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ABSTRACT

The simulated model office idea is to create, within a school, a unit which is as much like a real-life business as possible. To test the feasibility of incorporating this concept into high school business programs, a comparison was made between an experimental group of office simulation students and a control group of cooperative office practice students, students from a 1-hour office practice class and students from a 2-hour office practice class. Using a pretest-posttest design, data were collected by means of typing tests, attitude scales, filing tests, and tests covering other aspects of office work. At the time this interim report was written, no substantial conclusions could be drawn as to which approach to office education is best. It was recommended that future studies should be conducted, using larger sample sizes, more variables, better instruments, and the analysis of covariance technique. Based on the limited evaluation data available, the model office appears to be a viable approach to synthesizing a student's knowledges and skills prior to actual employment. (JS)

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Kentucky Research Coordinating Unit
Department of Vocational Education
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University of Kentucky
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TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

It has often been pointed out that a large majority of the persons who fail in office occupations do not do so because they lack the skills to handle the job. Rather, they fail because they lack the appropriate knowledges about, and attitudes toward, working in an office. Their downfall is in their inability (1) to get along with others, (2) to understand the relationships that exist between office jobs, or (3) to comprehend work flow and office procedures. Even though students gain skills, and some knowledges and attitudes, in business and office education courses, they often have little opportunity to try these out in a real-life situation prior to actual employment. What is needed is a method of giving students, who are about to enter the labor market, some realistic experiences in office occupations. In the past, schools have attempted to meet this need by entering into cooperative education programs or by using simulation techniques in the classroom.

The co-op experience has been used successfully by many schools, but the difficulty which has been encountered is that of obtaining a sufficient number of work stations for co-op students. In periods of tight economic conditions, work stations often disappear. In addition, many times students are hired full-time upon completion of the programs, While this may be a valuable placement device for students, new work stations must be found. Furthermore, the use of the co-op approach requires a significant amount of coordination between the school and the business if the experience is to be worthwhile. Though the co-op program does put students into realistic work situations, it may not provide them with a large variety of experiences within the office setting.

Some schools have attempted to offer more experiences to office students by utilizing simulation techniques within the regular class setting. Courses such as Advanced Typewriting, Office Machines, and Office Practice often incorporate simulation of business offices as a part of the course of study. The

problem with most of these attempts has been that they did not closely approximate the real world of office work. The environment of the typical classroom is such that the atmosphere of a real office cannot be captured. Students still think of themselves as being in a regular classroom with traditional classroom furniture, equipment, and supplies.

The Model Office

This brings us to a third kind of approach which can be used to give students more realistic experiences in office occupations. That is the Simulated Model Office approach. The simulated model office concept can eliminate many of the problems encountered by the other approaches. The program is operated within the school, thus eliminating the problems associated with the co-op programs. If properly developed, a realistic office-type environment can be created, thus eliminating the idea of the classroom from the simulation.

The simulated model office idea is to create, within a school, a unit which is as much like a real-life business as possible. It involves acquiring furniture, equipment, and supplies like those used in offices today. It involves setting up and operating an office modeled after a real business, perhaps one within the surrounding community. It involves the establishment and application of all the procedures necessary to carry on the business of the office. If properly initiated and executed, the development of a simulated model office experience for those about to enter the labor market should go a long way toward giving students realistic experiences in the application of their knowledges, skills, and attitudes in a real working situation.

Feasibility

The simulated model office is an intriguing concept which requires a tremendous amount of effort. The question may be posed, "Is it feasible to use this concept within our schools?" That is the question which Kentucky is trying to answer at the present time. A demonstration site has been funded by the Kentucky

Department of Education through the Bureau of Vocational Education. The project site, Ballard High School outside of Louisville, Kentucky, in Jefferson County, is being used to study the feasibility of using the concept in other Kentucky schools. It is hoped that the project will become the model for other attempts if it proves successful.

What is involved in setting up and operating a simulated model office program? There are two approaches which can be taken. One is to utilize a commercially-prepared simulation package. The other is to develop a package within the school. The Ballard project utilized a commercial package for the 1971-72 year. A school-prepared package is being developed for 1972-73 and later years.

Evaluation

It is essential, in any educational undertaking, that an evaluation scheme be incorporated into the experience. In the case of the simulated model office project, the KRCU agreed to assist in an evaluation effort. The initial evaluation study reported here had two purposes. One was to establish some evaluation procedures which could be built into the simulated model office experience and operated as a definite part of the course. The other purpose was to attempt to determine what effect the simulated model office class had on students relative to their office knowledges, skills, and attitudes.

Due to time constraints, a sophisticated evaluation design could not be demonstrated during the year immediately passed. However, the evaluation objectives were achieved to some degree. The remainder of this report is devoted to describing the study and its outcomes.

PROCEDURES

Population and Sample

The population for the study was senior girls enrolled in office education courses in the Louisville area. The purpose of the study dictated that students enrolled in the simulated mpdel office class at Ballard High School would be involved. All 15 students enrolled in that class made up the experimental group. The control groups were chosen randomly by Mr. Cantrel. They consisted of a cooperative office practice class at Ballard High School (12 students), a one-hour office practice class at Atherton High School (16 students), and a two-hour office practice class at Seneca High School (9 students).

The group of students enrolled in the simulated model office class will be referred to as the Model Office Group. The group enrolled in the cooperative office practice class will be called the Co-op group. Those enrolled in the one-hour office practice class will be referred to as the Office Practice Group 1. Finally, those enrolled in the two-hour office practice class will be called the Office Practice Group 2.

Data Collection

Data were collected through a pretest, conducted early in September, 1971 and a post-test conducted in the middle of May, 1972. The typing tests and the attitude scale were administered by the KRCU personnel and Mr. Leroy Cantrel of the Bureau of Vocational Education, Frankfort, Kentucky. The remainder of the tests were given by the teachers of the students tested.

Instrumentation

The four tests used in the assessment of student's typing skills were developed by the Psychological Corporation and are a part of a series of achievement tests in business education published by McGraw-Hill, Inc., New York. A five-minute straight copy typing test, a six-minute business letter typing test, a seven-minute revised manuscript typing test, and an eight-minute tabulation

typing test were administered as a pretest and again as a post-test.

The tests dealing with spelling, business math, preparing an invoice, preparing a payroll, and writing a check were sections of the National Business Entrance Tests prepared and published by the National Business Education Association, Washington, D. C. These tests were also used in a pretest scheme.

The tests on alphabetizing and filing terminology came from a business filing examination published by South-Western Publishing Co., Cincinnati. Again, a pretest - post-test format was used.

In addition to the testing of knowledges and skills in office education, an attempt was made to assess the attitudes and feelings of students about the particular office education course in which they were enrolled. The instrument used in this attempt was developed by the KRCU personnel and was administered at the time of the other post-tests. A copy of this instrument may be examined in Appendix I.

Data Analysis

The tests were scored by personnel in the KRCU, utilizing scoring guides which accompanied the tests. On the typing tests, net scores were calculated by substracting errors from gross words typed. The scores on business letter typing, revised manuscript typing, and tabulation typing were also combined into a score for total production typing. Scoring on the attitude scale was done by using an overlay which assigned numeric values from 1-5 to the answers circled. A provision was made for equating the negatively stated items with the positively stated ones.

After all the scoring was completed, the data were coded for the purposes of using a computer in the processing of data. The coding was done in the KRCU. The code sheets were used by keypunchers in transferring the data to punched cards.

The data analysis utilized several statistical techniques. T-tests on each group, using pretest vs. post-test scores, were utilized to ascertain whether groups changed significantly on any variable during the time period. The analysis of variance technique was used to determine if there were significant differences between groups on any of the pretest or post-test scores including the attitude scores. The analysis of covariance procedure was run on the 12 post-test knowledge and skills variables, utilizing pretest scores as the covariates. This procedure adjusts the post-test scores based on initial group differences. Finally, t-tests were computed on those variables where the analysis of covariance showed significant differences. This was done in order to ascertain exactly where the differences between groups lay.

DISCUSSION OF FINDINGS

There were 12 variables tested on the pretest. An equivalent 12 variables were tested on the post-test plus 17 attitudinal variables. The means, standard deviations, and maximum N's for the 41 variables are presented by group in Tables 1-4. These are unadjusted figures based on the raw scores obtained through the scoring procedures used. This information is presented solely for the reader's information and no discussion is necessary.

T-tests

Of more value is the information resulting from the t-tests run on the 12 variables utilized on both the pretest and post-test. Tables 5-8 present the findings from the t-tests by group. Using the .05 level of significance, it appears that, within the Model Office Group, the only significant change which occurred was in Variable 11, Preparing a Payroll. Though on no other variables did the group change significantly, it may be significant that the post-test scores on every variable were higher than the pretest scores. The reason for this may be that the simulated model office approach is designed to give students a wide variety of office experience utilizing many knowledges and skills. It may be possible that this variety allowed the students to progress in all areas to some extent without an over-concentration in any of the areas.

The t-tests on Office Practice Group 1 revealed that significant changes (at the .05 level) ocurred in straight copy typing, revised manuscript typing, tabulation typing, total production typing, and alphabetizing. This group scored lower on the spelling post-test than on the pretest. On all other variables, post-test scores were higher than pretest scores.

It is possible, by way of explaining the significant changes, that this group spent a considerable amount of time utilizing typing skills. This is in-line with the availability of office-type equipment in the classroom, consisting mainly of typewriters.

TABLE 1. MEANS, STANDARD DEVIATIONS, AND MAXIMUM N'S ON 41 VARIABLES FOR THE MODEL OFFICE GROUP

VARIABLE	MEAN	STANDARD DEVIATION	MAX. N.
PRETEST			
Straight Copy Typing	217.86	47.58	14
Business Letter Typing	205.50	33.71	14
Revised Manuscript Typing	183.93	31.73	14
Tabulation Typing	179.64	56.54	14
Total Production Typing	569.07	94.14	14
Spelling	18.21	5.89	14
Business Math	7.00	2.00	14
Alphabetizing	6.21	2.19	14
Filing Terminology	7.57	3.03	14
Preparing Invoice	25.15	3.11	13
Preparing Payroll	13.67	2.42	12
Checkwriting	3.17	.83	12
POST-TEST			
Straight Copy Typing	236.43	41.42	14
Business Letter Typing	231.57	35.94	14
Revised Manuscript Typing	194.43	39.29	14
Tabulation Typing	190.36	60.93	14
Total Production Typing	616.36	106.87	14
Spelling	21.50	4.93	14
Business Math	7.71	1.82	14
Alphabetizing	7.29	2.37	14
Filing Terminology	9.86	3.21	14

Table 1 Continued

VARIABLE	MEAN	STANDARD DEVIATION	MAX. N.
Preparing Invoice	27.29	3.15	14
Preparing Payroll	17.00	3.23	14
Check Writing	3.38	.87	13
Attitude Scale 1	4.33	.72	15
Attitude Scale 2	4.13	1.13	15
Attitude Scale 3	3.73	1.10	15
Attitude Scale 4	3.60	1.50	15
Attitude Scale 5	3.60	1.24	15
Attitude Scale 6	4.60	.74	15
Attitude Scale 7	3.87	1.41	15
Attitude Scale 8	4.60	.63	15
Attitude Scale 9	4.53	.92	15
Attitude Scale 10	4.33	.72	15
Attitude Scale 11	3.53	1.06	15
Attitude Scale 12	3.53	.83	15
Attitude Scale 13	4.33	.72	15
Attitude Scale 14	4.13	1.13	15
Attitude Scale 15	4.07	.96	15
Attitude Scale 16	3.60	.91	15
Attitude Scale 17	3.73	.80	15

TABLE 2. MEANS, STANDARD DEVIATIONS, AND MAXIMUM N'S ON 41 VARIABLES FOR THE OFFICE PRACTICE GROUP I

VARIABLE	MEAN	STANDARD DEVIATION	MAX. N.
PRETEST			
Straight Copy Typing	200.14	46.51	14
Business Letter Typing	173.93	41.77	14
Revised Manuscript Typing	150.57	36.60	14
Tabulation Typing	126.00	21.64	14
Total Production Typing	450.50	78.10	14
Spelling	21.64	4.96	14
Business Math	7.14	2.60	14
Alphabetizing	5.64	2.24	14
Filing Terminology	8.57	1.95	14
Preparing Invoice	27.21	2.33	14
Preparing Payroll	14.69	4.77	13
Check Writing	1.67	1.03	6
POST-TEST			
Straight Copy Typing	240.14	53.57	14
Business Letter Typing	195.57	48.06	14
Revised Manuscript Typing	200.93	57.35	14
Tabulation Typing	169.64	39.85	14
Total Production Typing	566.14	133.04	14
Spelling	18.21	4.23	14
Business Math	7.43	1.95	14
Alphabetizing	8.93	2.43	14

Table 2 Continued

VARIABLE	MEAN	STANDARD DEVIATION	MAX. N.
Filing Terminology	9.43	2.82	14
Preparing Invoice	28.21	1.19	14
Preparing Payroll	15.92	4.15	13
Check Writing	2.75	.89	8
Attitude Scale 1	3.93	.80	15
Attitude Scale 2	3.93	1.22	15
Attitude Scale 3	4.07	1.16	15
Attitude Scale 4	3.87	1.25	15
Attitude Scale 5	3.87	1.30	15
Attitude Scale 6	4.47	.52	15
Attitude Scale 7	4.13	.64	15
Attitude Scale 8	3.73	.70	15
Attitude Scale 9	3.73	.96	15
Attitude Scale 10	4.13	.74	15
Attitude Scale 11	4.00	.65	15
Attitude Scale 12	4.07	.70	15
Attitude Scale 13	4.33	.62	15
Attitude Scale 14	3.93	.59	15
Attitude Scale 15	3.93	.59	15
Attitude Scale 16	3.73	.70	15
Attitude Scale 17	4.00	.38	15

TABLE 3. MEANS, STANDARD DEVIATIONS, AND MAXIMUM N'S ON 41 VARIABLES FOR THE OFFICE PRACTICE GROUP 2

VARIABLE	MEAN	STANDARD DEVIATION	MAX. N.
PRETEST			
Straight Copy Typing	182.00	40.04	9
Business Letter Typing	209.89	77.63	9
Revised Manuscript Typing	146.78	39.53	9
Tabulation Typing	151.33	24.37	9
Total Production Typing	508.00	108.38	9
Spelling	20.33	7.05	9
Business Math	7.89	2.85	9
Alphabetizing	5.89	1.96	9
Filing Terminology	9.11	2.20	9
Preparing Invoice	27.44	1.24	9
Preparing Payroll	15.88	4.26	8
Check Writing	3.20	1.64	5
POST-TEST			
Straight Copy Typing	292.56	180.24	9
Business Letter Typing	196.56	45.47	9
Revised Manuscript Typing	186.22	58.13	9
Tabulation Typing	165.11	42.88	9
Total Production Typing	547.89	137.49	9
Spelling	21.00	5.85	9
Business Math	7.78	2.91	9
Alphabetizing	7.89	2.20	9

Table 3 Continued

VARIABLE	MEAN	STANDARD DEVIATION	MAX. N.
Filing Terminology	11.00	3.16	9
Preparing Invoice	28.44	1.33	9
Preparing Payroll	17.00	4.50	9
Check Writing	3.17	1.47	6
Attitude Scale 1	3.67	.50	9
Attitude Scale 2	3.78	.97	9
Attitude Scale 3	3.33	.87	9
Attitude Scale 4	4.11	.93	9
Attitude Scale 5	4.00	.87	9
Attitude Scale 6	4.00	1.00	9
Attitude Scale 7	3.78	.97	9
Attitude Scale 8	3.33	1.12	9
Attitude Scale 9	3.44	1.01	9
Attitude Scale 10	3.78	.83	9
Attitude Scale 11	3.33	.71	9
Attitude Scale 12	3.33	.71	9
Attitude Scale 13	3.89	.33	9
Attitude Scale 14	3.67	1.00	9
Attitude Scale 15	3.67	.87	9
Attitude Scale 16	3.22	.83	9
Attitude Scale 17	3.56	.53	9

TABLE 4. MEANS, STANDARD DEVIATIONS, AND MAXIMUM N'S ON 41 VARIABLES FOR THE CO-OP GROUP

VARIABLE	MEAN	STANDARD DEVIATION	MAX. N.
PRETEST			
Straight Copy Typing	227.64	40.81	11
Business Letter Typing	231.30	43.12	10
Revised Manuscript Typing	177.60	50.60	10
Tabulation Typing	180.10	53.72	10
Total Production Typing	589.00	134.89	10
Spelling	22.25	4.67	12
Business Math	6.42	2.78	12
Alphabetizing	8.00	2.26	12
Filing Terminology	10.45	2.70	11
Preparing Invoice	26.64	2.66	11
Preparing Payroll	17.00	3.61	11
Check Writing	3.82	.60	11
POST-TEST			
Straight Copy Typing	241.64	44.19	11
Business Letter Typing	267.80	42.52	10
Revised Manuscript Typing	212.30	55.62	10
Tabulation Typing	213.60	68.99	10
Total Production Typing	693.70	153.92	10
Spelling	26.08	5.20	12
Business Math	7.42	2.78	12
Alphabetizing	8.00	2.89	12

Table 4 Continued

VARIABLE	MEAN	STANDARD DEVIATION	MAX. N.
Filing Terminology	10.50	2.88	12
Preparing Invoice	28.58	.67	12
Preparing Payroll	19.92	2.64	12
Check Writing	4.45	.93	11
Attitude Scale 1	3.75	1.36	12
Attitude Scale 2	4.17	1.03	12
Attitude Scale 3	4.17	1.27	12
Attitude Scale 4	4.25	1.06	12
Attitude Scale 5	4.67	.49	12
Attitude Scale 6	3.58	1.38	12
Attitude Scale 7	3.67	1.37	12
Attitude Scale 8	4.25	1.05	12
Attitude Scale 9	3.42	1.56	12
Attitude Scale 10	4.42	.51	12
Attitude Scale 11	2.67	1.30	12
Attitude Scale 12	4.08	.67	12
Attitude Scale 13	4.42	.51	12
Attitude Scale 14	4.17	.83	12
Attitude Scale 15	4.00	.95	12
Attitude Scale 16	3.17	1.19	12
Attitude Scale 17	3.58	.90	12

TABLE 5. T TESTS ON 12 VARIABLES FOR MODEL OFFICE GROUP -(PRETEST VS. POST-TEST)(TWO-TAILED TESTS)

VARIABLE	PRETEST MEAN	POST-TEST MEAN	T RATIO	DEGREES OF FREEDOM	T PROBABILITY
Straight Copy Typing	217.86	236.43	1.10	26	.28
Business Letter Typing	205.50	231.57	1.98	26	.06
Revised Manuscript Typing	183.93	194.43	0.78	26	.44
Tabulation Typing	179.64	190.36	0.48	26	.63
Total Production Typing	569.07	616.36	1.24	26	.23
Spelling	18.21	21.50	1.60	26	.12
Business Math	7.00	7.71	.99	26	.33
Alphabetizing	6.21	7.29	1.24	26	.22
Filing Terminology	7.57	9.86	1.94	26	.06
Preparing Invoice	25.15	27.29	1.77	25	.09
Preparing Payroll	13.67	17.00	2.93	24	.01 *
Check Writing	3.17	3.38	0.64	23	.53

*Significant at .05 level

TABLE 6. T TESTS ON 12 VARIABLES FOR OFFICE PRACTICE GROUP I (PRETEST VS. POST-TEST) (TWO-TAILED TESTS)

VARIABLE	PRETEST MEAN	POST-TEST MEAN	T RATIO	DEGREES OF FREEDOM	T PROBABILITY
Straight Copy Typing	200.14	240.14	2.11	26	.04 *
Business Letter Typing	173.93	195.57	1.27	26	.21
Revised Manuscript Typing	150.57	200.93	2.77	26	.01 *
Tabulation Typing	126.00	169.64	3.60	18	.00 *
Total Production Typing	450.50	566.14	2.80	19	.01 *
Spelling	21.64	18.21	-1.97	26	.06
Business Math	7.14	7.43	0.33	26	.74
Alphabetizing	5.64	8.93	3.72	26	.00 *
Filing Terminology	8.57	9.43	0.94	26	.36
Preparing Invoice	27.21	28.21	1.43	17	.17
Preparing Payroll	14.69	15.92	0.70	24	.49
Check Writing	1.67	2.75	2.11	12	.06

*Significant at .05 level.

TABLE 7. T TESTS ON 12 VARIABLES FOR OFFICE PRACTICE GROUP 2 (PRETEST VS. POST-TEST) (TWO TAILED TESTS)

VARIABLE	PRETEST MEAN	POST-TEST MEAN	T RATIO	DEGREES OF FREEDOM	T PROBABILITY
Straight Copy Typing	182.00	292.56	1.80	7	.12
Business Letter Typing	209.89	196.56	- 0.44	16	.66
Revised Manuscript Typing	146.78	186.22	1.68	16	.11
Tabulation Typing	151.33	165.11	0.84	16	.41
Total Production Typing	508.00	547.89	0.68	16	.50
Spelling	20.33	21.00	0.21	16	.83
Business Math	7.89	7.78	- 0.08	16	.94
Alphabetizing	5.89	7.89	2.03	16	.06
Filing Terminology	9.11	11.00	1.47	16	.16
Preparing Invoice	27.44	28.44	1.65	16	.11
Preparing Payroll	15.88	17.00	0.53	15	.61
Check Writing	3.20	3.17	- 0.04	9	.97

TABLE 8. T TESTS ON 12 VARIABLES FOR CO-OP GROUP (PRETEST VS. POST-TEST) (TWO TAILED TESTS)

VARIABLE	PRETEST	POST-TEST	T RATIO	DEGREES OF FREEDOM	T PROBABILITY
Straight Copy Typing	227.64	241.64	0.77	20	.45
Business Letter Typing	231.30	267.80	1.91	18	.07
Revised Manuscript Typing	177.60	212.30	1.46	18	.16
Tabulation Typing	180.10	213.60	1.21	18	.24
Total Production Typing	589.00	693.70	1.62	18	.12
Spelling	22.25	26.08	1.90	22	.07
Business Math	6.42	7.42	0.88	22	.38
Alphabetizing	8.00	8.00	0.00	22	1.00
Filing Terminology	10.45	10.50	0.04	21	.97
Preparing Invoice	26.64	28.58	2.36	9	.04 *
Preparing Payroll	17.00	19.92	2.23	21	.04 *
Check Writing	3.82	4.45	1.90	20	.07

*Significant at .05 level.

Office Practice Group 2 showed no significant changes on any of the variables. On three of the variables, business letter typing, business math, and check writing, the group scored lower on the post-test. On all the other variables, the group scored higher on the post-test. However, many of the changes were very small. In particular, the three negative changes and the positive changes in spelling and preparing a payroll were so small as to be almost negligible.

The fact that the number of students in the group was small (N=9) may be the most important determiner of the pattern. Also, the fact that this class met for two hours daily makes it different from Office Practice Group 1.

The Co-op Group changed significantly on the variables, preparing an invoice and preparing a payroll. The group changed positively on all variables except alphabetizing where no change at all occurred. Positive changes which were almost significant at the .05 level occurred on three variables.

A factor which comes into play with the Co-op Group is the type of jobs held by students in their cooperative assignments. The particular co-op assignments held by the members of this group called for very little typing. More attention was placed on bookkeeping, recordkeeping, cashiering, and data processing. These were knowledge and skills areas which were not tested in this study.

The two areas where significant changes were indicated may be a reflection of the types of experiences that the students had in their work assignments. It is possible that they were required to do more of this kind of activity than the others tested.

ANALYSIS OF VARIANCE

The analysis of variance technique was used to determine if differences existed between the groups on the 41 variables. Presented in Table 9 were the results of the analysis of variance run.

Pretest. On the pretest, significant differences were found on the

TABLE 9. ANALYSIS OF VARIANCE AMONG THE FOUR GROUPS ON 41 VARIABLES

VARIABLE	MODEL OFFICE MEAN	OFFICE PRACTICE GROUP 1 MEAN	OFFICE PRACTICE GROUP 2 MEAN	CO-OP MEAN	OVERALL MEAN	F VALUE	PROB.
PRETEST							
Straight Copy Typing	217.86	200.14	182.00	227.64	208.21	2.11	.11
Business Letter Typing	205.86	173.93	209.89	231.30	202.43	2.85	.05*
Revised Manuscript Typing	183.93	150.57	146.78	177.60	165.53	2.71	.06
Tabulation Typing	179.64	126.00	151.33	180.10	158.34	4.79	.01*
Total Production Typing	569.07	450.50	508.00	589.00	526.30	4.70	.01*
Spelling	18.21	21.64	20.33	22.25	20.57	1.37	.26
Business Math	7.00	7.14	7.89	6.42	7.06	0.59	.63
Alphabetizing	6.21	5.64	5.89	8.00	6.43	2.91	.04*
Filing	7.57	8.57	9.11	10.45	8.63	1.13	.35
Preparing Invoice	25.15	27.21	27.44	26.64	25.47	1.53	.22
Preparing Payroll	13.67	14.69	15.88	17.00	13.65	0.93	.56
Check Writing	3.17	1.67	3.20	3.82	2.16	9.38	.00*

Table 9 Continued

VARIABLE	MODEL OFFICE MEAN	OFFICE PRACTICE GROUP 1 MEAN	OFFICE PRACTICE GROUP 2 MEAN	CO-OP MEAN	OVERALL MEAN	F VALUE	PROB.
POST-TEST							
Straight Copy Typing	236.43	240.14	292.56	241.64	249.23	0.91	.55
Business Letter Typing	231.57	195.57	196.56	267.80	221.85	6.82	.00*
Revised Manuscript Typing	194.43	200.93	186.22	212.30	198.60	0.44	.73
Tabulation Typing	190.36	169.64	165.11	213.60	184.30	1.75	.17
Total Production Typing	616.36	566.14	547.89	693.70	604.74	2.53	.07
Spelling	21.50	18.21	21.00	26.08	21.59	5.43	.00*
Business Math	7.71	7.43	7.78	7.42	7.57	0.07	.97
Alphabetizing	7.29	8.93	7.89	8.00	8.04	1.03	.39
Filing Terminology	9.86	9.43	11.00	10.50	10.10	0.60	.62
Preparing Invoice	27.29	28.21	28.44	28.58	28.08	1.20	.32
Preparing Payroll	17.00	15.92	17.00	19.92	17.08	3.13	.03*
Check Writing	3.38	2.75	3.17	4.45	2.73	6.42	.00*
Attitude Scale 1	4.33	3.93	3.67	3.75	3.96	1.38	.26
Attitude Scale 2	4.13	3.93	3.78	4.17	4.02	0.30	.83

Table 9 Continued

VARIABLE	MODEL OFFICE MEAN	OFFICE PRACTICE GROUP 1 MEAN	OFFICE PRACTICE GROUP 2 MEAN	CO-OP MEAN	OVERALL MEAN	F VALUE	PROB.
Attitude Scale 3	3.73	4.07	3.33	4.17	3.86	1.19	.33
Attitude Scale 4	3.60	3.87	4.11	4.25	3.92	0.69	.56
Attitude Scale 5	3.60	3.87	4.00	4.67	4.00	2.32	.09
Attitude Scale 6	4.60	4.47	4.00	3.58	4.22	3.26	.03*
Attitude Scale 7	3.87	4.13	3.78	3.67	3.88	0.41	.75
Attitude Scale 8	4.60	3.73	3.33	4.25	4.04	5.02	.00*
Attitude Scale 9	4.53	3.73	3.44	3.42	3.84	2.87	.05*
Attitude Scale 10	4.33	4.13	3.78	4.42	4.20	1.66	.19
Attitude Scale 11	3.53	4.00	3.33	2.67	3.43	4.27	.01*
Attitude Scale 12	3.53	4.07	3.33	4.08	3.78	3.09	.04*
Attitude Scale 13	4.33	4.33	3.89	4.42	4.27	1.60	.20
Attitude Scale 14	4.13	3.93	3.67	4.17	4.00	0.68	.57
Attitude Scale 15	4.07	3.93	3.67	4.00	3.94	0.44	.73
Attitude Scale 16	3.60	3.73	3.22	3.17	3.47	1.16	.33
Attitude Scale 17	3.73	4.00	3.56	3.58	3.75	1.15	.34

* Significant at .05 Level

following variables:

- Business letter typing
- Tabulation typing
- Total production typing
- Alphabetizing
- Check writing

In all cases, the Co-op Group had the highest pretest scores. Although no further tests were used in order to determine exactly where significant differences lay, it is possible to tentatively identify these differences.

It is apparent that Office Practice Group 1 was significantly different from the other groups in business letter typing. Again, on tabulation typing, it is apparent that Office Practice Group 1 was significantly different from the Model Office Group and the Co-op Group. A similar pattern holds for total production typing scores. On alphabetizing, it is likely that both the office parctice groups were significantly different from the Co-op Group. Finally, Office Practice Group 1 was significantly different from all the other groups on check writing.

Post-test. On the post-test, looking at the 12 variables used in the pre-test, significant differences were found in these variables:

- Business letter typing
- Spelling
- Preparing payroll
- Check writing

Again, the Co-op Group scored the highest on these variables.

On business letter typing, it appears that both the office practice groups were significantly different from the Co-op Group. An identical pattern holds for the variables, preparing a payroll and check writing.

Attitude scales. There were significant differences between the groups on five attitude scales. They were:

- Scale 6 (This course gave me a wide variety of office experience.)
- Scale 8 (I learned a lot about the relationships which exist between office jobs.)
- Scale 9 (I did not learn much about how work flows from one job to another in the office.)
- Scale 11 (I feel competent in tabulation typing.)
- Scale 12 (I feel competent in revised manuscript typing.)

On Scale 6, the Model Office Group scored significantly higher than the Co-op group. This is only natural since co-op students do not generally get a wide variety of experiences in their assignments. On Scale 8, Office Practice Group 2 scored significantly lower than the Model Office Group. Again, this is expected since it is difficult, or maybe impossible, to demonstrate relationships between jobs in a traditional office practice setting. On Scale 9, the Model Office Group again scored highest, being apparently different from both the Co-op Group and Office Practice Group 2. This may be a result of the attention given to work flow in the simulated model office approach.

On Scale 11, the Office Practice Group 1 scored highest. At the other extreme was the Co-op Group. This is an interesting situation, since exactly the opposite results would have been expected based on actual typing scores. On tabulation typing, the Co-op Group scored considerably higher than the Office Practice Group 1 on both the pretest and post-test. The reason for the feeling of competence among the office practice students may have been a result of specific attention being drawn to tabulation typing during the course of the class.

Scale 12 showed Office Practice Group 1 and the Co-op Group with almost identical high scores. Office Practice Group 2 was significantly different.

The actual revised manuscript typing scores are in line with the students feelings. Office Practice Group 2 scored lowest in this skill on both tests.

The analysis of variance technique points out variables where there are differences between the groups tested. The technique is of most value if it can be assumed that all sample groups tested are truly representative of the population from which they were drawn. The drawback to its use comes when there are initial group differences. Then, the analysis of covariance technique should be used. In this study, it became apparent that the groups were different initially as to measured knowledges and skills. The analysis of covariance was run on the 12 knowledge and skills variables in order to determine what really significant changes occurred.

ANALYSIS OF COVARIANCE

The analysis of covariance revealed five variables where there were significant differences among the groups on post-test scores. The post-test scores were adjusted to reflect the initial differences between the groups. There were differences on these variables:

- Straight copy typing
- Business letter typing
- Total Production typing
- Spelling
- Preparing payroll

The results of the analysis are contained in Table 10. An analysis of these adjusted post-test scores shows a mixed pattern.

On straight copy typing, Office Practice Group 2 had the highest adjusted score. The Co-op Group had the lowest. In essence, this says that Office Practice Group 2 changed the most in this skill and the Co-op Group changed least. This may be a true reflection of the types of activities and experiences encountered by the students.

TABLE 10. ANALYSIS OF COVARIANCE AMONG THE FOUR GROUPS ON 12 VARIABLES (MEANS ADJUSTED FOR INITIAL GROUP DIFFERENCES)

VARIABLE	MODEL OFFICE MEAN	OFFICE PRACTICE GROUP I MEAN	OFFICE PRACTICE GROUP 2 MEAN	CO-OP MEAN	F VALUE	PROBABILITY
Straight Copy Typing	230.67	250.43	325.36	221.49	3.28	.03 *
Business Letter Typing	230.47	219.73	192.16	250.36	5.42	.00 *
Revised Manuscript Typing	180.42	218.29	205.06	202.65	1.96	.13
Tabulation Typing	180.94	202.23	172.61	197.46	1.28	.30
Total Production Typing	584.07	662.91	571.30	632.05	3.59	.02 *
Spelling	22.73	16.99	21.22	25.06	7.66	.00 *
Business Math	7.85	7.38	7.22	7.65	.23	.87
Alphabetizing	7.10	8.77	7.97	7.67	.87	.53
Filing Terminology	10.36	9.49	10.94	10.60	.47	.71
Preparing Invoice	27.14	28.34	28.45	28.71	1.29	.29
Preparing Payroll	17.14	14.03	16.99	19.68	3.13	.04 *
Check Writing	2.73	2.49	2.37	3.03	.29	.83

* Significant at .05 level.

On business letter typing, exactly the opposite pattern appeared. The Co-op Group scored highest while Office Practice Group 2 scored lowest. Again, the experiences encountered may be reflected. Co-op students, when they did type on the job, may have had more opportunities to type business letters. In the office practice class, less attention may have been given to this type experience.

For the total production typing scores, the pattern changes again. Office Practice Group 1 scored highest. Office Practice Group 2 scored lowest. It would be difficult to pinpoint the reason. It may have been the small sample size or the fact that the two classes met for different lengths of time. Certainly, it would be expected that the two classes had somewhat the same kinds of experiences.

On spelling, the Co-op Group scored highest, followed by the Model Office Group, Office Practice Group 2, and Office Practice Group 1. Exactly the same pattern was found for preparing a payroll. While it would be expected that co-op students and model office students would have more experience with preparing payrolls, it is hard to imagine any group having more experience in spelling than the others.

An analysis was undertaken in order to determine exactly where significant differences existed between the groups. The technique used was the application of t-tests to the adjusted post-test scores. The number used in the denominator of the respective t-tests was computed by adjusting the number of observations in the smallest cell in each case. The adjustment utilized the error mean square of each analysis of variance test associated with each analysis of covariance. The error mean square was divided by the smallest cell size, the result multiplied by two, and the square root of that product was found. The result was an adjusted N for use in the respective t-tests. The results of the t-tests are contained in Tables 11-15.

From Table 11, it can be seen that Office Practice Group 2 differed significantly from all the other groups in straight copy typing. None of the other groups differed significantly from each other. It is apparent that Office Practice Group 2 changed significantly in this skill.

Table 12 reveals that the Co-op Group differed significantly from both the office practice groups in business letter typing. Furthermore, the Model Office Group differed significantly from Office Practice Group 2. It is apparent that the co-op students and the simulated model office students made real gains in business letter typing.

Analysis of Table 13 shows that Office Practice Group 1 was significantly different from the Model Office Group and Office Practice Group 2 in total production typing. It is apparent that, while Office Practice Group 1 did not change significantly on any one of the production typing skills, it changed enough on all of them to give it a significant total change.

Office Practice Group 1 was significantly different from all the other groups in spelling as shown in Table 14. In this case, all the other groups had significantly higher scores. As was pointed out earlier, it is hard to imagine why more attention would be given to spelling in the various groups. Possibly, sample size again enters in or there may be some factor, such as the test itself, which caused the difference.

Finally, Table 15 points out the relationship between the Co-op Group and Office Practice Group 1 in preparing payroll. The co-op students scored significantly higher on preparing a payroll. The other two groups were not significantly different from the Co-op group. This probably is a reflection of the particular experience the students gained during the year.

TABLE 11. ANALYSIS OF THE COVARIANCE TEST ON THE VARIABLE "STRAIGHT COPY TYPING" USING ADJUSTED MEANS IN T-TESTS (N=39) (CRITICAL T VALUE = 2.02)

Office Practice Group 2 vs. Office Practice Group 1	
Office Practice Group 2 Mean	325.36
Office Practice Group 1 Mean	250.43
Adjusted N	35.50
T-Value	2.11 *
Office Practice Group 2 vs. Model Office Group	
Office Practice Group 2 Mean	325.36
Model Office Group Mean	230.67
Adjusted N	35.50
T-Value	2.67 *
Office Practice Group 2 vs. Co-op Group	
Office Practice Group 2 Mean	325.36
Co-op Group Mean	221.49
Adjusted N	35.50
T-Value	2.93 *

* Significant at .05 level.

TABLE 12. ANALYSIS OF THE COVARIANCE TEST ON THE VARIABLE "BUSINESS LETTER TYPING" USING ADJUSTED MEANS IN T-TESTS (N=39) (CRITICAL T VALUE = 2.02)

Co-Op Group vs. Office Practice 1	
Co-op Group Mean	250.36
Office Practice Group 1 Mean	219.73
Adjusted N	14.97
T-Value	2.05 *
Co-op Group vs. Office Practice 2	
Co-op Group Mean	250.36
Office Practice Group 1 Mean	192.16
Adjusted N	14.97
T-Value	3.89 *
Model Office Group vs. Office Practice Group 2	
Model Office Group Mean	230.47
Office Practice Group 2 Mean	192.16
Adjusted N	14.97
T-Value	2.56 *

* Significant at .05 level.

TABLE 13. ANALYSIS OF THE COVARIANCE TEST ON THE VARIABLE "TOTAL PRODUCTION TYPING" USING ADJUSTED MEANS IN T-TESTS (N=39) (CRITICAL T VALUE = 2.02)

Office Practice Group 1 vs. Model Office Group	
Office Practice Group 1 Mean	662.91
Model Office Group Mean	584.07
Adjusted N	34.32
T-Value	2.30 *
Office Practice Group 1 vs. Office Practice Group 2	
Office Practice Group 1 Mean	662.91
Office Practice Group 2 Mean	571.30
Adjusted N	34.32
T-Value	2.67 *

*Significant at .05 level.

TABLE 14. ANALYSIS OF THE COVARIANCE TEST ON THE VARIABLE "SPELLING" USING ADJUSTED MEANS IN T-TESTS (N=39) (CRITICAL T VALUE = 2.02)

Co-op Group vs. Office Practice Group 1	
Co-op Group Mean	25.06
Office Practice Group 1 Mean	16.99
Adjusted N	1.94
T-Value	4.16 *
Model Office Group vs. Office Practice Group 1	
Model Office Group Mean	22.73
Office Practice Group 1 Mean	16.99
Adjusted N	1.94
T-Value	2.96 *
Office Practice Group 2 vs. Office Practice Group 1	
Office Practice Group 2 Mean	21.22
Office Practice Group 1 Mean	16.99
Adjusted N	1.94
T-Value	2.18 *

*Significant at .05 level.

TABLE 15. ANALYSIS OF THE COVARIANCE TEST ON THE VARIABLE "PREPARING PAYROLL" USING ADJUSTED MEANS IN T-TESTS (N = 39) (CRITICAL T VALUE = 2.02)

Co-op Group vs. Office Practice Group 1

Co-op Group Mean	19.68
Office Practice Group 1 Mean	14.03
Adjusted N	2.03
T-Value	2.78 *

* Significant at .05 level.

CONCLUSIONS AND RECOMMENDATIONS

No substantial conclusions can be drawn at this time concerning which approach to office education is best. The reasons for this are numerous. First of all, time was a factor. The KRCU became involved in the study very late in August, 1971. Consequently, there was little time to design a study with adequate controls and sophisticated techniques before the ideal time for pretesting. It was decided that most attention would be given to establishing vital relationships and developing some procedures to be used in later studies of this type.

Secondly, sample sizes were necessarily small. This was due to two factors. One was the size of the enrollment in the simulated model office class. The other was, again, the time factor. The researchers had to use control groups who were quickly contacted and indicated a willingness to participate. The original sample sizes appeared to be much larger than they finally were due to last minute drops in enrollment.

Thirdly, no provision was made to account for the change potential of the students. That is, there was no way to determine whether the various student groups were operating at or near their potentials or significantly below their potentials. Given more time for designing a study, such factors as I.Q. and grade point average can be utilized as covariates in the analysis of covariance. This technique might have substantailly altered the results of the analysis in this study.

Fourth, the instruments utilized in the study may not have been valid ones for the purpose of the study. In fact, the variables measured may not have been the most appropriate ones to examine. Certainly, more attention should have been given to attitudinal variables. Time precluded developing or securing a valid instrument to be used in a pretest - post-test scheme. This is especially important when one considers that the vast majority of

persons who lose office jobs do not do so because they lack knowledges and skills, but rather, because they fail to get along with fellow workers. The particular emphasis in the model office approach on the relationships between office jobs and on work flow within an office was not adequately measured as a variable.

Based on the results of the study and the limitations outlined above, the following recommendations are advanced:

1. A similar study should be carried out during future years, since a basic model has been developed and some important relationships have been established.
2. Future studies should utilize more sophisticated research techniques, such as use of larger sample sizes, the inclusion of more variables for use as covariates, etc.
3. More attention should be given to attitudinal factors.
4. Better instruments should be utilized to adequately measure those variables chosen.
5. The analysis of covariance technique should be utilized as the most significant test of changes which may have occurred.
6. More attention should be given to what actually happens within the classes studied. That is, what kinds of experiences are encountered by the students.
7. Data gathered for this study should be combined with future data, where appropriate, so that larger sample sizes would result. Or, data gathered for this study could be utilized in a longitudinal study of the approaches to office education which are under consideration.

Based on the limited evaluation data available, it would appear that the Model Office constitutes a viable approach to synthesizing a student's

knowledges and skills prior to actual employment. The students involved in this program displayed a positive attitude toward office occupations and felt that they had a good understanding of office procedures. In addition, their mean scores on the 12 variables utilized for analysis tended to be quite satisfactory when compared with the control groups. The Model Office group was lowest in their adjusted scores for revised manuscript typing, alphabetizing, and preparing an invoice. Their other scores were average or above. The areas where the students displayed low scores should be considered when curriculum revisions are planned.

APPENDIX I

School _____

The following statements are designed to determine your feelings about this course. After each statement, indicate your feelings by placing a circle around one of the choices. The choices are as follows:

SA = I strongly agree with the statement.
A = I agree with the statement.
N = I neither agree nor disagree with the statement.
D = I disagree with the statement.
SD = I strongly disagree with the statement.

I enjoyed this course very much.	SA	A	N	D	SD
The content of this course was not appropriate to my career plans.	SA	A	N	D	SD
I feel that I would enjoy office work.	SA	A	N	D	SD
I plan to get an office job when I leave school.	SA	A	N	D	SD
I do not feel that I am prepared to do an adequate job for an employer.	SA	A	N	D	SD
This course gave me a wide variety of office experiences.	SA	A	N	D	SD
I did not gain a good background in the total operation of an office.	SA	A	N	D	SD
I learned a lot about the relationships which exist between office jobs.	SA	A	N	D	SD
I did not learn much about how work flows from one job to another in the office.	SA	A	N	D	SD
I feel competent in:					
straight-copy typing	SA	A	N	D	SD
tabulation typing	SA	A	N	D	SD
revised manuscript typing	SA	A	N	D	SD
business letter typing	SA	A	N	D	SD
filling in business forms	SA	A	N	D	SD
filing and record-keeping	SA	A	N	D	SD
using mathematics in the office	SA	A	N	D	SD
using correct grammar in the office	SA	A	N	D	SD