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ABSTRACT

Discussed is phase 3 of a longitudinal research study evaluating Oregon's work-study programs for educable retarded secondary school students along the following dimensions: student characteristics, curriculum content and school experiences, work placement, instructional objectives of 26 work coordinators and evaluative instruments of short-term objectives. Measures of input (including student background), process (including work placement), and outcome (including student performance) are described. Reviewed are the development, pilot testing, and item analysis of student performance measures. The representative nature of sample programs and students in such factors as geographical distribution, family income level, and IQ are related. Reported are differences in schools' per pupil expenditure and in frustration tolerance and self confidence. Analyses of student daily activity inventories, with breakdowns in such indexes as most general category of activity (receiving instruction from work coordinator) and time distribution of instructional categories in regular class attendance (reading instruction representing 15.6 percent of the regular class day are reviewed). Included in a summary of student work placement are demonstrated relationships between pupil age, IQ and teacher perceived pupil attitudes and the likelihood of work placement. (CL)

WORKING PAPER NO. 62

LONGITUDINAL EVALUATION OF WORK/STUDY PROGRAMS FOR THE EDUCABLE MENTALLY RETARDED IN OREGON: PROGRESS REPORT

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August, 1972

These papers are intended primarily as informal communications to and among members of the Research and Training Center staff. The materials contained herein are generally not in final stages of refinement and are not intended for public release.

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Introduction and Background

Since Spring of 1969, the Research and Training Center in Mental Retardation at the University of Oregon, the Oregon Board of Education, and the Oregon Division of Vocational Rehabilitation have collaborated in a joint research effort aimed at evaluating the impact of high school work/study programs for the educable mentally retarded in Oregon. The purpose of this report is to describe the initial findings of the most recent phase of this project--a study that was conducted between January and May of 1972.

The first phase of this project involved a two year follow-up survey of pupil-clients who had terminated from work/study programs in Oregon. The first survey was conducted during the summer of 1969, and focused primarily on former pupil-clients who were one year beyond their high school termination. A second survey was conducted during the summer of 1970, also focusing on pupil-clients who were one year out of school. In addition, however, the first sample was re-interviewed during 1970, thereby constituting a panel and providing a picture of pipil-client adjustment two years following high school termination.

The results of this two-year survey indicated that Oregon's work/study programs had achieved moderately favorable results, when employment was used as the criterion of community adaptation. There were two primary pieces of evidence for this conclusion: (1) the employment status of the surveyed retarded youth was not greatly different from the employment status of all youth in Oregon; and (2) the employment status of high school graduates exceeded that of high school drop-outs.

A complete discussion of these findings can be found in the Research and Training Center's Working Paper Number 61. In addition, Working Paper Number 60 discusses the relationship between general community unemployment and employment opportunities for the retarded, and Working Paper Number 54 presents a comprehensive documentation of the overall results of the two-year survey.

Although the results of the survey were encouraging, many questions still remained unanswered concerning the impact of the high school programs on subsequent community adaptation. What was the specific influence of the curriculum which a pupil received? Did it make any difference whether he was taught in regular or special classes? What was the impact of the work-experience portion of a pupil's program? It became obvious that in order to begin to find answers to these and similar questions, it would be necessary to monitor the experiences of pupil-clients while they were still participating in their work/study programs. This realization led to the development of Phase 2 of this project.

Phase 2 involved an initial attempt to construct instruments and data collection procedures that could be utilized by work/study coordinators (high school teachers) to provide ongoing information about the high school experiences of their pupil-clients. A total of 13 instruments of three types were devised, and designated as Input, Daily Process, and Periodic Process. The Input instruments pertained to relatively unchanging attributes, such as demographic information of the pupil-client and his family, background information about the work coordinators, and descriptive information about the school and larger community in which the work/study program was located. The Daily Process

instruments pertained primarily to the curriculum being provided and the teacher-perceived attitudes of pupil-clients. As their title implies, these instruments were designed to be utilized on a daily basis. The Periodic Process instruments also pertained to curriculum and pupil-client attitudes, and in addition called for information regarding utilization of consultants, integration into regular classrooms, and participation in work experiences. These instruments were designed to be utilized on a periodic basis, with an arbitrary eight week period being initially designated.

The field testing of these Phase 2 instruments occurred during the Spring of 1971. Fifteen work coordinators were selected by the Oregon Board of Education to participate in this study. The basis for their selection included geographical distribution throughout Western Oregon, diversity of program approaches, and a willingness to participate. Approximately 15 minutes per day was needed in order to record the required information.

The results of Phase 2 were primarily methodological, providing the research staff with insights about changes in procedures and instrumentation that would be needed in order to maximize the quality and utility of the information being generated. Some interesting results with respect to the content areas were also obtained, however, and have been reported in the Center's Working Paper Number 56.

Phase 3 of the project, which is the subject of the present report, involved a second attempt to collect meaningful information about work/study programs using work coordinators as a primary source of information. As was mentioned above, this study was conducted during the Spring of

1972. This time 26 work coordinators participated, expanding the geographical distribution to include the entire state of Oregon.

Five major objectives were identified for Phase 3. These objectives were derived from both the initial overall plan of the project and from modifications of this plan that emerged following the completion of Phase 2.

The first objective was to provide a profile of the types of pupil-clients enrolled in work/study programs, and of the characteristics of their school and community environments. The second objective was to determine the curriculum content emphases in the work/study and other special classes, as well as the school experiences of pupils outside the special class program. The third objective was to describe the characteristics of the pupil-clients' work placements. These three objectives were also part of Phase 2, but they were modified in response to the results of that study.

The fourth and fifth objectives of the present study were newly formulated for this phase of the project. The fourth objective was to identify and define the work coordinators' short-term and long-range objectives for their pupil-clients. The fifth objective was to develop instruments to measure a subset of these short-term objectives.

The remainder of this report will present the preliminary results which pertain to these objectives of Phase 3. The next section will describe the design of Phase 3 in more detail. The following section will provide a thorough review of the instrument development that was required for Phase 3. The final section will present the data analyses, grouped in a manner that corresponds to the above stated objectives.

These results are regarded as being preliminary, in that they represent only the first round of analysis. Subsequent analyses will be completed during the Fall of 1972, and these results will be incorporated into a final report.

Design of the Study

The high school work coordinator was the key person around whom this study was designed. Most of the data for this study were provided by the work coordinator, which placed an immediate restriction on the design: the time demands could not be so great that they would detract from the work coordinators' major responsibilities. Keeping this in mind, the instruments and procedures were developed in such a way that, on the average, only 15 to 20 minutes per day would be needed for each work coordinator to provide and record the required information.

Selection of Participants

The 15 work coordinators who participated in Phase 2 of this project were also recruited for Phase 3. These 15 participants represented most of Western Oregon, with the exception of the southern and northern extremities. Since one of the purposes of Phase 3 was to test the model being developed on a state-wide basis, the sample of participants was expanded in order to represent the remainder of the state. Additional selection criteria included diversity in school and community size, types of school programs being provided, and the size and composition of individual classrooms. Finally, it was necessary for both the work coordinator and his building principal to be willing to participate in the study.

Utilizing these criteria for selection, the sample for Phase 3 was increased to 26 work coordinators. The extent to which these 26 are representative of all work coordinators in Oregon is discussed below in the section of this report dealing with results.

Instrument Development

The development of instruments that could be used to provide information relating to the five Phase 3 objectives was clearly one of the most important activities of this study. Some of the instruments developed were essentially revisions of Phase 2 instruments. Others, such as the instruments measuring pupil-client objectives, were entirely new to this phase of the project, and therefore required a completely new set of developmental procedures. Some fell between these two extremes and, although based in part on Phase 2 instruments, required nevertheless some major revisions and pre-testing. A complete account of Phase 3 instrument development is provided in the next section of this report.

Training Procedures for Work Coordinators

The 26 work coordinators in Phase 3 participated in a variety of workshops and meetings prior to the data collection period of January through May, 1972. During August 16 through 20, 1971, a workshop was conducted with three objectives in mind: (1) to explore current issues and problems relating to work/study programs for the retarded; (2) to discuss the results of Phase 2 and their implications for Phase 3; and (3) to begin the process of identifying short-term and long-range pupil-client objectives which are presumably the rationale for the work/study

program. The second and third of these objectives were designed to begin orienting the work coordinators to Phase 2 of the project.

On October 11, 1971, the work coordinators reconvened for one day in order to help establish priorities among the pupil-client objectives which they had generated during the summer workshop. This process is described more completely in the following section on instrument development.

On January 28 and 29, 1972, a two-day workshop was conducted in order to acquaint the work coordinators thoroughly with the data collection procedures they were about to begin. All revised forms and a comprehensive manual of instructions were distributed to the participants, and discussion was encouraged in order to resolve any ambiguities. By the end of the workshop, the work coordinators felt prepared to use the instruments properly and they understood the schedule that had been devised for data collection.

Since part of the procedure involved mailing appropriate data to the research staff on a weekly basis, it was further possible to monitor the correct utilization of the instruments on a continuing basis. One staff member was assigned the responsibility for maintaining weekly contact with each of the participants for this purpose. Problems that were encountered in the utilization of the instruments will be discussed in the next section of this report.

During August 22 through 25, 1972, another workshop will be held with Phase 3 participants in order to discuss the content of this report. Implications for future directions should also emerge from this workshop.

Subjects

All information collected during Phase 3 was pupil-client centered and recorded in terms of individual pupil-client records. A total of 354 pupil-clients from the 26 participating school districts constituted the subject sample for Phase 3, with respect to Objectives One, Three, Four, and Five. Objective Two, pertaining to an inventory of school day activities, required a smaller sample in order to be feasible within the constraints of time available for data recording. For the data collection relating to this objective, a random selection of 10 pupil-clients from each of the 26 classrooms was designated as the subject sample.

Data Collection Schedule

The time frame for Phase 3 data collection consisted of two seven-week periods separated by one week of spring vacation:

Period 1	February 3-March 17
Vacation	March 18-March 26
Period 2	March 27-May 12

During Period 1, three types of information were collected: (1) Input information relating to Objective 1 (one week); (2) Process information relating to Objectives 2 and 3 (four weeks); and (3) Outcome information relating to Objectives 4 and 5 (two weeks). During Period 2, five weeks of Process information and two weeks of Outcome information were collected. The preliminary analysis of this information is presented in the final sections of the report.

Instrument Development

Three Input instruments, four Process instruments, and five Outcome instruments were developed and utilized in the present study. The collection of the Input and Process instruments can be found in Appendix F, and the Outcome instruments have been reproduced in Appendix E. The most important aspects of the development of each of these instruments, and problems associated with their utilization will be presented in this section of the report.

Input Instruments

Forms 1, 2, and 3 in Appendix F are the Input instruments that were utilized in this study. Form 1 provides basic demographic and certification information about each pupil-client. Form 2 provides information about the family background of each pupil-client. Form 3 calls for teacher ratings concerning the abilities and attitudes of each pupil-client.

The formats for all three of these instruments are nearly identical to similar instruments that were used in Phase 2. The most significant modification is the provision of operational definitions for each of the items on Form 3. These definitions are found in the Manual of Instructions and were derived from the field testing of Phase 2. Since there were so few revisions in these forms, no additional pre-tests were conducted prior to the data collection period of Phase 3.

During the course of data collection for Phase 3, the information requested on Form 1 proved to be somewhat more difficult to obtain than

had been anticipated. The source of information for Form 1 was pupil-client records, and these were found to be frequently incomplete at both the school district and state levels. Some pupil-clients were found to be "in process" of certification, so that dates of certification could not be determined. Sometimes this "process", however, extended over a number of years. In other cases, entire records were lost or misplaced so that information was ultimately not available. IQ data was usually available, but more than one-third of the most recent scores available were seven or more years old. In attempting to gather this information, exceptional efforts were required on the parts of both teachers and the research staff. These problems do not invalidate the structure of Form 1, but rather the availability of adequate records from which to gather the required information.

Form 2 in general presented little difficulty, although historical facts about the families of newer pupil-clients in school tended to be unknown to the work coordinators. In addition, the occupation of the head of the household which was recorded might not have been the most recent, especially when this information was taken from records on file. In other respects, Form 2 did not appear to present any problems. Form 3 was also utilized without difficulty, once the operational definitions in the Manual of Instructions were learned.

Process Instruments

Of the four Process instruments utilized in Phase 3, only one remained essentially unchanged from Phase 2. This was Form 7 whose sole function was to report additions or deletions of pupil-clients to a

work coordinator's classroom over the course of the data collection period. As was anticipated, no particular problems were encountered in using this form.

Form 4, describing each work placement for each pupil-client, was almost entirely newly developed for Phase 3. Although some information about job performance, job attitudes, and general work behaviors was collected during Phase 2, no attempt was made then to collect specific information about each placement for each pupil-client. Form 4 does accomplish this task, including a job description for each placement, the starting and ending dates of each placement, the objectives of the placement with respect to the pupil-client, and the work coordinator's perception of how well each objective was achieved at the end of the placement. Form 4 was used periodically, the length of the period being determined by the length of the placement.

Most of the problems encountered with Form 4 were apparently the result of ambiguity in the Manual of Instructions. Some work coordinators sent in copies of Form 4 on a weekly basis, whether or not there was a change in the pupil-client's work placement status. Occasionally information was missing that should not have been difficult for the work coordinators to obtain. At the end of the research period, many work coordinators neglected to complete their final Form 4's, and had to be reminded by telephone. These problems should be correctable with a clearer set of instructions.

Daily Activities Forms

Forms 5 and 6, designed to record each pupil-client's classroom activities on a daily basis, were clearly the most extensively utilized

forms of Phase 3. Their purpose was to provide a structure for developing an accurate and complete inventory of the school-day activities that were provided to each pupil-client. The broadest categorization of these activities included classroom instruction by content area, work placement, field trips, interaction with special consultants (e.g., DVR counselors), and non-academic entries such as lunch and passing periods. The daily number of minutes spent by each pupil-client in each activity was recorded by the work coordinator at the end of each day.

Form 5 was the most basic of the two daily activities instruments. The first 20 entries were categories of instruction that were developed during the Phase 2 study. Operational definitions of these 20 categories were included in the Manual of Instructions. If a pupil-client received instruction that was not adequately described by any of the 20 categories, additional spaces were provided for these different topics to be identified and recorded. A summary space was then provided to record the total number of minutes of classroom instruction that a pupil-client received directly under the tutelage of his work coordinator. Subsequent entries on Form 5 provided a structure for completing the inventory of a pupil-client's daily activities. The categories utilized were interactions with consultants, instructional time spent under the tutelage of other teachers, time spent on work placements, and time spent at lunch or passing between periods.

The purpose of Form 6 was to provide a detailed account of the time a pupil-client spent with teachers other than his work coordinator. The same 20 topic areas from Form 5 were utilized on Form 6, when applicable. Write-ins were also permitted and encouraged, when necessary.

In addition, Form 6 indicated whether the "outside" instruction was received in a regular classroom or in another special classroom for the retarded.

The main problems anticipated in the utilization of Forms 5 and 6 were computational. Work coordinators were being asked to account for each pupil-client's school day in terms of the number of minutes spent in each activity. Would they be able to accomplish this task without making computational errors? Some computerized checks were available to provide an answer to this question.

Two computational errors were possible on Form 5. The first involved a sub-total entry in which the recorder was required to add together all of the instructional minutes which the pupil-client had received under his tutelage during the day. A computer program was easily written to check whether or not this sub-total did in fact equal the sum of its parts. A second computational requirement of Form 5 was that the total number of minutes for each day be equal to the sum of four sub-total components: (1) instructional time from the work coordinator; (2) instructional time from other teachers; (3) time spent on work placement; and (4) time spent in lunch or passing periods. Again, it was possible for the computer to check the accuracy of these computations.

Form 6, it will be recalled, required basically a breakdown into topic areas of the time spent receiving instruction outside of the work coordinator's classroom. The total number of minutes recorded on Form 6, therefore, should equal the analogous sub-total entry on Form 5. This equality was also checked by the computer.

The total number of errors discovered through these computerized checks was gratifyingly small. Only 3.8% of the total number of Form 5's were found to contain errors, and 4.6% of the Form 6's were also found to contain errors. These results are shown in Table 1. Rather than the errors being evenly distributed, a majority of them tended to be made by a relatively small proportion of the recorders. In many instances, the errors were corrected through information gained by telephone conversations between research staff and the work coordinators. The ultimate impact of these errors, therefore, was quite negligible insofar as interpretation of the overall results is concerned.

TABLE 1

Computational Errors Made by Work Coordinators
While Recording Information on Form 5 and Form 6

Instrument	Number of Errors	Number of Completed Forms	Percentage of Errors
Form 5	367	10,621	3.8%
Form 6	474	10,621	4.6%

Outcome Instruments

The development of a series of outcome instruments was a unique contribution of Phase 3, and pertains to Objectives Four and Five of this study. Unlike the Input and Process Instruments, which relied on work coordinators as a source of information, the Outcome instruments were designed to test pupil-client behaviors directly, providing thereby an objective measurement of pupil-client achievement. The procedures

involved in developing these tests were somewhat lengthy, and will be described in the remainder of this section.

With respect to measures of outcome, both short term effectiveness (the impact of current curriculum exposure on pupil-client performance) and long range effectiveness (the impact of curriculum exposure to post school adaptation) were of concern. The intent is to develop a model which incorporates a number of predictors of post school adaptation so that teachers of the EMR can feel confident that what they are teaching will have an impact on a pupil's later adjustment. In order to create such a model, the following initial steps are being taken. First a series of small homogeneous classroom-tests measuring current teacher stated classroom objectives are being designed to be used as the initial pool of predictor variables along with other demographic and process information. These tests will serve as general feedback to teachers concerning the current performance standards of their pupils as well as being used additionally as predictor variables. Simultaneously, attention is being focused on the development of an empirical definition of "community adaptation" which will serve as the criterion variable in this predictive model and will lead to the development of instruments which provide a reasonably sensitive measure of levels of adaptation.

The tasks undertaken in Phase 3 were the refinement and operationalization of teacher generated objectives, the prioritizing of these objectives by the teachers, and the development of five classroom tests based on five of the short term objectives considered most important.

Generation of Objectives

During the 1971 Summer Workshop for work coordinators, the problems of short range and long range outcomes were discussed. In order to capitalize on teacher training and experience, the work coordinators, in a group effort, were asked to produce a list of long range objectives and a list of within-school or short term objectives for their pupil-clients. In this way the work coordinators were given an opportunity to consider the relationship between their short and long range expectations for their pupil-clients and to grapple with the often overlooked question of the relevance of what is being taught to later community adaptation.

Following this summer institute, members of the research staff reviewed and carefully evaluated the written objectives in an attempt to eliminate any ambiguities and to remove or collapse redundant objectives. These objectives were then re-written in behavioral terms which lent themselves more readily to curriculum content and test material. The final product involved eight long term goals and 50 short-term objectives, groups of which were subsumed under each of the eight long term goals. At a subsequent meeting, the work coordinators were presented with a specially prepared list of these long and short term objectives, each of which had a seven point rating scale below it. The teachers were asked to rate first the long term goals and then the short term objectives. A rating of seven meant the objective was of maximum importance. Appendix A contains the list of objectives as well as the median rating for each. It is interesting to note that none of the objectives received a rating below three and most of the ratings were five or better.

After producing this final prioritized list of objectives, five short term objectives were selected for test construction by the research

staff representing four of the eight long range goals (Family Living, Economic Self-Sufficiency, Employability, and Communication Skills). Since none of the long range goals received a rating below four, it was thought that all eight areas should eventually be represented with tests allowing the rating associated with each long range goal to dictate only the number of short term objectives for which tests might be generated.

Generation of Domain Statements

The first task in the sequence of test development was to clearly specify in behavioral terms the complete domain of potential items. A domain is defined as a relatively homogeneous collection of characteristics, traits, or behaviors. Taking the behaviorally stated short term objective as the general domain statement, the research staff created a list of specific content areas which were thought to fully define the domain. For example, if the domain statement was "Demonstrates a knowledge of banking," then the content areas placed under this heading must successfully characterize the behaviors implied by the domain. Furthermore, the mode of response and other situational factors were considered as part of the domain definition. In this way, one attempts to create an item pool by generating items which represent each content area. The domain definitions for the five tests constructed in this study are found in Appendix B.

Once a domain has been defined in this manner, test interpretation becomes considerably simpler. One can generalize only to the domain of potential behaviors included in the definition. Thus, for example, the domain of "Banking" is defined totally by the content areas which

represent the behaviors thought to be relevant. If a student performs well on a test created from this domain definition one can infer only that he is capable of performing that class of behaviors represented by the domain definition. Anyone may take issue with the behaviors that are included and those that are excluded from the definition, but generalizations can only be made to those behaviors which are included.

Generation of Item Pools

The next task involved the creation of item pools. At this stage, it became apparent that certain pre-defined content areas were not as well stated behaviorally as was necessary and thus required some of the content areas to be omitted, re-defined or collapsed into others. This procedure did, of course, alter the domain definitions, which raised the question as to whether or not there was a loss in the integrity of the domain as a function of this pruning process. Items were then generated by the research staff, and a similar pruning procedure at the item level was used to eliminate obviously ambiguous or unrelated items. An attempt was made to include equal numbers of items representing each content area in order to produce a balanced instrument.

Since practical considerations of administration and scoring time were necessary, the basic format of all five tests followed a true/false paradigm. However, in most cases a small number of performance items (items requiring a student to write a check, etc.) were also included. If the full battery of tests is to eventually be given to all EMR pupils during the course of an academic year, then administration test taking time must be at a minimum. Furthermore, there was some concern over

whether or not multiple choice or matching type items would present problems to the pupils on a purely mechanical level, thereby masking their performance ability. As it turns out, this later concern appears to be unwarranted and perhaps some utilization of multiple choice items will be included during the next round of test development.

After completion of the initial item pools by the research staff, the 26 work coordinators were again called together in a workshop in order to give their reactions to these initial attempts. To provide structure for this task, each test was arranged by content headings and each item was followed by a rating scale (see Appendix C). This rating scale required the teachers to indicate whether or not an item was thought to be ambiguous or irrelevant. When poor items were encountered,the teachers were asked to try to write a better one in the space provided. In the event that an item was considered clear and relevant, the teachers were asked to indicate whether one of their better pupils would pass or fail the item and then whether one of their slower students would pass or fail the item. In this way it was possible to obtain some crude index of the difficulty level of the tests. Interestingly enough, this index of difficulty level proved to be more accurate than might have been expected. The teachers clearly perceived the tests as being essentially easy for most of their pupils and this was supported by the final data analysis.

This rating procedure proved to be a valuable pre-test procedure and led to the modification and elimination of a number of inappropriate and unclear items. Furthermore, it provided an opportunity for the work coordinators to react to the content areas being assessed and to evaluate

the representativeness of these content areas with respect to the general domains in question. One important point that emerged during this workshop was teacher-concern over the time and effort required to administer "performance" items; those items which require a student to actually perform a task rather than respond true or false. It was quite clear that if performance items were to be used, they would have to be relatively simple and few in number. Therefore, an attempt was made to create performance items that could be performed at the pupil's desk during a group administration and that required a minimum of time for a response.

Reliability and Homogeneity

The reliability estimate used was coefficient Alpha as introduced by Cronbach (1951) and discussed by Nunnally (1967) and Stanley (1971). Coefficient Alpha is the more general case of the Kuder-Richardson Formula 20 and has been referred to as the coefficient of generalizability. It should be noted, however, that "generalizability" as used here does not refer to generalizations to samples of people other than the one group tested, but rather to generalizations to other items from the pool of all possible items in a given domain. In other words, if a pupil performs well on a test by passing 15 out of 20 items, one would like to assume that he could perform as well on any other randomly chosen set of 20 items from all possible items of that domain.

In this sense then, coefficient Alpha is sensitive to the homogeneity of items and consequently to the homogeneity of the domain. The less homogeneous the domain of potential items is, the more difficult it is

to find a subset of items that will adequately represent that domain. Thus, if a .60 reliability (coefficient Alpha) were obtained on a set of 30 items, it would suggest that there is about a 60% chance of respondents performing similarly on another set of 30 items from the same domain. It should also be noted, however, that coefficient Alpha, like any other measure of internal consistency, is sensitive to test lengths and generally speaking, adding items to a test will increase reliability. The reason for this is based on the fact that when a larger sample of items is taken from the domain, there is less probability that a novel set of items could be found.

The difficult task assumed by the research staff was to design five tests which were relatively short (30 to 40 items) and which maintained a reliability of .80 or better. In order to accomplish this it was necessary to carefully consider the domain definition, content areas and individual items in an attempt to produce a relatively homogeneous domain; a domain from which consistent performance over any set of 30 items is probable 80% of the time. The more homogeneous the domain, the more representative any small subset of items will be of the entire domain of potential items.

Unfortunately, the degree of homogeneity desired was not obtained in most cases, but the average length of the five tests was 36 items which was not too far off target. The physical health care test required the largest number of items (55) suggesting a rather heterogeneous domain but this test was also one of the most difficult to handle definitionally. Nevertheless, a reliability of .80 was obtained from all five tests and for the most part the tests remained fairly short and easy to administer.

The experience of designing these five initial tests has clearly pointed to the need to spend considerable time at the domain definition level prior to any consideration of individual items. In this way, homogeneity can be insured and less time spent debating the issue of whether an item belongs or does not. As a final comment, it should be made clear that the ultimate decision of the content of a domain is not a statistical one but a personal commitment to what is believed to belong under a domain. If a domain is not homogeneous enough to produce a 30-item test with .80 reliability but one is convinced that the content areas belong then a longer test is the answer and not a change in the domain definition.

Administration of Pilot Tests (Standardization)

Pilot tests refer here to the five preliminary tests that were the result of the initial design and pruning procedures described above. According to Nunnally (1967),it is advisable to maintain a five to one ratio of people to items if an item analysis is planned. This recommendation is made to reduce the probability of achieving relatively high correlations by chance. In the case of this study, the maximum sample size was fixed at 350 junior and senior high school pupils, thus limiting initial test length to a maximum of 75 items. It was difficult, however, to develop 75 item tests and in most cases the pilot tests fell short of this number. As it worked out, this reduced item sample size was desirable since a number of absences and other technical problems reduced the pupil sample considerably.

The five pilot tests were produced in booklet form, one per pupil, and sent by mail to the 26 participating work coordinators. Each

coordinator also received a test manual which contained directions for administration as well as a copy of the test. The work coordinators were asked to use only the directions provided and were given instructions on speed of delivery and cautioned about inappropriate voice inflections. In addition, the work coordinators were asked to be certain that their pupils were completely familiar with the response requirements of these tests prior to administration. The work coordinators were also discouraged from teaching to the test just prior to administration. In order to document any deviations from standardized conditions, the work coordinators were also provided with a questionnaire regarding test conditions (see Appendix D). Although minor deviations were noted during the administration of these tests, their impact was minimal as evidenced by the final results.

Item Analysis

As has already been indicated, Phase 3 was divided into two 7-week periods. During the first 7-week interval, three of the pilot tests were administered (Banking, Physical Health Care, Purchasing Habits) and two more were given during the second interval. These tests were returned unscored to the research staff by mail. Upon receiving these tests, work coordinator remarks were reviewed and the test results were coded on Digitec data sheets for convenient data management. Two coders worked together on a single test at one time in order to serve as a check against one another. Then after an entire set of tests representing all 26 schools had been coded, the coders were instructed to select at random and verify 15 code sheets. Since the coding of the majority of the items involved simply a 0 or 1, there were very few coding errors.

With few exceptions, the items were coded but not scored by hand. For scoring purposes, a computer program was written which compared each coded test profile with a key and recorded correct and incorrect responses. This was done in order to eliminate another potential source of error resulting from the coders having to score visually from a key. In a few instances, especially among the performance items, the coders did have to score the items right or wrong but such scoring was minimal.

After the Digitec sheets were completed, the new data were put onto tape and then the scoring program was run to transfer the raw data into scored tests. This program marked each item correct or incorrect and provided a total test score as well. This scored form of each test was then also stored on tape. The item analysis procedure involved producing an inter-item correlation matrix along with the total score. The BMDO2D correlation program provided the correlation matrix along with the co-variance/variance matrix from which it was derived. The procedure used was that described in Nunnally (1967) and involved examining the item-total correlations. Only those items with item-total correlations above .20 were acceptable since correlations lower than this would tend to produce such a heterogeneous test that an excessively large number of items would be required to produce a .80 reliability. But just any 30 or 40 items with correlations above .20 would not do. The items had to represent, as equally as possible, each of the content areas used under the domain.

The results of this item analysis procedure for the five tests was quite encouraging. The average item-total correlation across all five tests was .35 and there were very few items with correlations below .20.

Furthermore, the items did not clump up into one or two content areas but remained fairly constant across the entire test. Thus, it was relatively easy to select a subset of items for each of the final test forms.

A special program was written to calculate coefficient Alpha as well as an index of homogeneity. This homogeneity index was simply the Spearman-Brown formula used for a one item test. This program would accept as input the entire variance/co-variance matrix generated from the BMD program. Given this matrix, it would then procede to calculate coefficient Alpha and homogeneity index for the entire pilot test as well as any sub-samples of items that were designated. In this way, it was quite easy to determine the smallest sub-sample of items which would maintain a reliability of .80. As noted in an earlier section, most of the tests required more than the minimum 30 items but the required reliability level was obtained for all five tests. In looking at the pilot test distributions as well as the selected sub-sample distributions it was quite clear that a strong negative skew was present. The tests were apparently quite easy for these students.

Table 2 shows the number of items required for each of the five tests in order to obtain a .80 reliability. It is important to note that all but one of the five original pilot tests had slightly lower reliabilities (.76-.79) than did the selected sub-samples of Table 2. The reason this occurred was that a few items correlated negatively with the total test and served to depress the overall reliability. By selecting a subset of items which produced a higher reliability than the larger pilot test, however, the domain definition could have been changed.

One must always be careful not to eliminate an item simply because of its low correlation. This index is only a warning that homogeneity has been violated. In the case of these first five tests, however, all of the items which were depressing the overall reliability proved to be ambiguous or in other ways clearly not related to the domain in question. Thus, their removal actually increased domain integrity while improving the reliability.

It is also possible for an item analysis to reveal that all of the items under a specific content area do not correlate with the total test, implying that the content area in question does not belong to the domain. Fortunately, the loss of a content area due to many low correlations did not occur in any of the five tests. In fact, relatively few items within any content area correlated below .20. Because of this, all of the five sub-sample tests contained aprroximately equal numbers of items within all content areas as originally planned.

TABLE 2

Number of Items Required to Reach
.80 Reliability for Each Test

Banking	Purchasing	Health Care	Job Search Skills	Functional Signs
38	36	55	30	28

Administration of Revised Tests

After selecting a representative sub-sample of items which obtained a reliability of .80, these items were reporduced in test booklet form

as described in a previous section. Again, a set of these new test booklets along with a revised teacher manual was sent to each participating work coordinator. The revised teachers' manuals for the five tests can be found in Appendix E. Standardization procedures pertaining to administration technique and the order of test presentations were maintained and the questionnaire regarding violations of standardization was again provided for each work coordinator. After the tests were administered, they were returned to the research staff by mail. Upon receiving these tests, the same procddures for coding and scoring were employed as described for the pilot forms.

Statistical Results of Final Test Forms

Table 3 presents the reliability and homogeneity index for all five final tests along with the number of items required to reach the .80 reliability level. It is quite interesting to note that the estimated reliabilities and homogeneity indexes obtained from the sub-samples of items from the pilot tests proved to be stable upon readministration as self-contained tests.

TABLE 3

Reliability and Homogeneity for Each of the Five Final Test Forms

	Banking	Purchasing	Health Care	Job Search Skills	Functional Signs
Number of items	38	36	55	30	28
Reliability	.80	.79	.80	.80	.80
Homogeneity	.10	.10	.10	.10	.15

Summary

Although the development of these first five tests was relatively trouble free, a number of important lessons were learned which should lead to the production of better tests in the future. Among these, there is the realization of the need for (1) a greater concern on the part of both the research staff and the participating work coordinator over the accuracy and completeness of the domain definitions, (2) greater variability in pupil-client performance in order to increase the utility of the tests for prediction, and (3) a greater variety of response formats such as multiple choice and matching. The ultimate question regarding the value of these tests, however, rests with the manner in which the information they generate is utilized. This is a task for the future.

References

Cronbach, L. J. Coefficient alpha and the internal structure of tests. Psychometrika, 1951, 16, 297-334.

Nunnally, J. C. Psychometric theory. New York McGraw Hill, 1967.

Stanley, J. C. Reliability. In Thorndike, R. L. (Ed.), Educational measurement. (2nd ed.) Washington, D.C.: American Council on Education, 1971.

RESULTS

The final section of this report will present the initial interpretation of the data that were generated during Phase 3. The first sub-section will address itself to the question: How representative are the 26 participants in Phase 3 of all the work coordinators in Oregon? The basis for this comparison required the gathering of information about communities and schools in addition to that which was generated by the research instruments previously described. The second sub-section will describe the characteristics of the pupil-clients and their families in terms of the data that were generated on Forms One, Two, and Three. The third sub-section will display information about the instructional programs that were experienced by the pupil-clients in this study, utilizing Forms Five and Six as the sources of data. The fourth sub-section will provide a description of the work placements that were experienced by pupil-clients, as recorded during the study on Form 4. The final sub-section will present the results of the five achievement tests that were developed during Phase 3.

Representativeness of the Phase 3 Sample

At the beginning of Phase 3, 59 persons in Oregon were employed in their school districts as work coordinators for the educable mentally retarded. The question being posed at this point is whether the programs offered by the 26 participants in Phase 3 are representative of the programs offered by all 59 of the state's work study coordinators.

In one sense, there is an obvious bias within the sample of participants. In order to participate in this study, it was essential that the work experience coordinators be able to spend time, in addition to their regular duties, keeping detailed daily records over many weeks, that they have an opportunity to search out information from the records of their pupil-clients, and that they be able to attend meetings away from their home towns for several days at a time. Work coordinators unable to meet these requirements could obviously not participate in the study, regardless of the nature of their work/study program.

In spite of this obvious bias, a number of dimensions remain which can be utilized to compare the extent to which the work/study programs within the sample are representative of those that were excluded. First, there are a number of broad characteristics of the communities in which the work/study programs reside, such as population density, geographical location, and indices of economic activity. At another level, characteristics of the schools and school districts can be compared, such as school size and per pupil expenditures. Those indices that were available for this comparison are presented below.

Community Characteristics

Three general aspects of community life which are believed to have an impact on work/study classes will be discussed in detail. These are, in the order of their presentation, geographic location, population density, and measures of economic activity. The factors that are considered under the last-named heading by no means exhaust the list of economic activities determining the nature of a community. In addition, the

search for useful data is complicated by the fact that statistics of this kind generally tend to follow county lines rather than school district lines. The fact that two school districts are within the same county does not guarantee the same accessibility of, for example, job training and placement opportunities. For purposes of this comparison, however, the assumption will be made that it does.

Geographical distribution: The state of Oregon is highly varied in both terrain and density of population. Its geography includes seacoast, desert, rugged mountains, and fertile valleys. Variations in daily life, including, no doubt, important aspects of school programs and curricula, are surely affected by variations in geography: however, in most instances specifying the exact manner in which this effect is felt would be very difficult without carefully controlled experimentation. For our purposes it is sufficient to show, first, that the twenty-six programs that were studied in detail occurred in areas that were representative of this variety in the geography of the state; and second, that this geographical distribution of the sample programs is reasonably close to the distribution of the entire group of fifty-nine programs.

To make this comparison, the state was divided into four major areas: Coastal; Central; Southern; and Eastern. In general, this division is similar to that utilized in the 1965 report by the Oregon Board of Education on the incidence of mental retardation in the state. However, in order to locate the districts having work/study programs more closely than the 1965 breakdown would have permitted, the valley region has been broken down into a northern, a central, and a southern portion. Clackamas, Multnomah, Washington, Columbia, and Yamhill counties comprise

the north valley region, Marion and Polk the central region, and Linn, Lane and Benton counties the southern region. Table 4 presents a breakdown of work/study programs according to their geographical location and the role they played in this research project (those studied in contrast to those not studied).

TABLE 4

Geographical Distribution of Work/Study Programs Within and Outside of the Project Sample

Type of Program	Coastal Counties[1]	Valley Counties: North	Central	South	Southern Counties[2]	Eastern Counties[3]	Total
Programs Studied	4	10	3	3	2	4	26
Programs Not Studied	4	12	2	8	3	4	33
Total	8	22	5	11	5	8	59

[1]Coastal counties are Clatsop, Coos, Curry, Lincoln, and Tillamook
[2]Southern counties are Jackson, Josephine, and Klamath
[3]Eastern counties are Baker, Deschutes, Hood River, Jefferson, Umatilla, and Union

In order to gage how closely the geographical distribution of the programs studied parallels the distribution of those not studied, the entries in Row 1 should be compared with those in Row 2. It will be seen that, except for the southern valley region, the two sets of figures are nearly identical. In the southern valley region only 3 out of 11 programs fell into the sample studied. This difference undoubtedly serves to limit somewhat the generalizability of the findings, and is perhaps even more limiting than it might otherwise have been because of

the high population density in this area of the state. As the reader will see, the effects of this underrepresentation will show up in other comparisons of the two groups that involve characteristics of the school and the community.

Population density: Density of population is an example of a demographic factor beyond the control of a school district or of a particular educational program which nevertheless exercises a strong influence in determining the particular nature of both. With respect to work/study programs one could reasonably expect that both the number and the variety of available jobs would differ according to the size of the community. The same expectation would hold for opportunities to train for a job.

In assigning a population label to the locale of each work/study program in the state, the categories defined by the United States Bureau of the Census were utilized as a guide (1970). Any community with a population of less than 2500 was labeled rural. Anything over this size was considered to be urban with an additional refinement being the Standard Metropolitan Statistical Area, which refers to any area with a population of high density that is dominated by a city of 50,000 or more. Eugene, Salem, and Portland qualify for this classification. Communities adjacent to the central city of a Standard Metropolitan Area were further classified as suburban. Table 5 presents the distribution of communities having work/study programs according to these population labels.

TABLE 5

Distribution of Work/Study Programs by Population
Within and Outside of the Project Sample

Type of Program	Metropolitan			Urban				Rural	Total
	Central City	Suburban		2500-5000	5000-10000	10000-20000	Over 20000		
		Less than 15,000	More than 15,000						
Programs Studied	4	4	1	2	4	4	2	5	26
Programs Not Studied	6	2	1	6	3	5	1	9	33
Total	10	6	2	8	7	9	3	14	59

This table can be read in the same way as Table 4. Row 1 shows the distribution by population of programs which were studied and Row 2 presents this information for those which were not studied.

In the three major categories the overall totals represented by the programs in the group studied are close enough to those of the group not studied so that a reasonable degree of comparability can be assumed. There are nine metropolitan programs in each group. Twelve of the programs studied are categorized as urban compared with fifteen in the group which did not participate in the study. The greatest discrepancy between these two sets of programs is found in the classification Rural. The five rural programs in the study sample represent only 19% of all the programs in the study while the nine rural programs in the group not studied represents 27% of those programs. The significance of this discrepancy is further heightened by the fact that four out of five, or

80%, of the programs in the study group are located within a fifty mile radius of cities larger than 70,000. Among the nine rural programs not included in the study, only five, or 55%, are similarly located.

Finally, it should be noted that some discrepancies exist within the major categories Metropolitan and Urban. Suburban communities of less than fifteen thousand and urban communities between five and ten thousand are overrepresented in the study sample. At the same time, urban communities smaller than five thousand are decidedly under-represented.

Measures of economic activity: Any social program that relies on the variety and availability of local employment for its success must make some effort to assess the major sources of economic activity and wealth. The impact of such factors on programs as limited in scope as work/study classes for adolescent retardates is difficult to evaluate, yet these factors undoubtedly play a crucial role in the eventual outcome of the programs.

One problem which complicates the assessment of the impact of such factors stems from the method generally used to report such information. The statistics for sources of economic wealth such as farm production, manufacturing, etc., are most often reported on the basis of counties. The exact relationship between the overall affluence of counties and the affluence of regions within counties is very difficult to determine insofar as these indices of economic productivity are concerned. The discussion in this section is therefore somewhat speculative, particularly with respect to the impact this productivity may have on work/study programs.

Using data reported on a county-by-county basis (Oregon Economic Statistics, 1972), three different indices of economic activity were selected which are all prominent contributors to the economy of the state: number of farms; number of manufacturing establishments; board feet of log production.

Table 6 presents a summary of this information for those programs which were in the study and those which were not. To obtain the average number of farms for communities where work/study programs are found, the number of farms reported for each of the counties in which the work/study programs are located was added together, and the sum was divided by the appropriate number of programs (26 for Row 1, Programs studied, and 33 for Row 2, Programs not studied). Where more than one program of either category was located in the same county, the number of farms found in that county was repeated for each additional program. If, for exmmple, a county was reported to have 250 farms, and it also had two work/study programs in the study sample and one in the group not studied, then five hundred (250 X 2) was added to the sum for Row 1, and two hundred and fifty (250 X 1) to the sum for Row 2.

TABLE 6

Community Economic Indices for Work/Study
Programs Within and Outside of the Project Sample

Type of Program	Type of Economic Activity		
	Farms[1]	Logging[2]	Industry[3]
Programs Studied	1241.3	215.5	320.0
Programs Not Studied	1483.4	419.4	347.1

[1]Data in this column indicate the average number of farms.
[2]Data in this column indicate the average number of board feet of log production in millions of board feet.
[3]Data in this column indicate the average number of manufacturing establishments.

It was pointed out earlier that efforts to assess the impact of a community's economic activity on such programs as work/study for retarded adolescents are highly speculative. It cannot be assumed, for example, that two programs in the same county necessarily have the same opportunities for job placement or training. With this limitation in mind, it appears that the two groups of programs, those studied and those not studied, are reasonably close insofar as the availability of job training opportunities on farms and in manufacturing establishments is concerned. There is a sharp difference, however, with regard to log production. The programs not studied show, as a group, almost twice as great an average production when compared to the group of programs which were studied. This discrepancy is contributed almost entirely by Lane County, which is the state's largest producer of logs. Of the seven work/study programs in Lane County, only one was included in the study sample.

Characteristics of the School Districts and the Schools

The next four sections are intended to focus more closely on the work/study programs themselves by moving from a discussion of community characteristics, whose impact is somewhat nebulous, to more specific information about the school districts and school settings in which the work/study programs are found.

Some of the dimensions to be discussed have been shown to be directly related to pupil behavior, for example, the size of the school and the socio-economic levels represented there. In addition, information will be presented about per pupil costs of programs for the educable mentally retarded, and the way in which the responsibilities of the work coordinator are structured.

School size: Evidence exists to support the contention that variations in school population have a differential effect on the kinds of experiences students have during their school career (Barker & Gump, 1964). Most of this data relates to the secondary school and demonstrates that, as school size increases, the number of students who participate in school activities, and the extent of that participation, tends to decrease. With this in mind, the sizes of the schools which contained work/study programs included in this survey were compared with those whose work/study programs were not in the survey.

The average population of the schools in the study group was 1,049. The range of populations in these schools was 253 for the smallest and 1,959 for the largest. The schools whose programs were not studied had a somewhat smaller average population, 837, and a range of 190 to

2,039. These two sets of statistics seem highly comparable. The upper and lower limits are extremely close and the difference in the average size seems negligible in terms of its impact on school atmosphere. The fact that the work/study programs not included in the study appear to be in slightly smaller schools may reflect a discrepancy pointed out earlier, namely, the under-representation of small urban communities in the study group.

Incidence of low-income families in schools with work/study programs: The relative incidence of students from low income families in programs studied has also been compared with programs not in the study. While any direct connection between this factor and the nature of the work/study program may be difficult to specify, it has been shown that the distribution of family income levels in secondary schools has a measureable effect on certain aspects of student behavior (Douvan & Adelson, 1958). Variations in the relative proportions of children from different socio-economic levels in a school seem to be related to its level of academic achievement and to the goals and aspirations of its students. Students from low income families profess vocational and educational goals that closely resemble those of their middle class peers in schools where the larger proportion of students is middle class.

According to the Division of School and College Finance and Statistical Services of the Oregon Board of Education, thirty-four percent, or 71, of Oregon's 208 high schools have a high concentration of students from low income families. Of these 71 schools, twenty percent, or 14, have work/study programs in the sample group and seventeen percent, or 12, have programs not included in this group. The two sets of programs

thus resemble each other on two counts, first, in having reasonably close agreement in the proportion of schools with a high incidence of low income families, and second, in having a smaller proportion of such schools than is found among all of Oregon's high schools.

Per pupil costs: All other things being equal, the cost of an educational program is probably the best single indicator of its effectiveness. In this section, per pupil costs for all programs for the educable mentally retarded will be presented as a function of the total number of retarded pupils served in the school district, provided that a work/study class for older adolescents is included as one of the programs. The costs shown are based on the total amount claimed for reimbursement by those districts which maintain such a program, divided by the total number of educable retarded pupils reported by that district. Although this does not provide information about the amount of money devoted exclusively to work/study classes, the overall average can be used as an index of the role such classes may play in a district's comprehensive planning for its special education needs.

The per pupil costs of programs for the educable mentally retarded pupil are presented in Table 7. In addition to the breakdown into programs sampled and those not included in the sample, the school districts with work/study classes have been broken down according to the size of their educable retarded population. Forty-one districts have less than one hundred students in their programs and seven districts have more than one hundred students.

TABLE 7

Per Pupil Costs of EMR Programs Which
Include Work/Studh Classes

Type of Program	Number of EMR Pupils in School Districts <100	>100	All Districts
Programs studied	$1114.79 n=22	$1243.45 n=4	$1134.58 n=26
Programs not studied	1045.07 n=19	993.71 n=3	1038.07 n=22
All districts	1082.48 n=41	1136.42 n=7	1090.34 n=48*

*The overall total is three less than the fifty-one districts having work/study programs because two programs are new this year and one deals entirely with students below the senior high level.

The most noteworthy aspect of the information presented in Table 7 is the fact that, regardless of the size of the population of educable mentally retarded students (less or more than one hundred), the school districts in the survey, in contrast to those not surveyed, show a strong trend to spend more, on the average, for each retarded pupil. The discrepancy is particularly marked in the case of the districts with larger populations where the difference amounts to about $250. In the case of districts with fewer than 100 such pupils, the difference is about $70.

In comparing the programs studied with those not studied, this difference in per pupil expenditure is probably the most severely limiting one that has been uncovered. It increases considerably the likelihood that the two sets of programs have other characteristic differences which, on the basis of present information, cannot be specified.

The structure of the work/study programs: The work/study coordinator has a dual responsibility to the pupils in his classroom. At one and the same time he is expected to provide an academic curriculum useful to the student, as well as suitable work experience to assist the student in the transition to post-school independence. One must wonder whether time and energy would permit a single individual to carry out both of these functions effectively. To some extent the attitude of a school district toward the role of a work/study class may be gaged by its expectations in this repeect. Where the responsibilities are shared, the pressure on the work coordinator is reduced and a better work supervision program may result.

On the assumption that a single coordinator who must provide all aspects of the work/study program is likely to be less effective than one who shares the responsibility with other teachers, a comparison was made between the programs in the study sample and the other programs to determine the extent to which shared responsibility existed in each group. The category which seemed most likely to produce effective academic and work experience programs were those where the work coordinator shared responsibility with one or more additional teachers. Of the 26 programs in the study sample, seven were structured in this way. Of the 33 programs not in the study sample, sixteen had shared responsibility.

The next level in degree of effectiveness might be those programs where a single coordinator was responsible for the work/study pupils in a single school. Twelve of the programs studied and sixteen of those not studied fall in this category. Perhaps the least effective program would be the one in which a single coordinator was responsible for

supervising the work/study students of more than one school. Seven programs in the study sample were structured in this way and only one among the programs not studied.

When the two sets of programs as a whole are compared, the group which was not studied appears to have more situations in which the total responsibility is shared.

Overview

In this section an attempt has been made to estimate the extent to which the 26 work/study programs examined in detail by this research project are representative of all the work/study programs in the state. For this purpose these programs were compared with the 33 programs not surveyed with respect to certain characteristics of the communities and school districts in which they are located. This analysis uncovered both similarities and differences.

As far as community characteristics are concerned, a reasonable degree of similarity was found. All geographic areas were about equally represented with the exception of the southern region of the Willamette Valley which was under-represented in the study group. Small suburban communities were over-represented in this group, and rural and small urban communities were somewhat under-represented. Indices of economic activity were judged to be nearly the same as far as numbers of farms and manufacturing establishments were concerned, but the production of logs appeared to be considerably higher in communities of the programs not studied.

With regard to the characteristics of schools and school districts, comparisons were made of school size, per pupil costs, the proportion of high schools with a high incidence of students from low income families, and the degree of responsibility for the program born by the work/study coordinator. Negligible differences were found in connection with school size and income level of the families. With regard to the extent to which the coordinator shares responsibility for the program, the programs not in the study sample appear to have a slight advantage. The most glaring discrepancy between the two groups was found in the area of per pupil costs, with the average cost much higher for the programs in the study.

References

Barker, R. & Gump, P. Big school, small school. Stanford, California: Stanford University Press, 1964.

Douvan, E. & Adelson, J. The psychodynamics of social mobility in adolescent boys. Journal of Abnormal and Social Psychology, 56, 31-34, 1958.

Mental Retardation Prevalence in Oregon: A Survey by the Oregon State Board of Health, 1965.

Oregon Economic Statistics 1972. Bureau of Business and Economic Research, University of Oregon. Eugene, Oregon: University of Oregon Press, 1972.

United States Bureau of the Census. Census of Population: 1970 General Social and Economic Characteristics, Final Report PC(1)-C39, Oregon. United States Government Printing Office, Washington, D.C., 1972.

Characteristics of Pupil-Clients and Their Families

Pupil Characteristics

The only clearcut difference which must distinguish retarded pupils from the total pupil population is the level of their performance on standard intelligence tests. Whether a population of retarded pupils is further distinguishable from other pupils in terms of family background and general attitudes is a complex question which has as yet not received a satisfactory answer. This section of the report will portray some personal and family characteristics of the pupil-clients who were studied in Phase 3, in order to provide a background for interpreting the subsequent sections on curriculum, work placements, and achievement test scores.

Age, sex and year in school: One potential influence on the way in which a school district views the role of a work/study class in the education of its retarded children is the distribution of pupil-clients in these classes by age and by sex. In the group of pupil-clients under consideration, the distribution by sex shows a 60-40 split, with boys more heavily represented than girls. This finding may involve some sampling variation, since the Phase 2 study (O'Connor, Halpern, & Romo, 1971) shows a less extreme split, with about 55% boys and 45% girls. However, most populations of retarded individuals show a heavier representation of males. This has been interpreted as a reflection of the fact that girls engage less in behavior that is socially undesirable, and as a result are less frequently brought to the attention of authorities and labeled in some way. There is no reason to assume that this explanation does not apply to the group under discussion.

Tables 8 and 9 present detailed summaries of the age distribution and the level in school of the entire group of subjects across all twenty-six districts.

TABLE 8

Distribution of Pupil-Clients by Year in School

	Year in School				
	Freshmen	Sophomore	Junior	Senior	Total
Frequency	41	92	117	99	349
Percentage	11.6	26.0	33.0	28.0	98.6

TABLE 9

Distribution of Pupil-Clients by Chronological Age

	Age in Years					
	15	16	17	18	19+	Total
Frequency	22	49	74	119	87	351
Percentage	6.2	13.8	20.9	33.6	24.6	99.1

It seems clear, with respect to both age and school year, that the upper ranges are much better represented than the lower. This finding suggests the possibility that there is a tendency on the part of school administrators to reserve the work experience program for the older retardate, even in a fair proportion of the cases (about 25%) permitting pupil-clients to participate who are well beyond the legal age limit.

Sixty-one percent of the pupil-clients are considered to be juniors and seniors and eighty percent are 17 or older; on the other hand, only twenty percent are 15 or 16. The largest proportion of pupil-clients falls at the chronological age of eighteen and at the junior year in high school, according to the work coordinators' judgment of their school placement.

Length of time in special program: Information about the pupil characteristics so far discussed - chronological age, sex and level in school - can be fairly accurately ascertained by a classroom teacher. The farther the information is, in terms of its source or its chronology, from the individual who is asked to provide it, the more unreliable it is likely to become. In most instances the certification of a pupil to a special class for the educable mentally retarded extends back to a period when it is unlikely that his present high school teacher knew him. Thus the teacher cannot serve as a witness to the accuracy of the information in the student's folder. Other sources of inaccuracy also contribute heavily to the unreliability of data about the length of time any pupil has been in a special class. Transfers from other states and temporary certifications which are never made permanent are probably the largest sources of inaccuracy in the present set of data. In some cases records were missing and could not be located. In spite of these sources of inaccuracy, it is believed that the summary data on the ages of the pupil-clients in the study group at the time they were certified, and on the length of time they have spent in special classes, is worth reviewing.

TABLE 10

Distribution of Pupil-Clients by Age at Placement

	Age in Years					
	5-7	8	9	10	11-15	16+
Frequency	23	38	45	31	157	38
Cumulative Percentage	6.5	17.2	29.9	38.7	83.1	100.0

Table 10 presents the chronological age of certification for this group of students. The data suggest that the ages of eight and nine are the ones in which placement in the special program is most likely to occur. Only 6.5% of the group were referred at an earlier age. Ages eight and nine account for 23% of all the subjects. At age ten the percentage drops to 9% and remains at about this level until age 16, where it undergoes a further reduction to 5%. The factor of early placement (at ages eight and nine) which is suggested by the data in Table 10 is further supported by the findings presented in Table 11, which show the length of time these students have spent in special education programs. Of the 354 students in Phase 3, one hundred and fifty, or 42% have spent seven or more years of their educational careers in such programs. In spite of the fact that there are inaccuracies in the information available, it seems reasonable to conclude on the basis of these two tables that there is a high likelihood, once a pupil is assigned to such a program, that he will remain there until he leaves school.

TABLE 11

Distribution of Pupil-Clients by Years in Special Classes

	Age in Years		
	Less than 4	4-6	7 or more
Frequency	112	95	150
Cumulative Percentage	30.8	57.7	100.0

Intellectual functioning: The criterion which should count most heavily in the assignment of pupils to special education programs is the adequacy of their intellectual functioning. For this reason the findings with respect to intelligence will be presented in considerable detail. It should be kept in mind, however, that the summary table below lumps together scores obtained with different tests under widely differing conditions. In addition, the age range of the subjects at the time the tests were administered varied from about age 8 to age 17. There is some question as to the validity of combining all of these scores into a single distribution. Care has been taken, however, to use only scores which were obtained with the use of thoroughly standardized individualized tests. Forms L and LM of the Stanford Binet, the Wechsler Intelligence Scale for Children, and the Wechsler Adult Intelligence Scale.

The following table presents the absolute frequencies and the cumulative percentages for the intelligence quotients of 335 subjects.[1]

[1]For 20 pupils test results were unobtainable. When this is added to 335, it sums to one more than the usual N of 354 which is found in most of the other tables presenting data about the total group. This discrepancy occurred because one pupil dropped out of school during the first week of the study.

The scores are grouped into five-point categories. While this makes for a somewhat cumbersome table, it provides necessary information if the reader is to make any judgments about the range of abilities one is likely to find among the pupils in the work experience programs in Oregon.

TABLE 12

Distribution of Intelligence Test Scores
for all Pupil-Clients

IQ Range	Frequency	Cumulative Percentage
40- 45	2	0.6
46- 50	5	2.1
51- 55	16	6.9
56- 60	24	14.0
61- 65	44	27.2
66- 70	70	48.1
71- 75	67	71.0
76- 80	49	85.7
81- 85	34	95.8
86- 90	6	97.6
91- 95	5	99.1
96-100	2	99.7
101-105	0	99.7
106-110	1	100.0

The mean IQ for the total group was 70.8 and the standard deviation was 9.7. Thus more than two-thirds of the pupils fall within the expected range of ability for this kind of educational program. However, one should note that approximately 33% fall above 80 or below 50. While these extremes are relatively small in number (N=55), the impact that one or two such pupils in each classroom might have on the total program must be taken into consideration.

One other table will be presented in this section which contains the absolute frequencies and the cumulative percentage for the calendar year when each pupil-client in the study was last tested by means of a well standardized individual intelligence test. On the basis of the data in Table 13, it is clear that more than three-quarters of the pupil-clients in the study group were tested three or more years ago, and, of these, slightly more than half have not been tested since 1966.

TABLE 13

Distribution of the Year of the Latest Intelligence Test

	Year of Latest Intelligence Test				
	1960 or before	1961-1963	1964-1966	1967-1969	1970 or later
Frequency	3	78	109	83	63
Cumulative Percentage	0.8	22.9	53.7	77.1	100.0

Family and Personal Characteristics

It was pointed out earlier that the single criterion which unmistakeably differentiates the work/study pupil from other school-age individuals is the level of his intellectual functioning. Furthermore, a satisfactory answer to the question of whether such pupils differ markedly from other pupils as far as their personalities or their experiences as family members are concerned has never been found. While there is little expectation that the findings from the present research will provide definitive answers to this question, it nevertheless seems

important, in understanding the processes involved in the various aspects of the work/study program, to have an idea of how the work/study teacher evaluates the personal and social characteristics of the pupils. The information provided in the next two sections was obtained by means of such ratings.

Family stability: Based on information provided by the work coordinators, the families from which the pupil-clients in Phase 3 were drawn appear to be reasonably stable. As was true of the Phase 2 sample, over 80% have resided at least three years in the same school district. About the same proportion of families (around 80%) is reported as having both parents present in the home. Furthermore, ninety percent of the pupil-clients are Caucasian in origin and have the same racial and/or ethnic background as the rest of the student body in the school.

The reports on regularity of employment reflect somewhat less stability, with only sixty percent of the heads of households regularly employed and seventeen percent irregularly employed. The remaining percentage (33%) were either retired or were not known to be employed at the time of the study.

Since demographic studies of mild retardation suggest that lower socio-economic levels are disproportionately represented in this group (Perlin, 1971), one might expect to find in the study group significantly more pupil-clients from families where the head of the house has a job low on the occupational scale. This does not appear to be the case. The breakdown by occupational level of those heads of households for whom an occupation is reported (94%) shows that 57% are seen by the teachers as being in the lower third of the occupational scale. According to the 1970 Oregon census, 50% of employed persons 16 years of age

or older have jobs in the lower third of this scale. This portion of the scale includes service workers, farm laborers, and "blue collar" workers.

Finally, with respect to educational level, the information available, which gives only the level of siblings and no data about the parents, suggests that these families resemble the general population and are not necessarily less well educated by comparison. The teachers report a 30% dropout rate among the siblings of the work/study students. According to the 1970 Oregon census, among all persons 18 or older, about 28% did not complete high school.

Personal characteristics: The twenty-six work/study teachers were asked to characterize their students physically, emotionally and intellectually. The rating form (Form 3) they used for this purpose will be found in Appendix F. In the case of variables describing behavior which is relatively easily observed, such as cheerfulness, cooperativeness and respectfulness, four-fifths of the students were rated high. Where the behavior is less readily observed, such as degree of self-confidence or level of tolerance for frustration, one finds considerably more diversity in the teachers' evaluations. On three personality dimensions, about two-thirds of the students were given positive evaluations: motivational level, sense of responsibility and degree of optimism. In adventurousness, ability to withstand frustration and degree of self-confidence, half the students were rated low and half high.

With regard to physical and intellectual characteristics, about thirty percent of the pupils were described as having some noticeable stigma and thirty-five percent as being markedly below the rest in

general motor ability. Ability to attend shows about the same degree of diversity. However, only half of the students are scored high on rote memory and only forty percent are described as high in creative thinking and abstract reasoning ability. Although the range of behaviors in this group of students can be expected to be somewhat restricted in comparison to a group with "normal" intellectual ability, certain commonly held expectations about the differences in behavior between boys and girls seem to be present in some of the evaluations. Boys are seen as more adventurous and rebellious than girls, as well as better in motor tasks and abstract reasoning.

Table 14 presents the results obtained when the teachers' ratings on each dimension were intercorrelated with their ratings on every other dimension. Considering only those correlations which are .30 or larger, it appears that teachers see positive attributes as being related to one another. For example, a highly motivated student is seen as high in attending rate, sense of responsibility and degree of optimism and self-confidence. Rebellious students are seen as unhappy, impolite and irresponsible. There is also a tendency for skills of an intellectual nature to be seen as related to one another, as well as to attributes of personality; for example, reasoning is highly correlated with rote memory, creative thinking and degree of self-confidence. There is reason to believe, on the basis of evidence in the table, that the ratings are indeed realistic. An example of this is the high degree of relationship between motor ability and the presence of a stigma, and the equally high relationship between motor skill and cautiousness.

TABLE 14

Intercorrelations of Teachers' Ratings of Physical, Intellectual, and Personality Characteristics

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Occupational level	1	X	.16	.15	.17	.10	.01	.00	.04	.02	.17	.02	.10	.03	.06
Both parents home	2		X	.01	.03	.05	.03	.04	.05	.08	.04	.01	.02	.04	.0
Time in district	3			X	.02	.06	.01	.10	.07	.12	.01	.04	.01	.02	.0
Sibling drop-outs	4				X	.14	.13	.04	.00	.05	.06	.01	.04	.04	.04
Stigma	5					X	.32*	.11	.13	.08	.04	.06	.05	.06	.10
Motor ability	6						X	.30*	.28	.23	.17	.10	.07	.01	.06
Reasoning	7							X	.65*	.41*	.18	.13	.03	.03	.03
Creative thinking	8								X	.37*	.20	.11	.03	.03	.09
Rote memory	9									X	.16	.17	.05	.02	.01
Motivation	10										X	.49*	.26	.28	.16
Attending rate	11											X	.26	.18	.22
Rebellious-cooperative	12												X	.38*	.45
Unhappy-cheerful	13													X	.25
Impolite-respectful	14														X
Cautious-adventurous	15														
Frustrated-not frustrated	16														
Irresponsible-responsible	17														
Pessimistic-optimistic	18														
Not confident															

*Only correlations of .30 or better are marked for purposes of discussion in the text.

TABLE 14

Intercorrelations of Teachers' Ratings of Physical, Intellectual, and Personality Characteristics

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
X	.16	.15	.17	.10	.01	.00	.04	.02	.17	.02	.10	.03	.06	.06	.04	.04	.12	.04
	X	.01	.03	.05	.03	.04	.05	.08	.04	.01	.02	.04	.03	.13	.02	.01	.05	.03
		X	.02	.06	.01	.10	.07	.12	.01	.04	.01	.02	.03	.02	.06	.03	.04	.04
			X	.14	.13	.04	.00	.05	.06	.01	.04	.04	.04	.11	.04	.08	.07	.01
				X	.32*	.11	.13	.08	.04	.06	.05	.06	.10	.18	.10	.01	.06	.12
					X	.30*	.28	.23	.17	.10	.07	.01	.06	.30*	.15	.02	.13	.29
						X	.65*	.41*	.18	.13	.03	.03	.03	.26	.21	.13	.18	.30*
							X	.37*	.20	.11	.03	.03	.09	.31*	.21	.07	.23	.25
								X	.16	.17	.05	.02	.01	.13	.22	.12	.16	.24
									X	.49*	.26	.28	.16	.14	.21	.37*	.36*	.39*
										X	.26	.18	.22	.01	.25	.40*	.23	.26
											X	.38*	.45*	.22	.19	.45*	.14	.06
												X	.25	.12	.29	.24	.44*	.32*
													X	.18	.15	.38*	.16	.01
														X	.18	.12	.24	.45*
															X	.25	.35*	.40*
																X	.21	.19
																	X	.50*
																		X

*Only correlations of .30 or better are marked for purposes of discussion in the text.

General Summary

It appears from the preceding analysis that the pupils in the work/study programs studied in Phase 3 conform to expectations with respect to the level of their intellectual functioning and their relative representation by sex. The average IQ is 70 and the group consists of sixty percent boys and forty percent girls. This difference was attributed to the fact that boys are more likely to become social problems and to require special educational programs. The fact that the mean intelligence test score of these students is almost precisely 70, suggests that on the average they are appropriate candidates for special education classes. It was noted, however, that this conclusion is based on test results that could hardly be described as current. There also appear to be enough cases of subjects with IQ's below 50 or over 85 to have a distinct impact on the total program.

From the standpoint of demography, it appears to be impossible to distinguish this group from the general population. The families appear to be stable residents of the area; both parents are present in the home in four-fifths of the cases; and proportions of different occupational and educational levels appear to resemble closely those of the general population of Oregon.

Personality variables show a somewhat different picture. The teachers, while they tended to rate the students high in certain aspects of behaviors that they might observe on a daily basis, such as respectfulness or cheerfulness, seemed to feel that there were perhaps some fairly deep-seated anxieties in their students. This is reflected in the fact that at least half of the students were seen as easily frustrated and lacking in self-confidence.

References

O'Connor, G., Romo, B., & Halpern, A. "Highlights:" A Report of Secondary Pupils on Work/Study Programs in Oregon. Research and Training Center in Mental Retardation, University of Oregon. Working Paper No. 56, 1971.

Perlin, A. The Socio-Cultural Ecology of Upper Level Mental Retardation: Census - Genealogical Phase. Research and Training Center in Mental Retardation, University of Oregon. Working Paper No. 57, 1971.

United States Bureau of the Census. Census of Population: 1970 General Social and Economic Characteristics, Final Report PC(1)-C39, Oregon. United States Government Printing Office, Washington, D.C., 1972.

Inventory of Daily Activities

The largest quantity of data collected during Phase 3 was generated from Forms Five and Six in order to provide an accurate inventory of how pupil-clients in work/study programs in Oregon were spending their days in school. During the nine week period of daily data collection, a total of 3,451,112 minutes of pupil-client time was recorded by 25 work coordinators in reporting the daily activities of 251 pupil-clients. The management and interpretation of this extremely large quantity of information was no easy task, and the results presented in this section of the present report constitute only a preliminary analysis of this data. Four general topics will be presented and discussed: (1) the most general distribution of time into broad instructional and non-instructional categories; (2) a breakdown of total instructional time into categories of instruction; (3) a breakdown of instructional time under the tutelage of the work coordinator into categories of instruction; and (4) an analysis of the nature and extent of pupil-client participation in regular high school classes.

The Most General Categories of Activity

In the most general sense, each pupil-client's school day had the potential of being distributed among four broad components: (1) direct instructional time under the tutelage of his work coordinator; (2) direct instructional time under the tutelage of some other teacher; (3) time spent on work placement; and (4) time spent eating lunch and moving about between classrooms. Table 15 shows the manner in which time

was distributed in these categories. Within each category, three percentages are presented, indicating a range, a median, and a mean. The mean refers to the total number of minutes in a given category for all 251 pupil-clients divided by the total number of minutes for all pupil-client days. The range refers to similar calculations that were produced for the pupil-clients in each of the 25 school districts separately. The median refers to the value associated with the 13th school, when arranged in an order of ascending scores.

TABLE 15

Distribution of Time Spent by Pupil-Clients in School with Respect to Four Broad Categories of Activity

Type of Activity	Across 25 School Districts		
	Range	Median	Mean
Work Coordinator Instruction	9%-61%	34%	33%
Other Teacher Instruction	5%-61%	21%	28%
Work Placement	1%-41%	28%	24%
Lunch and Passing Periods	9%-21%	15%	15%

As might have been expected, there was great variability among the 25 school districts in the manner in which the time of their pupil-clients was distributed. As Table 15 shows, this variability was greatest in the two categories of instructional time. On the average, however, it appears that approximately one-third of a pupil-client's time was spent receiving instruction from his work coordinator, approximately fifty percent was divided nearly equally between instruction from other teachers and work placement, and the remaining fifteen percent was spent eating lunch and moving about between classes.

Since not all pupil-clients who were monitored during Phase 3 received work placements, additional analyses were performed spearately for the group that received work placements compared to the group that did not receive work placements. These results are shown in Table 16. It can be seen that, on the average, the time not spent on work placement was distributed almost evenly between the two instructional categories.

TABLE 16

Distribution of Time Spent by Pupil-Clients in School as a Function of Being On or Off Work Placement

	Across 25 School Districts					
	On Work Placement			Off Work Placement		
Type of Activity	Range	Median	Mean	Range	Median	Mean
Work Coordinator Instruction	5%-54%	32%	29%	13%-83%	45%	44%
Other Teacher Instruction	3%-58%	19%	23%	6%-71%	35%	40%
Work Placement	11%-66%	35%	33%	0%	0%	0%
Lunch and Passing Periods	5%-21%	15%	15%	9%-36%	16%	16%

The remainder of this section will present a more detailed inventory of the instructional components of pupil-client daily activities. Since approximately 75 topic areas were either provided on Forms Five and Six or written in by work coordinators, some method of clustering these topics into categories had to be devised in order to facilitate the interpretation of the results. A number of different approaches were considered by the research staff, and it was finally decided to utilize the categories of pupil-client goals generated by the work coordinators as a basis for topic clustering. The assignment of topics

to these categories is shown in Table 17, and constitutes the basis of subsequent analyses in this section.

TABLE 17

Clustering of Curriculum Topics
Into Nine General Categories

General Category	List of Topics*
Family Living	Family Life, Home Management, House Tending and Repairs, Home Economics, Nutrition.
Economic Self-Sufficiency	Arithmetic, Budgeting, Consumership, Knowledge of Agencies for Economic Assistance, Record Keeping.
Employability	How to Look for a Job, Work Habits, Presentation for Work, Agriculture, Animal Science, Auto Mechanics, Bookkeeping, Briefhand, Business, Drafting, Forestry, Horticulture, Mechanics, Mechanical Drawing, Metal Shop, Stenography, Typing, Vocational Education, Woodshop, Job Interview.
Self-Concept	Personal Attitudes.
Personal Habits	Personal Health, Hygiene, Grooming, Personal Habits, Manners and Etiquette.
Communication Skills	Reading, Writing, Spelling, English, Composition, Foreign Language, Lanugage Arts, Literature, Remedial Reading, Instructional Materials Center, Library Use, Public Speaking.
Citizenship	Citizenship, School Activities, Civics, Modern Problems, Social Studies, Current Events.
Leisure Time	Use of Leisure Time, Art, Crafts, Drama, Music, Recreation, Chorus and Band.
Other	Field Trips, Non-Academic, Driver Education, General Science, Physical Education, Film, Geography, Testing, Orientation, Tardy, Counseling or Consultation.

*Underlined topics are the first 20 entries on Form 5.

Inventory of Total Instructional Time

In order to portray adequately the curriculum emphases in the work/study programs which participated in this study, the total instructional time provided to pupil-clients must be examined, both inside and outside the work coordinator's classroom. This required the combining of information from Forms Five and Six into a single display. These results are portrayed in Table 18.

TABLE 18

Distribution of Time Spent by Pupil-Clients in All Instructional Activities

Category of Instruction	Across all 25 School Districts Range	Median	Mean	Median Rating of Importance
Family Living	0.1-22.8%	10.1%	9.8%	6
Economic Self-Sufficiency	6.4-24.7%	12.0%	13.4%	7
Employability	6.5-31.0%	14.4%	15.8%	7
Self-Concept	0 - 6.6%	0.6%	1.0%	7
Personal Habits	0 - 7.0%	1.6%	2.4%	6
Communication Skills	5.2-37.1%	16.0%	17.3%	5
Participating Citizen	0 -13.1%	5.0%	4.9%	4
Leisure Time	0 -24.5%	7.6%	9.0%	5
Others	4.0-46.7%	24.2%	25.7%	

Once again, great variability was found among the 25 school districts in most of the categories. Comparing the median or mean values, however, with the rated importance of each category leads to some interesting observations. Communication skills, which encompass much of "traditional" academics, are clearly overemphasized in terms of their rated importance. On the other hand, both personal habits and the

development of a positive self-concept are clearly underemphasized. Time spent in the remaining five categories does seem to be fairly consistent with rated levels of importance.

Since one-fourth of the total time was spent in the category labeled "other", a further breakdown of this category into individual topics has been provided in Table 19. It is clear that the majority of "other" time was spent in either physical education classes or non-academic activity such as study hall.

TABLE 19

Distribution of Time in all Instructional Settings Spent by Pupil-Clients in the Most Frequently Utilized Topics Classified as "Other"

Topic Area	Percentage of Time
Physical Education	9.3%
Non-Academic (e.g., study hall)	5.7%
General Science	2.0%
Counseling or Consultation	1.7%
Driver Education	1.2%
Field Trip	1.1%
Tardy	0.5%
Tutoring in Unspecified Subjects	0.4%
Testing	0.4%
Geography	0.2%
All Others	3.2%
Total	25.7%

Table 19 has shown that pupil-clients who were not experiencing work placement received larger amounts of direct instruction instead. The question remains as to whether or not this larger quantity of

instruction was proportionally distributed any differently than the smaller quantity of instruction received by pupil-clients who received work placement. A comparison of Tables 20 and 21 provides an answer to this question.

TABLE 20

Distribution of All Instructional Time Spent by Pupil-Clients Who Were Not on Work Placement

Categories of Instruction	Across all 25 School Districts Range	Median	Mean	Median Rating of Importance
Family Living	0-31.0%	7.9%	9.9%	6
Economic Self-Sufficiency	0-23.0%	10.4%	12.7%	7
Employability	0-27.0%	9.9%	14.1%	7
Self-Concept	0- 6.3%	0.4%	0.9%	7
Personal Habits	0-13.1%	0.5%	2.2%	6
Communication Skills	0-26.7%	15.6%	16.1%	5
Participating Citizen	0-14.24%	5.4%	4.8%	4
Leisure Time	0-24.7%	6.8%	9.2%	5
Others	0-68.4%	33.7%	29.9%	

TABLE 21

Distribution of All Instructional Time Spent by Pupil-Clients Who Were Also On Work Placement

Categories of Instruction	Across all 25 School Districts Range	Median	Mean	Median Rating of Importance
Family Living	.2-21.9%	10.5%	10.1%	6
Economic Self-Sufficiency	0-26.3%	11.4%	13.9%	7
Employability	.4-32.0%	14.4%	16.9%	7
Self-Concept	0- 6.7%	0.7%	1.2%	7
Personal Habits	0- 7.6%	1.6%	2.5%	6
Communication Skills	4.3-39.3%	16.1%	17.8%	5
Participating Citizen	0-13.0%	4.5%	5.0%	4
Leisure Time	0-53.7%	8.2%	8.8%	5
Others	..2-40.3%	22.8%	23.0%	

In seven of the eight major content areas (all except leisure time), pupil-clients on work placement were receiving proportionally more instructional time than pupil-clients not on work placement. The trend for "other" activities, however, was in the reverse direction. An additional analysis has shown that the increased proportion of time spent by pupil-clients not on work placement in "other" activities was in large part attributable to an increase in the time spent in study hall.

Inventory of Time With Work Coordinators

Whereas the preceeding section has provided an account of the distribution of all pupil-client instructional time, this section deals only with the instructional time that was received directly from work coordinators. This analysis, therefore, is really providing a profile of the instructional roles of work coordinators rather than a description of the curricular activities that have been provided to pupil-clients. The specific role assumed by an individual work coordinator could be a function of many factors, including the instructional opportunities that were available in his school from teachers other than himself.

Table 22 shows the distribution of instructional time that was provided by the work coordinators to their pupil-clients. A comparison with Table 18 shows that work coordinators, on the average, spent proportionally more of their time teaching economic self-sufficiency, positive self-concept, personal habits, communication skills, and citizenship. On the other hand, they spent proportionally less of their time teaching family living, employability, leisure time activities, and "other" activities.

TABLE 22

Distribution of Time Spent by Pupil-Clients
Under the Direction of Their Work Coordinators

Categories of Instruction	Across all 25 School Districts Range	Median	Mean	Median Rating of Importance
Family Living	0 -18.9%	3.5%	7.8%	6
Economic Self-Sufficiency	0 -37.7%	19.2%	20.3%	7
Employability	0 -28.8%	8.8%	9.8%	7
Self-Concept	0 - 9.3%	1.2%	1.9%	7
Personal Habits	0 -22.3%	2.3%	3.9%	6
Communication Skills	0 -90.9%	21.7%	21.8%	5
Citizenship	0 -20.0%	5.5%	6.4%	4
Leisure Time	0 -24.4%	3.2%	6.5%	5
Other	0.7-86.7%	14.7%	21.5%	

An analysis of "other" topics provided to pupil-clients by their work coordinators is found in Table 23. In comparing this with Table 19, it is apparent that physical education, so prominant among the pupil-clients' total "other" activities, is almost entirely absent from the components of "other" instruction that were provided solely by work coordinators. It is also obvious from an examination of Table 23 that non-academic supervision constituted the primary component of work coordinators' "other" instruction.

TABLE 23

Distribution of Time Spent by Pupil-Clients in the Most Frequently Utilized Topics Classified as "Other", While Under the Direction of Their Work Coordinators

Topic Area	Percentage of Time
Non-Academic Activities	10.0%
Counseling or Consultation	2.6%
Field Trips	2.1%
General Science	1.7%
Driver Education	1.2%
Tardy to Class	1.0%
Testing	0.9%
Tutoring, Unspecified	0.6%
Physical Education	0.4%
All Others	1.0%
Total	21.5%

The differential roles played by work coordinators for their pupil-clients who were off or on work placement can be inferred from a comparison of Tables 24 and 25. In a surprisingly identical pattern that emerged from comparing Tables 20 and 21, work coordinators provided their pupil-clients on work placement with proportionally more instruction in seven of the eight major categories. This trend was again reversed with respect to "other" activities, which were provided in greater proportion to pupil-clients who were not experiencing work placement. The largest component of this latter difference, once again, was the time spent in non-academic activities.

TABLE 24

Distribution of Instructional Time Under the Direction of Work Coordinators Spent by Pupil-Clients Who Were Not on Work Placement

Categories of Instruction	Across all 25 School Districts Range	Median	Mean	Median Rating of Importance
Family Living	0-33.6%	1.4%	8.0%	6
Economic Self-Sufficiency	0-42.5%	14.5%	18.4%	7
Employability	0-29.5%	6.8%	9.7%	7
Self-Concept	0- 8.5%	.4%	1.7%	7
Personal Habits	0-21.9%	.8%	3.8%	6
Communication Skills	0-40.7%	15.6%	18.8%	5
Participating Citizen	0-33.7%	5.5%	6.1%	4
Leisure Time	0-33.7%	2.7%	7.3%	5
Others	0-94.5%	24.7%	26.2%	

TABLE 25

Distribution of Instructional Time Under the Direction of Work Coordinators Spent by Pupil-Clients Who Were Also on Work Placement

Categories of Instruction	Across all 25 School Districts Range	Median	Mean	Median Rating of Importance
Family Living	0 -41.3%	4.0%	8.0%	6
Economic Self-Sufficiency	0 -38.3%	20.0%	21.3%	7
Employability	0 -28.3%	8.8%	9.9%	7
Self-Concept	0 -10.5%	1.2%	2.1%	7
Personal Habits	0 -23.8%	2.3%	3.9%	6
Communication Skills	0 -90.8%	21.5%	23.6%	5
Participating Citizen	0 -43.9%	5.3%	6.6%	4
Leisure Time	0 -21.3%	3.1%	6.1%	5
Others	.48-79.9%	14.4%	18.6%	

Time Spent in Regular Classes

A recent theme that can be found in much of the current literature in special education argues that most of the mildly handicapped should be returned to the mainstream of regular education. Without making any attempt to arbitrate, this final section of the curriculum inventory reports the extent to which pupil-clients in Phase 3 were integrated into regular high school classes.

When the total number of minutes of instructional time for all 251 pupil-clients is used as a base of reference, 9.1% of this time was found to be spent in regular high school classes. Table 26 shows the distribution of this time in terms of the most frequently utilized classes. Table 27 shows the distribution of this time in terms of the eight categories that have been used throughout this section of the report.

TABLE 26

Distribution of Pupil-Client Instructional Time into Regular High School Classes

Topic	Frequency	Percent[1]
Reading	560	15.6%
Horticulture[2]	241	12.5%
Arithmetic	486	11.6%
Home Economics	348	9.0%
Art	330	8.7%
Physical Education	269	7.7%
Drama	198	6.0%
Family Life	205	4.9%
English	178	4.5%
Home Management	141	2.9%
Vocational Education	27	2.3%
Driver Education	69	2.2%
Music	42	1.3%
Woodshop	45	1.3%
Tutoring, Unspecified	40	1.1%
All Others Combined	722	8.4%
Total	3701	100%

[1]These percents were calculated by dividing the total number of minutes in each category by the total number of minutes in regular classes. It should be remembered that the total number of minutes in regular classes constitute only 9.1% of the total number of instructional minutes.

[2]This entire contribution came from one work coordinator's pupil-clients.

TABLE 27

Categories of Pupil-Client Instructional Time
in Regular High School Classes

Category	Frequency	Percent*
Family Living	717	16.0%
Economic Self-Sufficiency	486	10.5%
Employability	335	15.1%
Self-Concept	0	0
Personal Habits	0	0
Communication Skills	895	20.3%
Citizenship	35	0.7%
Leisure Time	600	15.4%
Other	851	22.2%

*These percents were calculated by dividing the total number of minutes in each category by the total number of minutes in regular classes.

Summary

The information presented in this preliminary analysis of curriculum has been primarily descriptive and relatively free of interpretation. The data pool available for analysis is immense, and a variety of different approaches will be attempted during the coming months. As these various analyses are completed, the possibilities for useful interpretation will increase.

Description of Work Placement

During the 15 weeks of the Spring semester in which data were collected for this study, many pupils had the opportunity to participate in work experiences as part of their high school curriculum. A variety of information was collected concerning these experiences, which has been organized and assembled in this section of the report.

The proportion of pupils participating in work experience within each classroom varied greatly across the 26 school districts in this study. For all classrooms combined, 27% of the 354 pupils did not experience a work placement, while the remaining 73% received one or more work placements during the 15 week period. The variability within classrooms, however, was remarkable, with some teachers placing all of their pupils on at least one work placement, while other teachers developed jobs for as few as 25% of their pupils. Table 28 shows the distribution of pupils on work placement.

TABLE 28

Percentage of Pupils on Work Placement
Within Each School District

Number of Placements	Across 26 School Districts		
	Range	Median	Mean
None	0-75%	20%	27%
One or more	19-93%	56%	73%
One	19-93%	56%	54%
Two	0-62%	14%	17%
Three +	0-12%	0%	2%

Work placements have typically been developed both within school and within the larger community. School placements (e.g., in cafeterias) are frequently seen as transitional experiences during which the pupil can learn skills, habits, and attitudes that will facilitate his subsequent vocational adjustment in the community. Table 29 shows that 40% of the placements in this study were made in school. The variability across classrooms, however, was once again extreme, with some teachers making all of their placements in school, while others made all of their placements within the community.

TABLE 29

Percentage of Pupil Work Placement Which Occurred in School or in the Community

Type of Placement	Across School Districts		
	Range	Median	Mean
In School	0-100%	33%	40%
In Community	0-100%	60%	60%

The type of remuneration to be provided to pupils on work placement has been an issue almost since the initiation of work/study programs for the mentally retarded. Some have argued that cash should be paid for the work provided, in order to simulate more closely the real world of work. Others have argued that since work experience is basically a <u>training</u> activity, the only appropriate remuneration is school credit. Accident insurance laws in some states have further complicated the picture by restricting the applicability of workman's compensation coverage to

employees receiving the minimum wage. In essence, this has made cash payment illegal for many retarded pupils on work placement.

Cash, in-kind payments (e.g., meals), and school credit have all been used as remuneration in work placements in Oregon. The most prevalent form of remuneration has been school credit alone, due in part to restrictive insurance laws of the type mentioned above. A summary of the types of remuneration accompanying work placement in this study is provided in Table 30.

TABLE 30

Type of Remuneration Provided to Pupils on Work Placement

Type of Remuneration	Across School Districts		
	Range	Median	Mean
Cash (a)	0-38%	0%	6%
In Kind (b)	0-31%	0%	2%
School Credit (c)	0-100%*	67%	56%
a + c	0-71%	4%	20%
b + c	0-39%	0%	9%
a + b + c	0-71%	0%	7%

*7 of the 26 school districts used school credit exclusively.

Types of Jobs

A wide variety of jobs was utilized as work placements for the pupils in this study. These jobs were clustered into 12 groups for the purpose of reporting. The specific jobs that comprise each group can be found on pages 15 through 18 of the Manual of Instruction.

It is obvious from Table 31 that food preparation and service was the job group utilized most frequently as a job placement. The proportion of boys and girls placed in this area were nearly identical. All other job areas, however, were clearly sex related, with some groups receiving more male placements and others more female placements. Overall, males received 62% of the work placements whereas females received 38% of the placements.

TABLE 31

Type of Job Placement as a Function of Sex

Type of Placement	Male		Female		Total
	N	%	N	%	N
Food Preparation and Service	52	53%	47	47%	99
Personal and Medical Services	15	34%	29	66%	44
Building Maintenance and Operation	30	88%	4	12%	34
Clerical Workers	9	26%	25	74%	34
Retail Trades and Services	22	76%	7	24%	29
Auto Operation and Service	26	96%	1	4%	27
Factory on Light Industrial	18	69%	8	31%	26
Agriculture and Lumber	13	93%	1	7%	14
Construction Helpers	8	100%	0	0%	8
Repair and Technical Services	6	100%	0	0%	6
Environmental Services	2	100%	0	0%	2
Other	6	55%	5	45%	11
Total	207	62%	127	38%	334

The average length of a job placement seemed to be somewhat related to the job group in which the placement occurred. Tenure was shortest in the agriculture and lumber group, where the average length of a placement was 24 days. At the other extreme, the average length of a placement in repair and technical services was 60 days. The information concerning length of job placement is contained in Table 32.

TABLE 32

Length of Work Placements as a Function of Type of Work Placement

Type of Placement	Length in Days N*	Mean	S.D.
Repair and Technical Services	6	60	25
Environmental Services	2	50	35
Personal and Medical Services	44	48	30
Food Preparation and Service	99	47	27
Retail Trades and Services	29	47	22
Clerical Workers	34	45	27
Building Maintenance and Operation	34	44	30
Auto Operation and Service	27	38	26
Factory on Light Industrial	26	36	30
Construction Helpers	8	35	32
Agriculture and Lumber	14	24	22
Other	11	45	28
Total	335	44	29

*N = number of placements in each job category

Criteria for Selecting Pupils for Work Placement

Any number of possible criteria might have been used by teachers as a basis for selecting pupils for work placement. Four such variables, selected from the input on demographic data of this study, were examined empirically for their possible influence on pupil selection. These variables included pupil age, pupil IQ, teacher-perceived pupil abilities, and teacher-perceived pupil attitudes.

As might well be expected, pupil age was related to the likelihood of being selected for work placement. Younger pupils were less likely than older pupils to be placed on jobs. It is interesting to note, however, that many younger pupils were placed on jobs, perhaps indicating a growing adherence to the philosophy that early vocational experience is an important component of overall vocational development. It is also

interesting to note that the proportion of multiple placements increased with age. Table 33 displays the information relating to age.

TABLE 33

Percentage of Pupils on Work Placement As A Function of Pupil Age

Number of Placements Per Pupil	Age Range 14-15 N	14-15 %	16-17 N	16-17 %	18-21 N	18-21 %
Total	66	100%	190	100%	95	100%
None	25	38%	53	28%	17	18%
One or More	41	62%	137	72%	78	82%
One	32	48%	102	54%	55	58%
Two	7	11%	31	16%	23	24%
Three+	2	3%	4	2%	0	0%

With respect to pupil IQ, one might well have anticipated that pupils with lower IQ's would be less likely to receive work placements. An opposite relationship was found, however, in that pupils with the lowest IQ's emerged as the most likely to receive work placements. This could indicate that teachers tended to place their least promising pupils, in the hope that the training experience would ultimately prove beneficial. Other data, however, concerning teacher-perceived pupil attitudes (presented below), tend to contradict this hypothesis. Table 34 shows the relationship between IQ and likelihood of work placement.

TABLE 34

Percentage of Pupils on Work Placement As A Function of Pupil IQ

Number of Placements Per Pupil	IQ Range 40-59 N	40-59 %	60-69 N	60-69 %	70-79 N	70-79 %	80-99 N	80-99 %
Total	41	100%	93	100%	142	100%	60	100%
None	8	20%	25	27%	40	28%	17	28%
One or More	33	80%	68	73%	102	72%	43	72%
One	25	61%	49	53%	72	51%	34	57%
Two	7	17%	18	19%	27	19%	8	13%
Three+	1	2%	1	1%	3	2%	1	2%

During the first week of data collection for this study, teachers were asked to rate each of their pupils on a set of variables which described pupils abilities and pupil attitudes. The rating possibilities for each variable were dichotomous, and the operational definitions for each variable were derived from the experiences of a previous year's pilot study. These definitions are found on pages 8 through 10 of the Manual of Instruction.

It seemed plausible that pupil abilities and attitudes as perceived by his teacher might influence his teacher in deciding whether or not a work placement was appropriate. The relationship between teacher perceived pupil abilities and the probability of work placement is shown in Table 35.

TABLE 35

Relationship of Teacher-Perceived Pupil Abilities
With Placement of Pupils in Work Experience

Pupil Activity		Work Placement: No N	No %	Yes N	Yes %	Total N	Total %
Total Pupils		95	27%	259	73%	354	100%
A. Motor Ability	Low	33	28%	84	72%	117	100%
	High	57	25%	175	75%	232	100%
B. Abstract Reasoning	Low	51	25%	154	75%	205	100%
	High	39	27%	105	73%	144	100%
C. Creative Thinking	Low	56	26%	160	74%	216	100%
	High	34	26%	99	74%	133	100%
D. Rote Memory	Low	43	24%	137	76%	180	100%
	High	47	28%	122	72%	169	100%
E. Attending Rate	Low	34	27%	94	73%	128	100%
	High	56	25%	165	75%	221	100%

Table 35 shows that, for all pupils combined, 27% did not receive work placement and 73% received one or more work placements. When the pupils are split into groups in terms of how they were rated on abilities we find that, in no instance, do the proportions vary more than 3% from the values for the total sample. It would appear, therefore, that teacher-perceived pupil abilities had little or no influence on the decision as to whether or not a given pupil should receive a work placement.

The results with respect to teacher-perceived pupil attitudes are strikingly different. Using a guideline of greater than 3% deviation from the sample values, we find eight rated attitudes having a noticeable relationship to the probability of work placement. Pupils less likely

to receive work placements were those who were rated by their teachers as being rebellious, unhappy, impolite, irresponsible, or unmotivated. Pupils more likely to receive work placements were those who were rated by their teachers as being cooperative, responsible, or motivated. This strongly suggests that the likelihood of pupil success was a selection criterion for teachers in their decision making about who should receive work placements. (Although, it will be recalled, the greater proportional placement of low IQ pupils leads to an opposite interpretation.) The data on teacher perceived pupil attitudes is presented in Table 36.

TABLE 36

Relationship of Teacher-Perceived Pupil Attitudes
With Placement of Pupils in Work Experience

Pupil Attitude	Work Placement: No N	No %	Yes N	Yes %	Total N	Total %
Total Pupils	95	27%	259	73%	354	100%
A. Rebellious	25	41%	36	59%	61	100%
Cooperative	65	23%	223	77%	288	100%
B. Unhappy	20	33%	41	67%	61	100%
Cheerful	70	25%	218	75%	288	100%
C. Impolite	18	37%	31	63%	49	100%
Respectful	71	24%	228	76%	299	100%
D. Cautious	46	24%	150	76%	196	100%
Adventuresome	44	29%	109	71%	153	100%
E. Easily frustrated	41	25%	123	75%	164	100%
Tolerates frustration	49	27%	136	73%	185	100%
F. Irresponsible	33	33%	67	67%	100	100%
Responsible	56	23%	193	77%	248	100%
G. Pessimistic	31	25%	94	75%	125	100%
Optimistic	59	26%	165	74%	224	100%
H. Lacks confidence	46	25%	136	75%	182	100%
Confident	44	26%	123	74%	167	100%
I. Unmotivated	45	32%	95	68%	140	100%
Motivated	44	21%	164	79%	208	100%

Work Placement Objectives

At the time when a pupil was assigned to a work placement, his teacher was asked to indicate and record the objectives of this placement for the pupil. Some suggestions concerning possible objectives were listed on pages 13 and 14 of the Manual of Instructions, but each teacher was encouraged to formulate these objectives in a personally satisfying manner.

The objectives that were produced in this manner were subsequently classified by the research staff into four general categories. Three of these categories seemed to involve genuine training objectives for pupils, focusing on either their personal, social or vocational development. The fourth category seemed to involve expediencies rather than training objectives, and was utilized in slightly more than 13% of the work placements. The type and frequency of these non-training objectives is shown in Table 37.

TABLE 37

Reasons for Assigning Work Placements That Were Not Related to Personal, Social, or Vocational Objectives for Pupils

Reason for Placement	Frequency	Per Cent*
Job was available	10	3.0%
Pupil asked for job	10	3.0%
Pupil placed himself	10	3.0%
To get pupil out of school	1	0.3%
To keep pupil in school	3	0.9%
To keep pupil busy	2	0.6%
See if pupil can "do something"	2	0.6%
Pupil can handle job	2	0.6%
To earn money	4	1.2%
Total	44	13.2%

*The total number of objectives (N=335) was used as a denominator in calculating these percents.

The vast majority of teacher objectives for pupils were more closely related to training. At the end of each placement, teachers were then required to rate the degree to which they felt each objective had been obtained over the course of the work placement. A four value rating scale was utilized, indicating a potential range of objective attainment from none to very well. These data are presented in Table 38.

TABLE 38

Types of Teacher Objectives for Pupils on Work Placement and Teacher Perceptions of How Well the Objectives Were Attained

	Degree of Attainment				
Objective	None N	Lit-tle N	Some-what N	Very Well N	Total N*
Teach specific job skills (V)	2	4	24	21	56
Teach about work in general (V)	1	6	22	20	52
Teach about specific job (V)	0	1	16	9	30
Assess pupil job skills (V)	3	4	8	11	28
Teach work habits (S)	0	4	8	6	19
Assess pupil adaptability (P)	1	0	5	6	12
Teach pupil confidence (P)	1	4	1	6	12
Teach following instructions (S)	2	0	5	1	9
Teach pupil responsibility (P)	1	2	5	0	8
Teach need for supervision (S)	0	1	3	1	6
Teach about work complexities (V)	1	0	2	2	5
Assess general work functioning (V)	1	0	3	1	5
Teach interaction with co-workers (S)	0	0	4	1	5
Assess need for supervision (S)	0	1	2	1	4
Teach demands of daily routine (P)	1	1	1	1	4
Other objectives					80
Total	14	28	109	87	335

* Each N in the total column does not always add up to the sum of the N's in the corresponding row. This is because some of the stated objectives were not rated of the teachers by the end of the semester.

The 15 objectives listed in Table 38 are those most frequently chosen by the teachers in this study. They accounted for 76% (255 of 335) of the stated objectives. It is interesting to observe that the frequency of vocational objectives is nearly four times that of either the personal or social objectives. It is also interesting to observe that the perceived attainment of objectives was, on the whole, moderately high.

In Table 39, the frequencies of objectives in each of the three general domains have been combined, in order to examine the relative degree of perceived attainment of personal, social, and vocational objectives. A trend seems to emerge showing vocational objectives to be the most highly attained, followed by social objectives, followed in turn by personal objectives.

TABLE 39

Relationship Between Type of Objective and Degree of Objective Attainment

Type of Objective	Degree of Attainment							
	None		Little		Somewhat		Very Well	
	N	%	N	%	N	%	N	%
Personal	4	11%	7	19%	12	33%	13	37%
Social	2	5%	6	15%	22	55%	10	25%
Vocational	8	5%	15	9%	75	47%	64	39%
Total	14	6%	28	12%	109	46%	87	36%

Summary and Discussion

Nearly three-fourths of the pupils in this study received one or more work placements during the spring semester of 1972. There was extreme variability across the 26 participating school districts, indicating that the school district in which a pupil happened to reside had a strong influence on the likelihood of his receiving a work placement. Variability across school districts was also quite pronounced with respect to the type of remuneration paid and whether the placement was made in school or in the broader community.

In addition to this strong relationship found between school district and the likelihood of work placement, pupil age, pupil IQ, and teacher-perceived pupil attitudes were also found to have an impact on the selection of pupils for work placement. Older pupils, pupils with lower IQ's, and pupils with socially desirable attitudes were the most likely to receive work placements.

Many kinds of jobs were provided within the context of work placements. Food preparation and service was the most widely utilized job area, accounting for nearly one-third of the total number of placements made. No sex differences were found among placements in this area, whereas all of the other job areas did show partiality to either males or females.

In stating pupil objectives with respect to work placements, vocational objectives outnumbered both personal and social objectives by a ratio of approximately four to one. Vocational objectives were also seen as being more fully attained than either personal or social objectives, although the overall level of perceived attainment was generally high. This implies that teachers, for the most part, are fairly well satisfied with the work experience portions of their programs.

Achievement Test Results

In this section, a presentation of the results of the 5 final classroom test forms will be provided along with a discussion of possible implications. Table 40 presents final test form statistics for all five tests. As noted in an earlier section on the development of these tests, each test shows a negative skew and in some cases the mode was at or very near the maximum score possible. Furthermore, it should be noted that the score spread in terms of standard deviation units is small, indicating a rather constricted range of test scores.

TABLE 40

Summary Statistics for the Five Achievement Tests

	Banking	Purchasing	Health Care	Functional Signs	Job Search Skills
Number of Items	38	36	55	28	30
Sample Size	254	271	265	203	196
Mean	26.1	28.6	44.5	25.2	24.3
Median	26.7	26.9	45.6	26.4	25.5
Mode	27	33	46	28	27
Standard Deviation	5.1	5.0	5.3	3.6	4.0
Range of Scores	12-37	10-36	19-53	9-28	9-30

It seems reasonable to assume from these results that the majority of pupil-clients in this study had mastered these five domains prior to being tested. When was this mastery achieved? Did it occur during the most recent semester, or is it possible that the pupil-clients tested in this study had been competent in these areas for a long time? Although there is no way to answer this question conclusively on a post-hoc basis, an examination of the relationship between pupil-client age and test scores does provide us with some meaningful evidence. If the information contained in the five current tests has been learned progressively during the high school years, then the mean test scores for older pupil-clients should be greater than the mean test scores for younger pupil-clients, with the assumption that the younger and older pupil-clients are alike in their abilities to learn the material being tested and also alike in having received opportunities for such learning.

Table 41 shows the relationship between age and test scores that was found in this study. With the exception of a slight positive trend within the Functional Signs Test, there does not appear to be any relationship at all between pupil-client age and achievement test scores. This supports (but does not confirm) the hypothesis that the five areas tested had been learned by the pupil-clients in this study a fairly long time ago.

TABLE 41

Relationship Between Pupil-Client Age
and Achievement Test Scores

	Banking		Purchasing		Health Care		Functional Signs		Job Search Skills	
Age	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
14	14	25.7	15	28.1	16	44.4	9	22.6	9	23.7
15	32	24.6	35	28.3	33	43.9	32	25.2	31	24.6
16	57	25.9	60	27.9	59	43.8	48	24.8	45	23.8
17	80	26.7	82	28.7	80	44.8	60	25.2	56	23.8
18	44	26.8	51	28.6	50	44.5	35	25.6	36	24.9
19	20	25.6	20	28.8	18	44.6	13	26.0	13	24.4
20	5	26.0	6	30.1	6	46.1	3	27.0	3	23.6
21	1	25.0	1	27.0	1	43.0	1	28.0	1	26.0
Total	254	26.1	271	28.6	265	44.5	203	25.2	196	24.3

A plausible alternative to this hypothesis would be (1) that the younger pupil-clients were brighter and the older pupil-clients were duller; (2) that more intelligent pupil-clients were more likely to achieve high test scores; and (3) that the less intelligent, older pupil-clients learned in high school what the more intelligent, younger pupil-clients learned during junior high school. These alternative conditions would also be consistent with the lack of relationship that was found between pupil-client age and achievement test scores.

Table 42 shows the relationship between IO level and achievement test scores. These results show a clear trend across all five tests for brighter pupil-clients to achieve higher mean scores. This finding is consistent with the universally observed positive correlation between achievement test scores and general intelligence score.

TABLE 42

Relationship Between Pupil-Client IQ's and Achievement Test Scores

IQ Interval	Banking		Purchasing		Health Care		Functional Signs		Job Search Skills	
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
40-49	5	19.0	4	23.3	4	37.9	--	--	3	23.3
50-59	28	22.1	31	23.4	29	39.7	19	22.5	21	23.2
60-69	65	25.3	69	27.7	71	43.7	55	23.3	55	24.6
70-79	106	27.1	112	29.9	111	45.4	94	25.0	78	26.0
80-89	38	28.4	38	30.7	35	47.2	32	25.0	31	26.3
90-99	4	30.0	5	32.4	3	49.0	3	26.7	3	27.7
100-109	2	32.5	2	33.5	2	49.0	2	29.0	2	28.0
Total	254*	26.1	271*	28.6	265*	44.5	203*	25.2	196*	24.3

*This total does not necessarily equal the column sum, since IQ data was missing for some pupil-clients.

Table 43 looks at the relationship between age and IQ for pupil-clients in this study. Although there does seem to be a trend toward lower IQ's for older pupil-clients and higher IQ's for younger pupil-clients, this interpretation must be tempered with the observation that sample size is extremely small at the extremes of the age distribution. It is, therefore, not possible to state with any confidence that age and IQ are related in this sample.

TABLE 43

Relationship Between Pupil-Client Age and IQ

	Pupil-Client Age							
	14	15	16	17	18	19	20	21
Mean IQ	73	72	70	72	71	69	59	69
N	17	43	73	111	62	21	8	1

Because of the weakness of the data in Table 43, it is not possible to provide firm support for either of the competing hypotheses concerning the age at which the information being tested in this study was learned. In either case, however, it does appear that some pupil-clients have mastered the content of these five domains by the age of 14 or 15, so that to continue teaching them these same topics at older ages would be redundant.

Since sex differences have often been found on achievement tests with non-retarded pupils, it seemed reasonable to look for such differences in the present set of five tests. Table 44 shows that, contrary to past experience, no sex differences were found in these tests.

TABLE 44

Relationship Between Pupil-Client Sex
and Achievement Test Scores

Sex	Banking	Purchasing	Health Care	Functional Signs	Job Search Skills
Male					
Sample Size	145	155	153	113	112
Mean Score	26.4	28.8	44.1	25.2	24.1
S.D.	5.0	5.2	5.8	3.7	4.3
Female					
Sample Size	109	116	112	90	84
Mean Score	25.8	28.3	45.0	25.3	24.5
S.D.	5.3	4.6	4.3	3.4	3.6

General Discussion

The primary emphasis of this aspect of the project was to produce a set of classroom tests that could serve as predictors of later

adaptation as well as to provide teachers with some feedback as to the general level of performance of their pupils. The current test results are only a first attempt in this direction and as such they can be considered largely successful. The primary finding for the work coordinators involved in this study is that the majority of their pupils appear to be quite competent in the five areas tested. Of course, the final value of such information will depend upon whether or not it is believed that the domains were adequately defined such that if a student scores high on a test it can be accepted that he has mastered that domain. If this is accepted for the five domains in this study, then one might question the need for further academic emphasis in these areas. It is often claimed that repetition is the key to teaching the educable retarded, but it seems equally important to be aware of when a student has reached his limit in a particular area.

When considering these tests as possible predictors of later adaptation, it is important to note that the constricted test score range will place a limit on the value of these tests for prediction purposes. When prediction is intended, one wants to maximize sensitivity to individual differences. Future tests should be constructed with this in mind so that better predictor variables can be obtained. This means that greater concern must be placed on the process of domain definitions and item selection in an attempt to create tests which are more sensitive to individual differences.

Finally, it is necessary to discuss the issue of the generalizability of these test results to all junior and senior high school educable retarded pupils. Caution in such generalization is strongly urged since

there is some indication that the sample used in this study may not be fully representative of all educable retarded pupils. First, there is some evidence that the certification requirements in the state of Oregon are less strict than in other states and that districts differ with respect to certification procedures. Furthermore, there is some question as to whether or not the sample of 350 retarded pupil-clients involved in this study is truely representative of the educable retarded in the state of Oregon. (See the discussion at the beginning of this section on results.) In order to obtain supporting information regarding the generalizability of these results, it will be necessary to cross-validate within the state of Oregon as well as in other states. If the sample used in this study proves to be unique, it may be that test score spread, and consequently differentiation, will increase when derived from other retarded samples.