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ANALYSIS OF A SELF-PACED INSTRUCTIONAL PROGRAM IN THE CLERICAL FIELD

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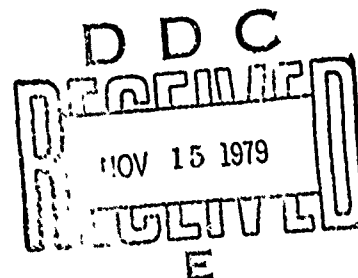
ANALYSIS OF A SELF-PACED INSTRUCTIONAL PROGRAM IN THE CLERICAL FIELD

INTRODUCTION AND PURPOSE

The Army along with the other services and other large scale trainers
is putting considerable emphasis on self-paced instruction. The apparent
advantages of self-paced instruction include the reduction of training
time and the reduction of instructional support, both of which should
lead to a more effective use of valuable training resources. The Army
Research Institute has completed an analysis of a self-paced course to
determine how it was working after being in operation for about four
years. This analysis, described in the present report, was also presented
at the Military Operations Research Conference at West Point, N.Y., in
June 1974 and is discussed more fully in HumRRO Draft Final Report D1-74-3.[1]

The course analyzed was the Clerk-Typist course, which produced over
8,000 clerk-typists a year for the Army. The self-paced course was imple-
mented in 1969, and by now it has had a chance to settle down to a routine
self-paced Army training course.

An additional feature of the course is that the content as contained in
the programmed instructional (PI) texts, in the tests given at the end of
each PI text, and at the end of the course is standard across installations
where the course is taught. A decision rule used in the course is that
group typing is provided for students who type less than 10 Net Words Per
Minute (NWPM) at entry into the course. The criterion standards of accept-
able performance on the tests have also been specified. The standardization
of content and performance criteria means that the minimal job skills pos-
sessed by course graduates are both fixed and known to all concerned. The
SMART Books, or Soldiers Manuals for Army Training, serve the counterpart
purpose in other Army courses in providing standard training content and
performance criteria.

The standardized features of the course have led to expectations on the
part of management about the proper role, function, and training of the
instructors in this course. The self-paced feature has led to questions
about proper prerequisites for the course, such as aptitude area scores,
and about procedures for handling the graduates who complete the course
at different times.

Specific Objectives

The objectives of this research study were to account for student
performance and to determine the environment in which the course was

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[1] Fink, C. D., Bharinger, R. D., Wagner, H., and Showel, M. A systems
analysis of a self-paced, variable-length course of instruction.
HumRRO Draft Final Report D1-74-3, June 1974.

conducted. The specific objectives were as follows:

1.) To analyze the criteria of performance in a self-paced course and to find valid predictors of the criteria;

2.) To determine student attitudes toward the course;

3.) To examine the discipline rate of students in a self-paced course;

4.) To identify problems in administering and managing a self-paced course.

Two classes, one at Fort Ord, CA and one at Fort Jackson, SC, were included in the study. Each class was large, with over 200 students. Course performance data and background information were collected for students, and a student questionnaire was administered. A sample of academic dropouts was interviewed to obtain more detailed opinions about the course from those who failed. Members of the instructional and administrative staff were administered questionnaires and were interviewed to assess their attitudes toward the course. Disciplinary records for up to 1,000 clerk-typist students at each installation were obtained and the rates compared to students in the basic supply course (MOS 76 A10) taught at both Fort Ord and Fort Jackson, a fixed length course with about the same caliber of input. From all the analyses some problems in conducting a self-paced course were identified; where solutions appear feasible, they are suggested.

RESULTS

Criteria and Predictors

In a self-paced course the level of achievement is dichotomous; either the student passes or fails, and there are no finer discriminations within each category. Individual differences in performance can appear in the time taken to complete the course. In this course individual differences did appear in the typing speed at the end of training and in addition in the number of parts of the end-of-course test the students passed on the initial attempt. The end-of-course or final test is divided into parts that correspond to the PI texts. If a student fails the corresponding part of the final test, he or she is sent back to study that part of the course again. There are eight parts of the final test.

The correlation among the criterion measures showed that time to completion is related to both the number of final test parts passed on the initial attempt and to the final typing speed. The correlations were in range of .40 to .50 at both Fort Ord and Fort Jackson. This result is reasonable, in that time to completion could be expected to vary with both the amount of study time spent on PI texts and with typing speed. An incidental finding is that final course typing speed and number of test parts passed on initial attempt were correlated at Fort Jackson ($r = .35$), but were

independent at Fort Ord (r = .0C). There is nothing in the data to suggest a reason for the difference in these correlations.

The only prerequisite for getting into the clerical course is a score of 90 (one-half standard deviation below the population average) on the Clerical (CL) aptitude area of the ACB. The CL aptitude area was found to have the usual degree of validity for predicting time taken to complete the course. With the highly restricted group, the validity at Fort Ord was .50, which is estimated to be about .70 for the full range of the population. Thus, individual differences in completion times in this course are as predictable as differences in level of achievement under conventional fixed-length instruction. Since the CL scores were not available for the students at Fort Jackson who completed the course during the first two weeks, and since this group was about 20 percent of the class, the CL validity for the Fort Jackson sample was not meaningful. At Fort Ord the CL aptitude area continues to be a useful prerequisite for this course.

The variable that was most important in predicting the criterion of time to completion was the student's typing speed before class began. The correlation between entry typing speed and time to completion was .68; the correlation of entry typing speed with final typing speed at the end of the course was .75. An interesting finding was that entry typing speed also correlated .27 with the number of parts of the final test passed on the initial attempt.

The correlation of entry typing speed with the criterion of pass-fail in the course was equally strong. The biserial correlation with the graduation-dropout dichotomy was .58. When typing speed is measured after five days of training, the correlation with the pass-fail criterion went even higher; at Fort Ord it was .61 and at Fort Jackson it went up to .85, for a pooled value of .75.

Typing ability at the beginning or early in the course was a powerful factor in the subsequent performance of the students. Those who already knew how to type or became proficient after one week of training almost always graduated. Of the 395 students who typed more than 10 NWPM after the fifth day of the course, only 18, or less than 5 percent, were dropped from the course. Of the 18 students who typed 5 or fewer NWPM after the fifth day, only 4 graduated; while of the 55 students who typed between 6 and 10 NWPM, 25, or half, graduated and the other half were dropped. Another indication of the importance of typing ability comes from looking at the reasons for academic failure in the course. The records of 59 dropouts were examined, and of these 33 were dropped for lack of typing skill and another 13 for a combination of failure in both typing and the PI tests. The remaining 13 failed only the PI portion of the course. The results are clear that typing skills early in the course are critical for subsequent success.

Student Attitudes

Student attitudes toward the course were generally favorable but less related to performance. Although dropouts had somewhat less favorable attitudes than graduates in some respects, there were indications that their unfavorable attitudes developed during the course rather than existing before any training began. Measures of student attitudes were obtained about two weeks after instruction began, and thus the measures may reflect both experience during the course and prior attitudes.

The picture that emerged about course dropouts as compared to successful graduates is that the dropouts did not find the training helpful. The dropouts as a group thought that the typing training was not long enough, they saw less relationship between the PI texts and the criterion tests, and they had more trouble in getting useful feedback from their performance on the criterion tests. One factor that may help account for their failure is that although they reported going to the study hall as often or even more often than graduates, they also reported getting less help from their fellow students. The dropouts may have felt separated from their fellow classmates. They also expressed less interest in using programmed instruction on the job, and they said that their interest in doing clerical work in the Army decreased as a result of having been exposed to the course. Although the students' responses by themselves do not show whether these negative attitudes developed during the course, some instructors were of the opinion that the students tended to decide during the first week whether or not they wanted to complete the course and behaved correspondingly.

Prior experience with programmed instruction and expressed interest in doing clerical work had little relationship to the pass-fail criterion. Most students did not have prior experience with programmed instruction, and those who did were not more successful. Student interest as measured by enlisted commitment had some relationship with success; about three quarters of the graduates had a commitment as compared to somewhat over half of the dropouts. As was revealed in the interviews with the dropouts, however, there are many different kinds of commitment. Many of the dropouts really preferred a different kind of job in the Army, but due to a lack of openings in their first preference, they had to settle for something else. The recruiters often talked them into becoming clerks, and some reported that they did not know they would become typists. These reports by the dropouts were obtained after they left the course, and thus their reports about enlisting may be colored by their academic failure.

Student Disciplinary Rates

Prior to conducting this research study, there was concern that some students might have difficulty in adjusting to the relatively unstructured environment of the self-paced mode of instruction. To determine whether the disciplinary rates were higher for the clerical course than for a

fixed-length conventionally taught course, discipline records were obtained for about 1,000 clerical students and about 750 supply course students. All students were from Fort Ord and Fort Jackson, and in the opinion of the training cadre the students in the two courses were comparable at time of input.

The disciplinary rates in the two courses were virtually identical. At Fort Ord, 7.4 percent of the male clerical students had a disciplinary record compared to 8.9 percent of the supply course students. At Fort Jackson both rates were higher, 16 percent for clerical students and 14.5 percent for supply students. At both installations the bulk of the disciplinary infractions resulted in Article 15's. Interviews with the training company and administrative personnel substantiated the findings that no undue disciplinary problems are associated with the self-paced clerical course. This was true, both while the clerical students were enrolled in the course and while the graduates were assigned to applicatory training on the job following completion of the classroom training.

The responses of the clerical students to the questionnaire and interviews with dropouts did not reveal any special problems with the self-pacing feature. Based on these results, there is no reason to believe that the self-paced mode of instruction introduces special problems that increase low morale or disciplinary rates.

Management Problems Identified

Several problems in managing the clerical course did surface in the analysis. One problem that emerged related to a discrepancy between the perceived and actual role of the classroom instructor. A common perception is that for a course presented by PI texts the classroom instructor is a classroom monitor and a keeper of records. From this point of view the instructor need not know much about the clerical job or the content of the course. But in fact, the instructors are frequently called upon to provide tutorial assistance, which requires both a good knowledge of course content and skill in presenting the material to facilitate learning. Instructors currently are not given any such training.

A related problem is that much of the instructor's time is spent in keeping detailed records of how students spend their time. As far as could be determined not much pedagogical use is made of these student records. It would seem therefore that the instructors' time could possibly be spent more fruitfully in other activities.

The instructors' role in rewarding and punishing student performance sometimes poses administrative problems. The instructional staff would like to reward good performance in the classroom, but has little authority to implement their decisions. The training company has final authority over the students while they are enrolled in the course. In the case of a three day pass, the school may propose that a student be rewarded for good performance in the classroom, but the training company may deny the student this privilege becasue of poor performance outside the classroom.

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This division of authority, plus a general lack of recognition for instructors in the clerical course, contributed to the reported dissatisfaction among the staff about their status, although they were generally satisfied with the course itself.

One problem of some magnitude was that of keeping the course content up to date. In a course that uses programmed texts as the primary vehicle of instruction, maintaining the currency of the material can be a real burden. One example in the clerical course is that students at Fort Ord in the group typing sessions are taught via TV tapes. The tapes describe in detail how to operate a Remington typewriter, but unfortunately when the students go to their classroom they are confronted with Olivetti typewriters. While this problem poses no great difficulty, it is symptomatic of a recurring situation. Much of the clerical training is based on Army regulations and pamphlets, which are subject to change. Some of the instructors reported that they were reluctant to use particular programmed texts because the content was not current. In these cases, the students are either trained on obsolete procedures and content, or the texts must be supplemented by additional instruction.

One proposal has been advanced to keep the content up to date by using student manpower. Since an important clerical task in the Army is to post changes in regulations, the students can simultaneously learn to post changes and to keep the content current on the PI texts. A special text could be prepared to train students to post changes, and then classroom time can be set aside to change the existing PI texts as required. Following this procedure all interests--both student and staff--could be served.

The problem of maintaining currency is a general one and not limited to PI texts. Any hard copy, whether conventional textbook, filmstrip, or tape recording, is difficult to change. In a changing content area, such as maintaining records and completing forms based on regulations, the problem becomes especially acute. In stable content areas, such as the principles of the internal combustion engine, obsolescense is hardly an issue. In the case of programmed texts, changes can be made quite readily by training the students to make them. In the case of audiovisual presentations, the work cannot be portioned out so easily, and other techniques to make changes are required. The need for maintaining currency, however, remains, and this seems to be an important consideration in the implementation and management of courses that rely primarily on instructional modes other than live instructors.

SUMMARY AND CONCLUSIONS

The Basic Army Administrative Course is a self-paced course which has been operating successfully by producing qualified graduates in a relatively short period of training. The average male graduate required about 100 hours of training spread over about 5 to 6 weeks of calendar time. The extra time was spent on details and at other nonacademic activities. The average woman graduate finished in a shorter time, about 70 hours of

training spread over 4 to _ calendar weeks. In addition to taking less time, the women graduates also had a higher typing speed; their average was 33 NWPM as compared to 20 NWPM for man graduates. The average time of both groups was well below the time allotted for a comparable fixed length course, which is seven or eight weeks, and most graduates typed at least 20 NWPM.

No significant problems emerged about the attitudes and behavior of the students. The students, including the academic dropouts, reported favorable attitudes toward the course and the mode of instruction. Their adjustment, as measured by official disciplinary actions and by time spent at the dispensary or hospital, was comparable to that of students attending comparable other courses. Apparently the unstructured environment provided by the self-paced feature of the clerical course does not pose insurmountable adjustment problems for the students.

The instructors did report some problems with the course. Since instructors from another course were not surveyed, there is no way of telling whether the reported problems are unique to the clerical course or are common among Army trainers. Some of the problems, such as lack of official recognition, may be widespread, but some seem unique. The lack of clear definition of a proper role and function in the classroom may be especially bothersome in the self-paced course. The instructors are trained to conduct platform lectures, but they spend much of their time keeping records of student behavior. Management tends to view the instructor's job as a simple one not requiring any special content or interpersonal skills, yet the instructors are frequently called upon to provide tutorial and counseling aid to students. Clarification of the instructor's job and an adequate training program may help alleviate some of the dissonance among the instructional staff.

A feature of the clerical course that seems to pose special problems is the fact that most of the instructional load is carried by programmed instructional texts. One problem already discussed at length is that of maintaining the currency of the course content. Another concern of the instructors is that many of them have a desire to conduct platform lectures, and they see lectures as required to introduce new materials. Many students also stated that they would like some platform instruction to supplement the PI texts. The feeling seems to be that PI texts are good and should be used, but they are not self-instructional to the exclusion of live teachers in instructional and counseling capacities.

One desirable feature of the structured and standardized clerical course from a research point of view is that an analysis of the kind described here is relatively easy to conduct. The desired performance standards, including the criterion tests, are built into the course. An outside observer or evaluator can then see what is actually going on in the course, and compare the operations and outcomes with what is expected. In the case of the Army's clerical course (71B10/20 MOS), even though there are some places of concern, the training process and outcomes seem to be meeting expectations.