Period 1  | (35)  | ....               | 83.23               | 83.23                       |             |                            |                               |
| Period 4  | (37)  | ....               | 86.03               | 86.03                       |             |                            |                               |
| Period 2  | (33)  | ....               | 101.15              | 101.15                      |             |                            |                               |
| Period 3  | (33)  | ....               | 102.18              | 102.18                      |             |                            |                               |
| Period 5  | (31)  | ....               | 103.16              | 103.16                      |             |                            |                               |
| Period 7  | (32)  | ....               | 96.09               | 96.09                       |             |                            |                               |
| Period 8  | (31)  | ....               | 97.19               | 97.19                       |             |                            |                               |
| North Typing I  | (30)  | ....               | 106.20              | 106.20                      | \$ 1,437    | \$47.88                    | \$ .45                        |
| Ben Franklin Typing   | (194) | ....               | 103.87              | 103.87                      | \$ 9,260    | \$47.73                    | \$ .46                        |
| Period 1  | (22)  | ....               | 93.73               | 93.73                       |             |                            |                               |
| Period 3  | (32)  | ....               | 102.75              | 102.75                      |             |                            |                               |
| Period 5  | (29)  | ....               | 109.17              | 109.17                      |             |                            |                               |
| Period 6  | (33)  | ....               | 107.12              | 107.12                      |             |                            |                               |
| Period 7  | (28)  | ....               | 99.29               | 99.29                       |             |                            |                               |
| Period 8  | (17)  | ....               | 103.72              | 103.72                      |             |                            |                               |
| Period 4  | (33)  | ....               | 107.76              | 107.76                      |             |                            |                               |
| FARGO TYPING II   | (78)  | 39.17              | 78.48               | 39.31                       | \$ 4,476    | \$57.38                    | \$1.46                        |
| South Typing II   | (41)  | 46.03              | 86.93               | 40.90                       | \$ 1,867    | \$45.54                    | \$1.11                        |
| Period 6  | (20)  | 49.24              | 85.80               | 36.56                       |             |                            |                               |
| Period 9  | (21)  | 42.81              | 88.00               | 45.19                       |             |                            |                               |
| North Typing II   | (37)  | 31.79              | 69.11               | 37.32                       | \$ 2,609    | \$70.52                    | \$1.89                        |
| Period 5  | (19)  | 30.85              | 65.00               | 34.15                       |             |                            |                               |
| Period 9  | (18)  | 32.88              | 73.44               | 40.56                       |             |                            |                               |
| FARGO TYPING III  | (80)  | 44.04              | 71.72               | 27.68                       | \$ 5,880    | \$73.50                    | \$2.65                        |
| South Typing III  | (35)  | 49.41              | 60.52               | 11.11                       | \$ 2,186    | \$62.45                    | \$5.62                        |
| Period 4  | (16)  | 52.06              | 55.38               | 3.32                        |             |                            |                               |
| Period 7  | (19)  | 46.89              | 64.84               | 17.95                       |             |                            |                               |
| North Typing III  | (45)  | 40.21              | 80.44               | 40.23                       | \$ 3,694    | \$82.08                    | \$2.04                        |
| Period 3-4  | (24)  | 39.75              | 82.29               | 42.54                       |             |                            |                               |
| Period 5-6  | (21)  | 40.61              | 78.33               | 37.72                       |             |                            |                               |
| FARGO KEYPUNCH  | (21)  | 4.42               | 79.64               | 75.22                       | \$ 5,272    | \$251.04                   | \$3.34                        |
| South Keypunch  | (13)  | 1.80               | 84.11               | 82.31                       | \$ 2,726    | \$209.53                   | \$2.55                        |
| North Keypunch  | (8)   | 8.78               | 72.38               | 63.60                       | \$ 2,546    | \$318.25                   | \$5.00                        |
| FARGO BUSINESS MACH.  | (84)  | ....               | 84.49               | 84.49                       | \$ 9,500    | \$113.10                   | \$1.34                        |
| South Bus. Machines   | (44)  | ....               | 82.52               | 82.52                       | \$ 4,821    | \$109.57                   | \$1.33                        |
| Period 1  | (14)  | ....               | 78.37               | 78.37                       |             |                            |                               |
| Period 3  | (18)  | ....               | 88.73               | 88.73                       |             |                            |                               |
| Period 9  | (12)  | ....               | 78.06               | 78.06                       |             |                            |                               |
| North Bus. Machines   | (40)  | ....               | 86.65               | 86.65                       | \$ 4,679    | \$116.97                   | \$1.35                        |
| Period 5  | (22)  | ....               | 89.00               | 89.00                       |             |                            |                               |
| Period 9  | (18)  | ....               | 83.78               | 83.78                       |             |                            |                               |

Cost/benefit ratio is the average amount of money needed for an increase of one objective per student.

TABLE IV  
RESULTS OF 2nd SEMESTER, 1973-74 SHOWING PRE-TESTS, POST-TESTS, GAINS, COSTS, AND  
COST/BENEFIT RATIOS

| CLASS            | (n)   | (A)<br>PRE<br>MEAN | (B)<br>POST<br>MEAN | (C)<br>AVERAGE<br>GAIN(B-A) | (D)<br>COST | (E)<br>COST PER<br>STUDENT | (F)<br>*COST/BENEFIT<br>(E:C) |
|------------------|-------|--------------------|---------------------|-----------------------------|-------------|----------------------------|-------------------------------|
| FARGO TYPING I   | (114) | ....               | 101.58              | 101.58                      | \$5805      | \$50.92                    | \$ .50                        |
| North Typing I   |       |                    |                     |                             |             |                            |                               |
| Per 8            | (13)  | ....               | 110.73              | 110.73                      | \$1602      | \$123.26                   | \$1.11                        |
| South Typing I   | (101) | ....               | 100.40              | 100.40                      | \$4203      | \$ 41.61                   | \$ .41                        |
| Per 7            | (34)  | ....               | 106.50              | 106.50                      |             |                            |                               |
| Per 8            | (35)  | ....               | 115.34              | 115.34                      |             |                            |                               |
| Per 1            | (32)  | ....               | 77.59               | 77.59                       |             |                            |                               |
| FARGO TYPING II  | (117) | 62.14              | 98.12               | 35.98                       | \$6533      | \$ 55.84                   | \$1.55                        |
| North Typing II  |       |                    |                     |                             |             |                            |                               |
| Per 9            | (21)  | 42.22              | 92.79               | 50.57                       | \$1604      | \$ 76.40                   | \$ 1.51                       |
| South Typing II  | (96)  | 67.07              | 99.28               | 31.21                       | \$4929      | \$ 51.34                   | \$ 1.65                       |
| Per 2            | (35)  | 67.21              | 95.91               | 28.70                       |             |                            |                               |
| Per 3            | (28)  | 67.00              | 102.83              | 35.83                       |             |                            |                               |
| Per 5            | (33)  | 66.97              | 99.85               | 32.88                       |             |                            |                               |
| FARGO TYPING III | (30)  | 40.10              | 73.20               | 33.10                       | \$2863      | \$ 95.43                   | \$ 2.88                       |
| North Typing III |       |                    |                     |                             |             |                            |                               |
| Per 7            | (21)  | 40.90              | 77.38               | 36.48                       | \$1847      | \$ 87.96                   | \$ 2.41                       |
| South Typing III |       |                    |                     |                             |             |                            |                               |
| Per 9            | (9)   | 38.33              | 63.44               | 25.11                       | \$1016      | \$112.93                   | \$ 4.98                       |
| FARGO TYPING IV  | (56)  | 78.38              | 109.90              | 31.52                       | \$5514      | \$ 98.46                   | \$3.12                        |
| North Typing IV  | (30)  | 86.72              | 129.17              | 42.45                       | \$3328      | \$110.95                   | \$2.61                        |
| Per 3            | (16)  | 88.36              | 123.35              | 34.99                       |             |                            |                               |
| Per 5            | (14)  | 85.07              | 135.93              | 50.86                       |             |                            |                               |
| South Typing IV  | (26)  | 69.04              | 87.66               | 18.62                       | \$2186      | \$ 84.78                   | \$4.52                        |
| Per 7            | (10)  | 68.36              | 89.30               | 20.94                       |             |                            |                               |
| Per 4            | (16)  | 69.57              | 86.63               | 17.06                       |             |                            |                               |



TABLE V

(a) RESULTS OF THE PRE-ATTITUDE SURVEY OF NINE VOCATIONAL TEACHERS (Sept., 1973)

Concept Means and Standard Deviations

| <u>CONCEPT</u>               | <u>MEAN</u> | <u>STANDARD DEVIATION</u> |
|------------------------------|-------------|---------------------------|
| Course Curricula             | 33.44       | 6.88                      |
| The Testing Program          | 29.44       | 5.57                      |
| Administration of Program    | 33.22       | 5.54                      |
| Fargo Public School System   | 29.56       | 5.17                      |
| State Aid to Sponsor Project | 30.22       | 4.18                      |
| Innovative Projects          | 27.44       | 5.73                      |
| Vocational Education         | 34.33       | 4.74                      |
| TOTAL                        | 217.67      | 30.92                     |

RESULTS OF THE ANALYSIS OF VARIANCE TESTS COMPARING DIFFERENCES IN CONCEPT MEANS  
 $F = 1.95$  Not significant

(b) RESULTS OF THE POST-ATTITUDE SURVEY OF TEN VOCATIONAL TEACHERS AT NORTH AND SOUTH HIGH SCHOOLS (May, 1974)

Concept Means and Standard Deviations

| <u>CONCEPT</u>               | <u>MEAN</u> | <u>STANDARD DEVIATION</u> |
|------------------------------|-------------|---------------------------|
| Course Curricula             | 30.40       | 5.87                      |
| The Testing Program          | 26.30       | 10.11                     |
| Administration of Program    | 30.70       | 7.59                      |
| Fargo Public School System   | 33.90       | 3.63                      |
| State Aid to Sponsor Project | 31.80       | 3.43                      |
| Innovative Projects          | 28.50       | 5.17                      |
| Vocational Education         | 38.10       | 2.81                      |
| TOTAL                        | 219.70      | 20.88                     |

Results Of The Analysis of Variance Tests Comparing Differences in Concept Means

$F = 4.01$  Significant at .01

Results of Fisher LSD Test

Comparing Mean Differences (LSD = 5.39)

Lines connect means that do not differ significantly.

| TEST  | INN   | CC    | ADM   | STATE | FPS   | VOC. ED |
|-------|-------|-------|-------|-------|-------|---------|
| 26.30 | 28.50 | 30.40 | 30.70 | 31.80 | 33.90 | 38.10   |

(c) RESULTS OF TESTS COMPARING PRE- AND POST- MEANS ON THE BUSINESS OFFICE TEACHERS ATTITUDE SURVEY

| CONCEPT                   | PRE MEAN | POST MEAN | t        | DIFFERENCES |
|---------------------------|----------|-----------|----------|-------------|
| Course Curricula          | 33.44    | 30.40     | -1.04 NS |             |
| Testing Program           | 29.44    | 26.30     | -0.82 NS |             |
| Administration of Program | 33.22    | 30.70     | -0.82 NS |             |
| Fargo Public Schools      | 29.56    | 33.90     | 2.14*    | post > pre  |
| State Aid To Sponsor      | 30.22    | 31.80     | 0.90 NS  |             |
| Innovative Projects       | 27.44    | 28.50     | 0.42 NS  |             |
| Vocational Education      | 34.33    | 38.10     | 2.14*    | post > pre  |
| TOTAL                     | 217.67   | 219.70    | 0.17 NS  |             |