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ABSTRACT

A literature review was conducted to examine reading skills development in selected educational systems delivering postsecondary occupational education. The systems chosen were two-year, junior, and community colleges; area vocational-technical schools and adult programs; training centers; correctional institutions; the military; and business and industry. Criteria for including reports in the review reflected curricular and occupational concerns. The literature proved to be nearly devoid of references to reading skills development directly related to the practice of an occupational specialty. When reading skills were treated at all, they were treated as a curricular issue, usually as a means of treating disadvantaged groups in reading programs designed for that purpose (remedial and English as a second language). (The literature review contains chapters focusing on each of the selected postsecondary systems, a summary of the findings, and a discussion of research necessary to improve the treatment of reading in occupational education.) (RL)

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Review and Synthesis of Reading in
Post-Secondary Occupational Education

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Division of Occupational and Vocational Studies
The Pennsylvania State University

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PREFACE

In the past few years interest in ascertaining that vocational students possess basic communication skills has been intensifying. Part of the emphasis can be attributed to charges by parents, employers, and the education community that students are being processed through educational systems without these important skills. Another perspective is that with the decline of elitism and separatism between academic and occupational education communication skills are being accepted as appropriate concerns of the vocational educator, rather than envisioned as prerequisite to entry in vocational programs. A third view describes communication skills as vocational skills, different from academic skills by virtue of application, thus totally appropriate, if not mandatory concerns of vocational education.

Regardless of the source of intensified interest, the fact is that basic skills in vocational education are being emphasized. Articles about theories, methodology, and intervention strategies appear regularly in all the secondary and post secondary occupational education journals. Federal funding priorities list basic skills among the top issues to be addressed.

Reading, if not the most basic communication skill, certainly is a critical facilitator of learning. Traditionally, reading has been addressed in the elementary curricula, while in secondary and post secondary programs reading has been treated only within developmental studies or remedial programs. However, with more non-traditional students seeking education, returning to the system in which they

previously experienced failures or alienation, it has become urgent to intervene in instances in which reading presents an obstacle to learning. That intervention may occur in the shop and laboratory, as a separate program, or in the classroom.

In order to know what would be the best course to pursue with regard to reading strategies, it is imperative that we are clear on what has been done. This paper seeks to examine the past and present practices of reading in post secondary occupational education. Since occupational courses are taught with employment in mind, grade levels are irrelevant. Secondary practices can be used in post secondary delivery systems. Equally, the converse is true. The reading project mentioned earlier is a secondary education project. It was the project staff's opinion, however, that all occupational programs should be reviewed for the development of reading intervention strategies. This paper is intended to meet part of that objective.

The National Center for Research in Vocational Education last year commissioned a monograph to be written addressing both secondary and post secondary reading in vocational education. Pending approval of the project sponsor, The Bureau of Occupational and Adult Education, that paper should be available soon. At least two other reading in occupational education projects are underway at The Pennsylvania State University. All of these activities should lend insight into dealing with reading for the purpose of providing an appropriate vocational education for all learners.

L. Jay Thornton

Project Director, 1980

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INTRODUCTION

The Issues

Basic skills - reading, writing and speaking - have become the subject of intensified interest by vocational educators. No less true for post-secondary than secondary educators, the importance of ascertaining that vocational students are able to communicate by means of the written as well as the spoken word in terms of their occupational interests has been established. Responding to the necessity to guarantee to vocational students the ability to communicate, the Bureau of Occupational and Adult Education (BOAE) set "Basic Skills" as one of its 1980 priorities (Federal Register, 1979). According to BOAE, "Basic educational skills are essential to all persons, and vocational education must complement basic skills/remedial programs if persons are to succeed in vocational education programs" (p. 33960, 61).

Reading is considered to be the most basic skill within the communication set. Heilman (1972) illustrated its primary status, "Our society places a very high value on learning to read. So high, in fact, that once children begin their formal education the school provides no curricular options that are not premised on reading ability" (p. 23). Dulin (1978) emphasized the educational value of reading in the statement, "...[R]eading is one of the best, if not the best, ways to learn, particularly if that learning is abstract and ordered or exotic and vicarious. Learners who combine a strong

reading skill with a knowledge of how and where to secure the reading matter they desire need never reinvent the wheel or re-discover fire..." (p. 110). These descriptions of the primary nature of reading establish it as an important curricular issue.

Reading is recognized now as an issue of occupational importance; for not only must vocational students be able to read textbooks to achieve success in a vocational program, they must also be able to read the literature required of their occupational specialties. Thornton (1979) explained, "In all the skilled trades, there is a language peculiar to each trade and a language acquisition level of persons within the trade related to performance expectation... The literature is of a wide range of degree of difficulty according to the task, the amount of technical language, the amount of technical language, the amount of trades language, the amount of lay description, the complexity of sentence structure, the use of diagram/illustration, and the attendant language to diagram ratio" (pp. 38, 39). This unique language phenomenon is even more true in the technological and professional disciplines.

Because reading has been regarded as a curricular issue, one in which the focus is on the ability to read textbooks and other educational materials, reading skill has been thought to be a prerequisite to entry into vocational programs. That is, students are supposed to be able to read textbooks and the like at entry. When students are unable to do so, they are referred to a specialist for remediation. Disregard for the occupational importance of reading

has resisted inclusion of reading in the vocational curriculum. Considering reading a prerequisite to entry in a vocational program supports that exclusion.

This paper will demonstrate that reading is an occupational issue and, as such, is appropriate in the vocational curriculum. The literature demonstrates that the occupational importance of reading scarcely has been acknowledged, that reading instruction in the vocational shops, laboratories, and classrooms has been practiced limitedly. A review of the literature will indicate that reading has been addressed as a means of treating disadvantaged groups with reading programs designed for that purpose. Reading programs have been essentially remedial, occasionally designed according to English-as-a-second-language parameters. Mostly, however, the literature will indicate clearly that the concerns have been curricular, seldom sensitive to the reading requirements of the worker.

The Problem

Treatment without research. Instruction in reading as a basic skill in vocational education is rapidly becoming in vogue. Federal legislation is providing funding for vocational educators to address student reading deficiencies. Vocational administrators are acknowledging the importance of reading in the vocational curriculum. Reading specialists, with and without occupational credentials, have opened to them a host of new professional opportunities. These activities and interests do not seem to pose much of a problem.



The problem, however, lies not in the flurry of interest in overcoming reading deficiency, but in the underlying assumption that enough is known about reading to address it as a vocational issue. Cramer (1978) suggested that there are more questions than answers, "...[T]here is an almost unchecked flow of articles, lacking empirical support, that explain how to teach reading in secondary school content areas. The conclusion to be derived from the foregoing is that it is past time to subject promising innovations to critical evaluation procedures" (pp. 145, 6).

Post-secondary occupational education is delivered in a number of formats. Occupational subjects are offered, among other places, in community colleges, area vocational-technical adult programs, private business and industry programs, training centers, military educational facilities and correctional institutions. The systems chosen for this paper were: (1) two year, junior, and community colleges; (2) area vocational-technical schools - adult programs; (3) training centers; (4) correctional institutions; (5) the military; and (6) business and industry. It is certain that reading problems for each of the delivery systems have both similarities and differences. Since there has not been developed a generalized post-secondary reading model, nor reading treated as a universal post-secondary issue, it is equally certain that there is widespread duplication of effort.

Over-generalization. Efforts to identify the "single-most-important deterrent to the upward mobility of disadvantaged persons have resulted in ambivalence. There are claims that they possess

less human capital through cultural and environmental impoverishment, and others claim that education has failed to provide the disadvantaged with basic skills. The current trend to envision the delivery of basic skills as the key means to overcome socio-economic disadvantage at least recognizes that society's institutions may have been failing specific segments of that society. Whether for social or occupational survival, or both, efficient delivery of basic skills for ameliorating the conditions attendant to disadvantage requires the definition of what constitutes basic skills. The ability to read the Saturday Evening Post may be a desirable skill; the ability to read an employee/employer memorandum of agreement, however, could be a basic survival skill. Education abounds with concern for the former at the expense of the latter. Standard diagnostic reading tests have not been developed to assess occupational reading skill levels. Elementary reading programs guarantee that students know that Dick, Jane, and Spot run and play with a ball, but fail to identify what occupation serves to provide food for Dick, Jane, and Spot. There is an urgency to deliver basic skills. The danger lies in what Jonathan Kozol (1977) described as education's "non-stop forward motion," moving "...from one incom-
pletion to the next" (p. 108).

For vocational educators, the ability to practice an occupational specialty is the objective of the student's program. Reading the installation instructions, safety warnings, tool and equipment instructions, manuals, codes, specifications, medical contraindications, and the like is a component skill of the occupation. It is not known if the reading ability required for that skill is the same as the reading ability required to read general literature. Until and unless

that determination is made, the danger of ignorance underlies attempts to overcome reading deficiency, not ignorance on the part of the student, but on the part of the practitioner.

Reading for bilingual students. Reading for bilingual students is being addressed also as an issue related to primary and second language; that is, the student whose native language is other than English is being taught by foreign language instruction methodology. With the questions raised in the preceding paragraph, the value of the English as a Second Language (ESL) may be questionable. Has the practice been justified in consideration of the distinction, if any, between general reading and reading required in an occupational specialty?

Theme. The problems identified in the preceding paragraphs have one central theme: there is reason to believe that sufficient questions about occupational reading remain unanswered to challenge the validity of forging ahead with reading instruction in vocational education. This does not mean that interim reading intervention strategies are not valid. It does imply, however, that vocational reading instruction could be misguided. The potential for that implication is central to the problem of vocational reading.

The Design

This paper is intended to review vocational reading practices in post-secondary occupational education. That review will establish several matrices according to the previously identified delivery



systems in conjunction with reading practices defined within those systems. Post-secondary vocational education reading practices will be examined according to the literature contained in the Dialog Data Bases (Lockheed, Note 1) which includes research and development projects and professional journals contained in the Dialog system.

Subsequent to developing matrices of practices related to post-secondary occupational education, an attempt will be made to synthesize the findings and make recommendations accordingly. The limitations are obviously those occurring as a result of the constraints imposed by a limited literature search. The reader should be aware that sources outside the Dialog Base have not been reviewed in the preparation of this paper. The author believes, however, that the literature examined is sufficiently representative to support the generalizations which follow and to arrive at reasonable conclusions yielding recommendations for research and development.

Definitions

Articulation. Articulation is being used to mean the purposeful interrelating of educational systems, such as secondary and community colleges, so that experiences in one system are at some point conjunctive with the other. The most useful example would be the intentional design of high school and community college carpentry courses so that credit earned in the former could be applied to the latter. In terms of reading, articulation would mean that reading



instruction in one system would relate to similar instruction in another so that the pattern of instruction would be a pretest-instruction-posttest across both systems instead of pretest-instruction-posttest-stop-pretest-instruction, etc.

Curricular Reading/Literature. This kind of reading and literature is that which is confined to the educational process: textbooks, faculty and commercially prepared instructional materials, workbooks, etc. It is distinguished from occupational reading/literature in that it is required for success within the educational system, but is not necessarily related to the actual reading/literature attendant to employment.

ESL-Bilingual. ESL (English as a Second Language) and Bilingual are two opposing methods of English instruction for students for whom English is not a native language. ESL refers to English instruction as the target language; bilingual instruction uses the native language as a basis for learning the target (English) language.

Occupational Reading/Literature. Reading and literature referred to as occupational is that required to practice a given occupation. It occurs in the day-to-day employment or in situations directly related to the employment. Examples of such literature include codes, contracts, tool instructions, safety warnings, contraindications, directions, material specifications, employer memoranda, and journals.

Textbook authors often refer students to occupational literature. The textbooks in which the references are made are curricular

literature; the materials to which the students are referred are occupational. The following examples illustrate the difference:

Textbook for machine shop (curricular): "The operators' instruction manual will state the grade of oil that should be used for the various machines." (Occupational) (Lascoe, Nelson & Porter, 1977, p. 178).

Textbook for medical assistant (curricular): "An excellent way of acquainting yourself with these medications is to read medical publications...Read the manufacturers' literature...Read the recommended dosage..." (Occupational) (Frederick and Ginn, 1974, p. 408).

Textbook on welding (curricular): "Manufacturers' recommended methods are very important and should be followed at all times." (Occupational) Giachino and Weeks, 1976, p. 10).

Readability. As used in this paper, readability refers to the degree of reading difficulty of a particular piece of literature.

Klare (1974) further defined: "A readability formula uses counts of language variables in a piece of writing in order to provide an index of probable difficulty for readers. It is a prescriptive device in the sense that no actual participation by readers is needed" (p. 64).

More than 30 readability procedures have been developed since 1923 (Monteith, 1976). The reader is referred to Klare's,

"Assessing Readability," Reading Research Quarterly, Number 1, 1974-75, as a beginning point to examine the variety of readability procedures available for use. The list is simply too long to include here.

Transferability. Sidney Marland, Commissioner of Education, U. S. Office of Education in 1970, described a concept entitled "Career Education." Along with this concept came a component entitled

transferability of skills among clusters. Clusters are defined as those groups of jobs which are in some way interdependent. For example, a construction cluster would include several jobs which relate to the construction totality. Transferability among these clusters means the ability to apply skills which are common to the cluster in such a manner as to provide movement of the employee laterally from job to job in the cluster. The importance of developing transferable skills lies with continued employability of a person in the event one job within the cluster ceases to exist or in some way precludes continued employment. Reading, in this paper, is envisioned as an important, if not vital, skill required to effect transferability.

Treatment. For the purposes of this paper, reading treatment is defined as any means to address the issue of reading in a curricular or occupational context. Schultheis and Napoli (1975) described three approaches to reading: (1) Avoidance approach - weeding out of unnecessary reading; (2) Simplification approach - selecting easily read materials; and (3) Improvement approach - helping students to improve their reading abilities. Although the first two fail to deal with the students' problem, and merely circumvent it, Schultheis' approaches shall be included as treatment in this paper.

TWO-YEAR, JUNIOR, AND COMMUNITY COLLEGES
WITH VOCATIONAL-TECHNICAL PROGRAMS

Curricular

Problems

In general, problems associated with student reading ability in the two-year, junior, and community college (referred to hereafter as College) can be divided into student deficiencies and instructional deficiencies. In terms of student deficiencies, the arguments range from a point of view in which the reading development process naturally continues in college to the argument that reading inability is prerequisite failure. Strang (1969) stated, "Reading ability continues to develop during high school and college years, as earlier, through reinforcement and application of previously learned skills and through instruction in more advanced reading abilities..." (p. 20). Recommending a "life skills course," Vitalo (1974) declared communication to be an unmet student need. Citing Strang (1967) and Goodwin (1971), Schewe (1971), however, Vitalo stated, "Vocationally oriented readers... range roughly in age from the late teens into the middle forties, may be high school dropouts, recent graduates, or those who are beginning vocational training after a lapse from school for several years" (p. 1). Establishing a means to validate nursing eligibility criteria, Larkin (1977) pointed out, "Students entering the college are required to take six Comparative Guidance and Placement Tests (CGP). The Reading and Sentences Components of the CGP are designed to test basic language skills" (p. 4). On the one hand, reading is considered

part of the college responsibility; on the other, reading is considered a part of the screening process.

The second general category of reading problem in colleges is of an instructional nature. Wainwright (1970) argued against the prerequisite notion and for the development of reading instruction: "The worst effects of (reading) deficiencies are seen in colleges with a technical bias...No longer can we afford to allow reading to remain a subject which is only taught in primary grades..." (p. 338).

Jobson (1969) determined the problem to be one of staff development and utilization:

[Community College] teaching assignments are customarily dispensed on the basis of academic rank and seniority. This practice results in the more experienced and able members of the faculty electing to teach the advanced and exotic college level courses, the less experienced faculty choosing to teach what is left out of the college level courses, and finally, the inexperienced faculty... are left with the task of teaching -- perhaps against their wishes -- in the Developmental Curriculum. Those least able are given the most challenging teaching assignment (p. 26).

Articulation

Although not conceptually new, the interrelating of educational experiences for students of community colleges with those of the source from which these students emerged has only begun to appear in the literature. In terms of reading, much of the emphasis is predicated upon accepting that the developmental fabric is continuous into the college experience. Theoretical issues of reading instruction in college may assist in making such a decision. For example, Chaplin (1976) relates Piagetian Theory to College Reading Instruction:

Piaget has provided a basic conceptual system for understanding the acquisition of knowledge. Since reading is the primary medium for acquiring knowledge in higher education, the value and utility of this theory for college reading instruction extend far beyond the references that have been made. The chasm which exists between the institutional expectations for college students and the actual abilities of the students themselves can be narrowed considerably through an application of these Piagetian concepts to reading experiences. Moreover, these implications can help to lead college reading away from the 'remedial band-aid' as it is often characterized into a viable mechanism which is indispensable in helping students further their cognitive capacity (p. 10).

Articulation projects are not without precedent. Svob (1973) described an articulation project undertaken by Illinois Central College and twenty-six high schools within the college's district. The project specifically addressed the communications field and vocational-technical field, but separately; no mention was made of communication in vocational education or vocational components in communication.

Readability

Readability procedures, as previously discussed, yield a Grade Readability Level (GRL) which supposedly relates to the grade level of the student. Possibly, for this reason, there is less evidence in the literature of college level readability analyses of educational literature than there is found for secondary literature. College programs are not normally identified in terms of grade placement (i.e. 13th grade, 14th grade, etc.).

In vocational-technical education, many of the textbooks used in secondary programs are the same as those used in college vocational programs. Therefore, readability analyses conducted and published

regarding secondary literature have been available to the college researcher. For example, The Institute for Occupational Education Research at Cornell (Bennett and Muncrief, 1975) examined the readability levels of textbooks in several occupational areas and published the results in a multi-volume series. Thornton (Note 2) examined the readability of carpentry texts, many of which were being used at the college level. Williamsport Area Community College (Thompson, Note 3) analyzed selected materials in vocational subjects.

For the most part, readability analyses have been in-house studies of educational literature without effort to generalize the findings. It can be argued that the dearth of published college readability research is based upon the problems inherent in the GRL yield. Or, it can be argued that college reading insensitivity prohibits such research. Sticht (1975) expressed another concern about readability measures:

A problem with readability measures is that they tend to set reading requirements somewhat higher than do other empirical methods to be discussed below. Many vocational education courses and jobs would require reading skills at the twelfth grade level or above if readability factors alone were considered. Since many persons with reading skills below the twelfth grade level are successfully completing career education programs and performing successfully on the job, the reading requirements suggested by the readability formulas must be regarded with caution (p. 70).

Boyce (1974) indicated that the precision of readability formulas is a problem:

Finally, although Klare (1952) argues that '...readability formulas are...sufficiently accurate for estimating the comparative readability of adult materials' (p. 397) and Lorge (1948) points out that readability index is an estimate and not intended as a precise indication, Carozzi (1972) indicates that 'teachers and publishers tend to treat

readability formulas as though they were precise measures' (p. 71). So although Spache and Chall each pointed out that levels from formulas are only accurate to within + or - year of reading age (McLeod, 1962), the formulas have been used to make distinctions of one to two months in the reading difficulty of books without also making the error involved quite clear. (See, for example, Bird and Falk, 1971) (p.6).

Despite these problems attendant to the use of readability formulas there is support for such analysis. Parsons (1976) found the readability level of physics textbooks used by vocational students to be too high. Scott (1974) concluded that business textbooks needed to be evaluated to accommodate varying levels of reading ability.

Program Development

Literature regarding college reading programs falls into two categories: (1) program recommendations and (2) program descriptions. The former is generally more theoretical; the latter is practical.

Program Recommendations. Several constructs or models emerge from research into potential college reading program design. Strang (1969) recommended that "more advanced reading abilities... can best be taught in each subject by a teacher who understands that reading process in his field" (p. 20). Likewise, Strevens (1972), regarding Technical, Technological, and Scientific English (TTSE) proposed an integration of content and English:

...There now exists, in addition to conventional English teaching, a large and growing demand for English language teaching to be provided specifically for the needs of a particular subject, profession, or occupation; and for this teaching to be carried on largely outside the school system. Within the wide range of vocational uses of English we can identify a group concerned with pure or applied science, at various levels of complexity (p. 223).



Few teachers of English have the scientific training. The conventional pattern of English in the past has been as a general educational and cultural subject, taught in the schools, and for this purpose the training of teachers in the traditions of the humanities has seemed to be appropriate. It is a consequence of this tradition, however, that teachers of English called upon to teach English with the uses of scientists face especial problems. They have to learn something of the habits of thought of the scientists and they have to become aware of the nature of TTSE (p. 229).

The integrated course, in which English is taught by and through science, seems in principle to be the most economical and satisfactory approach, not least because the teacher can devote the whole of the teaching time to activities that are relevant to the eventual aims of the learner (p. 230).

Other writers considered the reading skills components as pivotal for program development. In an attempt to identify "well balanced reading program," Mione (1977) spent no time in attempting to relate reading to specific course objectives or concentration areas in the two-year college. Instead, the author listed the following components of said well balanced program: " a) develop meaning and concept background; b) develop vocabulary; c) develop word analysis skills; d) develop organizational skills; e) develop critical reading skills; f) develop flexibility in rate of comprehension; g) develop research skills (e.g., dictionary, encyclopedia, indexes, card catalog) in order to teach how to learn." (p. 23). Emphasis was placed on methods based upon an understanding of the personality and psychology of the learner, multi-level in difficulty, and encouraging of a positive, loving attitude toward reading. No mention of the interest of the reader was made. Mahoney (1973) described a model reading program as one involving (a) textbook analysis; (b) reading intervention; (c) use

of a reading center. Wainwright (1970) recommended a program emphasizing speed (rate), reading flexibility, and comprehension.

Another position supports the needs of the students. "College courses in efficient reading should...be solidly based on student needs and deal broadly with the reading process itself" (Brown, 1976, p. 8). Brown recommended emphasizing such specialized reading skills as pre-reading or surveying, skimming, scanning, and intensive study-type reading. Pickens (1976), supporting programs related to student needs, placed the onus on the student. Instruction must first center on attitudes, then reasoning and logic, and finally vocabulary. "We have to require that students own dictionaries and vocabulary workbooks" (p. 14).

Program Descriptions. Carney and Lasinger (1976) described an automotive mechanics "program designed to integrate instruction in reading and in content, and to measure the resultant content learning of vocational college students" (p. 14). A study text covering automotive theory, trouble-shooting, and repair was used in the curriculum. The treatment consisted of text reading introduction for the experimental group and resulted in no significant difference between experimental and control groups. However, Carney and Lasinger concluded; "The results of the study offer support for an instructional format in which reading behaviors and the concepts embodied in the subject are integrated. This format should be carried out in such a manner that reading skills inherent in the material and essential to its understanding are taught functionally through the content..." (pp. 16, 17).

The Science Reading Program, Division of Allied Health, New York City Community College (Beitler, 1976) "...focused on the immediate goals of preparing the students for a career which they had chosen. There (were) three interactive factors central to this program: motivation; through the use of career related materials; mastery level requirement of 70% comprehension; reading rate improvement..." (p. 14).

Nitka and Caplin (1976) described a college reading program of generalized reading instruction for nursing students:

- Since the principles of remediation...remain essentially constant, it was decided that an eclectic methodology tailored to individual needs would be the best approach. Moreover, the instructor was not overly concerned with the etiology of the deficiencies, but chose rather to treat the symptoms, to strengthen weaknesses by dealing through strengths. ...[T]he instructor used certain materials in the belief that proper reading skills transfer and adapt to any situation (i.e. reading for a specific purpose, relating past knowledge, discovering and utilizing the format, recognizing differences and similarities, re-organizing material to suit purpose, varying rate and style of reading according to the material, predicting outcome from events, drawing conclusions, and judging quality and usefulness of information). Further, it is believed that a competent reader utilizes whatever skills (once he has mastered them) necessary in any given situation (pp. 2-3).

Contrary to the evidence that specific vocational reading needs are somewhat different from reading needs for general usage, these writers indicated that generalized reading instruction will effect appropriate skills, transferable to the requirements of a particular vocation. Another nursing education reading program (Huhn, 1976) decreased "the failure rate...from 45 to 15% by the addition of a reading/learning skills program" (p. 5).

Pessah (1975) reported a cloze procedure integration into the regular reading program was found to be useful. Clozing involves deletion of words from text, requiring the student to utilize context and experiential clues to identify the words.

Is the cloze procedure effective in teaching reading comprehension to community college students and if so, how can it best be presented? (p. 2).

This study has been conducted in ten 'b' sections of the Reading Development Laboratory (RDL) course that is offered in the Department of Special Educational Services at Bronx Community College. Students who have not attained the minimum raw score of 60 on the Nelson-Denny Reading Test, a part of the entrance battery, are required to take the RDL course and those whose raw score was between 40 and 59 (reading grade level 9.0 to 11.4) register for the 'b' section.

The final total number of students in the entire sample was 100. Sixty-eight of these students are female and thirty-two are male. These students are almost entirely from minority groups and most of them can be termed as disadvantaged.

The reading achievement scores of community college students, measured by the Nelson-Denny Reading Test, form A, indicate a significant improvement when the cloze procedure has been used as part of the regular reading instruction.

...[C]lasses that have been taught with the cloze technique as part of their regular remedial reading instruction will show significantly greater improvement in reading achievement than those that have not...When the control group was compared to the first experimental group, there was no significant difference in reading achievement. Yet, when the NT group was compared to second and third experimental groups, there was a significant difference in reading achievement. Perhaps involvement with cloze is not enough to produce a significant difference in reading achievement unless there is also discussion of logic behind the answers coupled with teacher input (pp. 11-12).

Bilingual/ESL

The distinction between reading instruction as a bilingual exercise and English-as-a-second-language has already been made.

Neither emerges as dominant in the literature regarding college application. Shepack (1977) described a model for bi-lingual vocational training at El Paso Community College in which the language experience method is used. In this method the instruction proceeds from speech, to writing to reading. The San Francisco Community College District (1976) stated of Vocational ESL, "language objectives are always contextualized into work-related situations (p. 4). The emphasis is on specific skills and the ordering of these skills is dependent upon the student's immediate employment goal" (p. 5). Dempsey (1975) also related ESL to content orientation, recommending an addition of reading laboratories and reading courses based upon skill level.

Two methods of teaching TTSE courses were described by Strevens (1972) as the special purpose course and the integrated course. The integrated course involves "using the science or technology syllabus with and through the language syllabus." Of the special purpose course Strevens reported:

(One particular type of special course -- the reading-only knowledge of English) when scientists or technologists need to acquire a reading-only knowledge of English...in their own branch of science, with no requirement to understand the spoken language or to speak it. Since the scientist is normally an intelligent, sophisticated learner...the circumstances of teaching reading-only courses for scientists are very favourable indeed: progress is usually rapid and success rates are high (p. 8).

Occupational

Reading-Amount and Kinds

There was nothing in the literature to indicate that colleges have attempted to determine the kind of reading required in employment.

Reading Requirements-Entry, Survival, Upward Mobility

According to Nations Schools and Colleges (Curriculum, 1975) Santa Clara Community College students have received assistance in qualifying for jobs by participating in Career English programs. Blue (1976) reported that a survey of 30 employers and supervisors determined reading to be a source of employer generated information for employees. Preliminary to a study ranking occupational competencies (Farning and Boyce, 1976), supervisors ranked reading for comprehension:

Electronic graduates - 6th (p. 38);
 Mechanical Design graduates = 6.5 (p. 39);
 Data Processing graduates = 9th (p. 28);
 Mechanical Drafting graduates = 13.5 (p. 34);
 Machine Tool graduates = 13.5 (p. 34).

Farning and Boyce reported that vocational technical employers ranked recognition, comprehension, and recall of essential information first in importance for employees in business machines, auto mechanics, auto body, welding, printing, industrial cluster, fire science, police science, and service cluster.

Beyond the survey of general importance, no research efforts were found in the literature which would distinguish reading requirements for entry, survival, and upward mobility.

Summary

Literature abounds regarding curricular reading issues from discussion of problems to resolution. Except for limited inquiries about the worth of reading in employment, no research was found

examining reading as an occupational issue for students and graduates of the two-year, junior and community college. No reports were found regarding readability, reading requirements for transferability among clusters or bilingual/ESL reading.

AREA VOCATIONAL-TECHNICAL SCHOOL

ADULT PROGRAMS

Curricular

Problems

Perceptions of reading problems of the post-secondary student in area vocational-technical schools range from prerequisite deficiency to attitudinal resistance. Crowl (1976) stated, "What has been encountered in vocational education is that many post-secondary students have a high school diploma, but basic skills abilities for below the eleventh or twelfth grade level" (p. 4). Relevancy to overcome attitudinal resistance to reading was recommended by James (1978). "The vocational student is in school for only one reason -- to learn a specific trade...Reading material not pertinent to his vocation is generally looked upon as not interesting and not worth reading" (p. 3).

The necessity of reading skill in employment and selling students on that necessity was discussed by Levin (1975):

Reading skills needed at the lowest levels of job entry involve the literal interpretation of texts. In the vocational-occupational area, for example, essential skills are understanding printed directions, following the steps in a sequence, learning a basic sight vocabulary of the technical terms in a given vocation, finding the main idea, noting specific details, and using the dictionary and resource materials. Even at the lower job entry levels, good critical reading-reasoning skills are desirable for both adequate job performance and personal development.

Each student must be made aware that reading plays a vital role in enhancing or impeding his plans for immediate or ultimate job entry; he must know that reading is not an abstract intellectual option but is as necessary a tool for the auto mechanic as for the engineer, historian, or lawyer. In addition, teachers and administrators have an important role in preparing students to function at the highest reading level of which they are capable (pp. 78-79).

Articulation

Articulation studies and articles were not expected and were not found in the literature. Essentially these programs deal with out-of-phase students and adults and are not designed to be locked-in to the level-by-level progression of educational delivery systems. It would seem reasonable, however, that investigation into progress from the AVTS adult program into one of higher education would embody articulation questions. That possibility, however, requires that AVTS adult programs be envisioned as something other than pre-employment or terminal for certain groups of students. With that reconsideration, reading could well become an articulation component.

Program

Program Recommendations. Specific recommendations for program content were found in the literature. Pittman (1974) suggested a strategy for vocational courses in English for adults:

...The bulk of the "meaning" lost to the indigenous listener and reader lies only too often in the structural area of English and that the problem will not be solved by "vocational" vocabularies however appropriate, but only in a sense be exasperated by such treatment.

It is particularly useful...for the teacher who is called upon to give special courses to nurses, clerk and technicians of various sorts, to have "blanket" material available to meet the needs of various groups of students. Such "blanket" material should meet both employee's and employer's requests by (a) incorporating general vocational vocabularies; (b) including structural elements which need remedial attention, e.g., articles, tense changes, known plurals; (c) including the verb with the vocabulary, it activates; (d) covering a wide range of attainment, hence "blanket" (p. 26).

An adult is usually more at home in applying some sort of understandable system than in practicing a number of unrelated examples.

When an adult is presented with (a) a coherent system of describing actions with concrete vocabulary, and (b) a coherent system of prepositions and vocabulary, and when these systems transfer to abstract vocabulary, he is usually convinced that he cannot do without it (p. 127).

Raetsch (1975) recommended that all teaching and reinforcement activities utilize textbook and professional journals as a base, however, keeping in mind "Vocational-Technical schools are designed to train their students in a marketable vocation. Most students are in the program because they want to learn, but reading classes are generally not what they had in mind when they came to school. In order to provide meaningful reading instruction, the course content must relate to a vocation, provide enrichment in professional journals, and acquaint the student with every day reading skills" (pp. 10-12).

Inferior to the program is the testing component of reading instruction. Pendlebury (1970) recommended specific testing principles:

All tests must as far as possible conform to the following principles of testing:

1. The test should form an integrated part of a language-training course. Before the course begins, it should be decided what measures will be used at the end of it to see whether the course objectives have been achieved.
2. The tests should reflect the situation for which language teaching is being given. The more the testing situation simulates the real life situation, the more confident we can be that the skills and knowledge acquired on a course will be used at work. Successful test performance should suggest successful job performance.

3. Each test question should be attempting to measure a person's familiarity with only one aspect of any area of learning. If a student answers a question incorrectly, we should be fairly certain as to where exactly his knowledge is lacking.
4. Tests should be able to be scored objectively. It must be clear what constitutes a correct answer to a question.
5. Tests should be able to be administered and scored quickly. (pp. 254-60).

Except in those cases in which reading deficiency is so pronounced, AVTS adult programs emphasize the relationship of reading to work. Colpitts and Cerri (1971) described a program of reading intended to prepare office skills students to take civil service exams: "...[C]lerical jobs require reading comprehension...The course will contain material on reading for instructions, main ideas and detailing" (p. 2). Johnston (1974) proposed using an external-internal approach, teaming a cosmetology instructor and reading specialist to establish a reading program for cosmetology students. Greatly concerned about reading skills deficiencies of post-secondary vocational students, Crowl (1976) recommended a "learning skills center." It was noted that the skills center approach in Kansas doubled students' reading abilities over students not using the centers.

The Test Development Division of Educational Testing Service demonstrated the importance of relevancy between reading evaluation and employment (Northcutt, 1975):

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Fifteen members of the test development division of Educational Testing Service began developing reading tasks intended to be representative of the types of tasks performed by adults in normal day-to-day life. The tasks were not subject to the usual and multiple choice format constraints. Effort was focused on developing tasks which would discriminate adults who can function adequately from those who cannot.

A panel of representatives from industry, education, journalism and consumer groups reviewed the preliminary tasks developed and the preliminary results of the national survey of reading activities. Their primary suggestions were to make the tasks even more basic and to avoid using multiple choice formats as much as possible. In the final survey of reading performance, multiple choice formats were eliminated completely. (pp. 53-54).

The reading tasks which were developed by the research staff contained a variety of objectives. However, it is interesting to note that the form in which the items appeared included personal communication, listings, advertising, legal documents, sets of instructions and periodicals. Only in the task identified as education and culture were the items taken from a book format.

Readability

Unless the readability studies of literature in post-secondary vocational education were specified to be for community, junior, or two year colleges, it was assumed they were conducted for AVTS-Adult programs; that is, of course, unless the studies were conducted for some other specified purpose. The reader should also be aware that AVTS-Adult reading programs would have direct access to secondary AVTS readability research, thus independent studies might not be needed.

Caffey (1975) reported, "The Fry Readability Formula was used to determine the difficulty of the textbooks used in (welding and refrigeration/air-conditioning) classrooms...The books were found to be too difficult for the students to be successful in their study" (p. 11). Karnes and Ginn (1976) examined the readability levels of post-secondary area vocational-technical school textbooks and then compared these GRLs with reading comprehension levels of the students using them. They found the mean readability levels of the textbooks to be 3.51 GRLs higher than the mean reading abilities of vocational students and 1.94 GRLs higher for technical students. (p. 55).

Bilingual/ESL

Perhaps because of the availability of secondary AVTS research and development to AVTS Adult programs, one would not expect to find voluminous information in the literature on bilingual/ESL research. Also, the absence might be explained by relatively recent prominence of non-native English speaking issues. The Rochester City School District, Adult Evaluation Report (Bilingual Occupational Education, 1977) was the sole citation found. This report recommended ESL instruction emphasizing vocabulary in general and vocabulary pertinent to the student's occupational choice. The Report also concluded that there should be coordination between the English and the vocational instructors.

Occupational

Reading-Amounts and Kinds

Johnston (1974) was the only reference found in which occupational literature was utilized in vocational reading strategies. Johnston reported, "For relevance, direction circulars accompanying products in actual use in beauty shops were collected" (p. 28).

Reading Requirements-Entry, Survival, Upward Mobility

Investigators from the Lafayette Parish Adult Education Program (1975) attempted to determine which skills were considered important by employers. Project staff reported that they conducted an employer survey, administered to "plant managers, personnel directors, department heads and other supervisors with direct responsibility for low level workers...in four categories: health services, municipal service, private industry and a miscellaneous category" (pp. 7,8). The report concluded, "...employers placed more emphasis on basic reading and writing skills than on math skills" (p. 23). Nelson and O'Neil (1977) examined workers perceptions of occupational survival skills in nine classifications: professional-managerial, managerial-proprietors, sales workers, clerical workers, craftsmen, service workers, laborers, and farm workers. Second only to dependability, understanding written instructions was concluded to be most important of the occupational survival skills.

No studies were found which determined specific reading requirements for entry, survival, or upward mobility in employment.

Summary

There is limited information about curricular reading strategies for AVTS-Adult programs. Even the recommendations for reading programs and program descriptions are sparse. A few studies indicate that employees and employers perceive reading skills to be important employment skills. No reports were found which examined reading as an occupational issue, examining amount, kind, difficulty, and the like in the context of the Area Vocational-Technical School adult program. No reports were found which examined readability, transferability among clusters, or bilingual/ESL.

TRAINING CENTERS

Curricular

Problems

Training centers emerging from legislation regarding unemployment, national security, and targeted social problems are oriented more intensely toward psychomotor skills than traditional vocational education in the schools. The primary objective of these centers has been to meet explicit employment needs of their constituencies. They have not been bound by general educational considerations; thus, they have focused almost exclusively on work skills preparation. Remediation in basic skills deficiencies, when addressed, were referral efforts to exterior or separated interior programs.

As these programs developed, it was found to be necessary to include increasing amounts of basic skills preparation. With that inclusion came problems peculiar to training centers whose clientele were not locked into a system of progressive steps. Greenfield (1966) illustrated one such problem: "The correction of serious reading disabilities requires the youth to invest probably at least a year of his time. Most of our target population would not make that investment. Their needs were immediate and their tolerance for long term learning was low" (Rdg - 2).

The importance of basic skills development for clients of training centers has not been lost to the U. S. Department of Labor (DOL). For use by the U.S. Training and Employment Service, the DOL established General Educational Development (GED) levels necessary

to meet specific employment objectives. These levels are cited in the Dictionary of Occupational Titles for each job. The GED definition was provided by Lewis (1971). "...GED is education of general academic nature...which does not have a recognized, fairly specific occupational objective..." (p. 1).

One of the components of the GED levels is reading. For each level, the requisite amount of reading is specified:

(GED Level 1, Grades 1-3) Introduction to the printed word. Emphasis placed on relating written word to spoken word; acquisition of vocabulary, reinforcing correct grammatical usage; stimulating thought (p. 7).

(GED Level 2, Grades 4-6) Learn roots, prefixes and suffixes. Learn to read discriminately, distinguishing between essential and non-essential material. Enrich vocabulary with wide selection of reading material. Introduction to magazines, newspapers, bulletins, etc. (p. 9).

(GED Level 3, Grades 7-8) Read to find main thought or idea of a paragraph. Locate topic and summary sentences, and identify details and relate them to central thought (p. 11).

(GED Level 4, Grades 9-12) Variety of textbooks, fiction and non-fiction, newspapers and magazines (p. 13).

(GED Level 5, Grades College 1-2) Literature; book and play reviews; scientific and technical journals; abstracts; financial reports; legal, historical, and medical documents; and periodicals (p. 15).

(GED Level 6, College 3-4) Same as level 5.

Program Development

Program Recommendations. Of programs for urban disadvantaged youth, Bass (1971) stated, "Reading and mathematics teachers...can make their subjects more meaningful if they use illustrations and examples which show the student how the material can be used in a career occupation. Moreover, the vocational teacher must support and promote basic education or the student will have a low regard for academic subjects. The best results are obtained when both teaching groups work closely together in a team effort" (pp. 17-18). Maxwell, Brown, and McCracken (1973) were more explicit. "Curriculum should adjust to the students needs...Students are more likely to be retained if they can see an immediate need for the instruction...Emphasis can be given to use shop manuals, preparing orders, job applications..." (p. 7).

Program Description. The Gary Job Corps, San Marcos, Texas, enrolled more than 3000 young men, ages 16-21, with underprivileged backgrounds, who had dropped out of school. Based upon reading tests administered at entry, if deficient, the enrollees were placed in a foundation reading program (Frost and Pilgrim, 1969). Citing Ausabel (1963), the authors stated:

Three considerations are necessary...: selection of initial material geared to the learners' readiness levels, mastery and consolidation of all ongoing learning tasks before new ones are presented, and the use of structured learning materials optimally organized to facilitate efficient sequential learning. Motivation of an intrinsic nature must be developed if learning is to be permanent. This necessitates that the knowledge to be incorporated into the individual must be relevant to areas of concern in his psychological field (p. 7).

Materials of high interest, great variety, and ready adaptability were used in a study reported by Hall and Waldo (1967). The results...were good for all groups, but especially for those pupils with higher I.Q.s. Others, such as Balow (1965), Woolman (1964) and Fader and Shaewitz (1966) have reported gains on reading test scores of a year or more...as a result of relatively short, intensive programs where reading skills are taught in relation to material which has high interest and pertinence to the learners (pp. 7-8).

The Gary Reading Center teaches reading to functionally illiterate Job Corpsmen until they attain a public school reading level of beginning sixth grade (p. 20).

There are scores of reports in the literature describing training programs. Few of these elaborate on attendant reading programs, however, beyond a terse acknowledgement of need. Of the few reported, there was little attempt to describe the reading programs. The Minnesota Work Opportunity Center, according to Decker and Anderson (1969) developed a reading course for high school dropouts and hard core unemployed. Reading, study skills, and voluntary remedial programs were cited in conjunction with training (McPhail, 1978; Crawford, 1974; Greenfield, 1966). The Multiple Learning Strategies Project in Michigan provides learning modules for reading deficient learners in selected occupational fields (White, 1978).

Occupational

The literature contained no reports that indicated that training centers concerned themselves with occupational reading requirements.

Reading, in all cases, was considered an academic prerequisite. Thus, deficiencies were treated by academic remediation to achieve general skill levels commensurate with academic standards.

Summary

Occupational training programs, in most cases, contain some recognition of reading as a necessary skill. The necessity, however, is equated with a general education level perceived as minimum levels of achievement. Reading skill is considered an academic issue. Consequently, there has been no discernable effort to identify reading as a vocational skill. Treatment of deficiencies, therefore, has been addressed by academic procedures of remediation, using academically oriented and general education developed practices. No reports regarding articulation, readability or bilingual/ESL were found.

CORRECTIONAL INSTITUTIONS

Vocational programs in correctional institutions face unique problems. Although these programs deal with literally a captive audience, lack of motivation by that audience is an extraordinary difficulty. Education and vocational training in prisons and jails, beyond work invented for time consumption, is relatively new and limitedly practiced. The literature regarding reading in correctional vocational programs is correspondingly sparse.

Curricular

Problems

A commission report of the New Jersey Correctional System (1971) summed up the problem in general. "A person who is unable to read cannot be an active participant in our society and economy. The Commission is alarmingly aware of the need to improve the reading level of the inmate population..." (p.2). The Commission recommended two solutions, neither of which was occupationally oriented: (a) a reading program; (b) availability of popular reading materials. The Clearinghouse of Offender Literacy Programs (American Bar Association, 1973) cited adult literacy as a major problem in correctional institutions. Their recommendation was for the establishment of correctional school districts.

Sullivan and Mandell (1967) adequately summarized correction's compounded problem:

Real vocational training is a rarity in jails. Sometimes working parties of inmates assigned to institutional maintenance and hand labor on jail farms and in work houses are described as offering the kind of vocational preparation or discipline for work. There are circumstances where such claims might be justified, but ordinarily it is arrant nonsense and irresponsible rationalization of inadequacy. For the most part, this use of jail inmates is likely to be merely a way of keeping the inmate population occupied and of housekeeping with a limited operating budget.

Education in jail also is limited. On occasion, part-time and evening classes are developed by volunteers from outside the institution and by inmates and jail personnel willing to do extra work. However, most of these programs offer limited vocational training and are handicapped by a meager quality of materials and facilities (pp. 21-22).

The implication for a young man with a criminal history is obvious. If the labor market is difficult for an ordinary young person without a jail record, it is proportionately more difficult and limited for a young man with a jail record. He has multiple handicaps barriers to overcome. In addition to any ordinary handicaps of inexperience and lack of preparation which may be shared with youth in general, he is also likely to be struggling with problems of minority group status, cultural deprivation and educational deficit (p. 24).

Drastic changes also are taking place in the occupational structure of the nation. Most of the jobs of the future will require workers with higher levels of skill and better education than in the past. The need for unskilled workers to do the repetitive kinds of tasks previously required in mass production is diminishing rapidly. Fewer people are required to produce greater amounts of goods (p. 26).

...[U]sing the highest grade level achieved may result in an overestimation of the ability of young adults in jail to perform basic tasks requiring reading and comprehension of abstract concepts. Thus, for example, even with greatly lowered scoring standards, 40% of the young adult population at Rikers Island were unable to score well enough on the IBM punch card machine operator aptitude test and the Beta

test of intelligence so that they could be considered for training. This finding is consistent with the findings reported by many studies comparing delinquents and non-delinquents. Such studies repeatedly have shown that despite essential similarities in intelligence, the reading skills and verbal conceptual abilities of delinquents are far below those of non-delinquents (p. 30).

Youth in jail are often non-readers. Most of the trainees showed marked deficiencies in reading skills and were surprised by the amount of reading matter they were expected to digest. It was difficult to get them to spend any time on reading that was not scheduled for them. Some of this difficulty was probably due to the fact that at the close of the day, the trainee group returned to the cell block's housing the general inmate population. One of the trainees described the problem faced by the study group very well. He said, 'It was hard to read and study with all the other guys not in the program around every night. I could lay in the bunk at night and see the lights of the city...You begin thinking of mom and pop...and I'm locked up here...and kids are roaming around outside. Instead of studying, you go and start talking' (p. 30).

Program Development

Program Recommendation. The considerations of vocational programs, not to mention vocational reading, are sufficiently new that there has been little generalization to serve as models. Mostly, the programs have been reported in terms of descriptions of practices at a given institution. Lewis and Boyle (1976) reported provisions for GED equivalency in the 1975-76 Vocational and Basic Program Evaluation of eight Pennsylvania correctional institutions. Nothing in the evaluation specified reading skills programs.

Program Descriptions. Vocational English at Camp Hill

Correctional Institution, Pennsylvania, emphasized "usage with adequate attention to grammar and composition...vocal vocabulary...technical sentence structure...combined with reading laboratory evaluations" (Program of Vocational Rehabilitation, 1970, p. 23). Correctional vocational programs in farm and earth moving equipment; pneumatics, hydraulics, fluidics; driver training; small power sources, and automotive, described by The Pennsylvania Department of Justice (1971) all contained undefined reading components. Remedial reading instruction was offered Rikers Island inmates during a project comparing the availability of vocational training and post release services to recidivism (Sullivan and Mandell, 1967).

Reading levels have also been used as part of a screening process for entry of inmates in vocational programs. Steurer (1977) indicated that the Maryland Correctional Training Center had used an arbitrary grade level for screening prior to considering reading and math skills tests. The author concluded that Informal Reading Inventories would be a better screening procedure.

Sullivan and Mandell (1967) described a reading program in conjunction with IBM training for inmates which contained occupational overtones, but was not directly related to the IBM program. How best to apply the reading instruction to the training was discussed by the authors:

Considerable difficulty was encountered in trying to fit the program into the most effective relationship with machine training. When the reading program was first

scheduled to run currently with machine training, the reading classes were held at night. The program was then viewed as overtaxing both by staff and trainees. When remedial reading was given subsequent to completion of the LBM course, the boys did not do as well in assimilating the IBM material. Therefore, it appears logical to put the reading before IBM training. However, where this is done, motivation to acquire this academic skill falters because the trainee has no frame of reference to enable him to see the direct relation to the IBM training.

The remedial reading program utilized two program instruction systems developed by Science Research Associates: Reading Laboratory 3a, and Reading For Understanding (pp. 68069).

Occupational

There was no evidence in the literature that reading programs in correctional institutions were more than occupationally related. On the contrary, the programs and recommendations, beyond a statement of need for relevancy of reading instruction, relegated the reading emphasis to academic, non-vocational practices.

Summary

Vocational programs, other than make-work types, are a recent and severely limited introduction to correctional institutions. Reading skills, when considered at all, are part of a general education concern. There has been no direct relationship established between reading and skills necessary to attain, survive, or be upwardly mobile in employment. No reports regarding articulation, readability or bilingual/ESL were found in the literature.

THE MILITARY

Of all the post-secondary vocational education delivery systems, the military has demonstrated the most concern with specific occupational reading requirements. Unfortunately, the military has published the least; thus, it is not possible to compare curricular and occupational emphasis as has been done previously in this paper. The few citations found, however, are sharply distinguished from reports by other educational systems. The difference clearly lies in the prominence of functional, occupational orientation by the military.

Sticht (1975) distinctly differentiates between functional and general literacy in an attempt to bridge the difference between army personnel literacy requirements and specific literacy demands of jobs. The United States Air Force School of Aviation Medicine (Leisey and Guinn, 1978) conducted research "to develop a screening methodology which would identify potential failures and/or students requiring remedial training" (p. 5). The screening components included reading comprehension, rate in words per minute, and vocabulary.

Gray (1978) described a reading program which, although it resulted in GRL evaluations, utilized actual job literature instead of contrived educational literature. Gray described the FLIT (Functional Literacy) program:

The FLIT program consists of six units related to military jobs: combat, medic, cook, communications, clerical and mechanic...FLIT students use technical manuals, forms,

tables, graphs, and procedural guides. The program is individualized with continuous assessment (pp. 41-2).

Regarding program results, Gray stated:

The average job reading skills increased from 5.2(GRL) before training to 7.3(GRL) after training. The percentage of successful students reading at the seventh grade level increased from 10 percent before training to 54 percent after training (p. 42).

BUSINESS AND INDUSTRY

One might expect a host of employment related programs to be reported in the literature, assuming an interest in reading by business and industry. That expectation was not, however, realized. Some interest was expressed about the problem of illiteracy among workers in business and industry -- but very little. Treatment reported was confined to middle and upper management programs, and even that treatment was confined to the usual curricular oriented programs. While concern for worker illiteracy was found, exemplary programs to deal with the literacy were noticeably absent.

Nasutian (1972) summarized the concern with illiteracy: "Illiteracy among workers in factories and other industrial enterprises causes not only low productivity, but in a number of cases, also waste of instruments and materials, and a high occurrence of accidents. Also misunderstanding or conflicts between workers and their trade unions, and/or their employers" (pp. 6-7).

Ironically, the problem appears to be as equally perplexing regarding executive personnel as it is among production workers. Nearly twenty-five years ago, D. D. Hunt (1955) of Humble Oil complained that reading problems are not confined to disadvantaged students in community colleges or inmates of correctional institutions or vocational technical students: "...[T]he 'average executive' has been told very bluntly that he does not know how to read, that his reading, generally, is equivalent to that of a seventh grade school

boy. Honestly, this has been presented as 'fact' substantiated by tests of more than 1000 executives. These men were tested either in special university clinics or by professional reading consultants" (p. 128). Humble Oil instituted a speed reading course to treat the problem.

The problem of reading deficiency is not unique to the United States. Chromecka (1974) described a factory reading program in Czechoslovakia:

For three years the Factory Institute of Education at the K. G. New Metallurgical Plant, in Ostrava-Kuncice, Czechoslovakia, has been running intensive language courses for senior staff members of the Management Research Institute, etc.

Four skills (understanding, reading, speaking and writing) are trained at an elementary and intermediate stage, stress being on manipulation of the code through structurally controlled exercises.

The program Chromecka described was provided for two years, four terms of 200 hours each at the rate of 40 hours per month. The time was distributed according to two four hour sessions per week, plus one eight hour Saturday session a month. This was done in conjunction with the employees' normal employment period.

SUMMARY-CONCLUSIONS

The intent of this paper has been to search the literature for reports of the nature of reading skills development efforts being made by selected systems which deliver post-secondary occupational education. The systems chosen were: (1) Two-year, junior and community colleges; (2) area vocational-technical schools-adult programs; (3) training centers; (4) correctional institutions; (5) the military; and (6) business and industry.

Criteria for inclusions of reports in this paper were subdivided into two categories: curricular and occupational. Curricular was defined to include reading within the educational system of textbooks and other such educational literature and those programs which utilized methods and materials normally found in curriculum. Occupational, on the other hand, included reading of literature pertaining directly to practice of an occupational specialty and programs which emphasized the non-traditional use of occupational literature in treatment and methodology.

The literature was found to be nearly devoid of references to reading skills development directly related to the practice of an occupational specialty. When reading skills were treated at all, they were treated as a curricular issue. Although an oversimplification, the paramount concern of the systems was whether students could read the textbooks, not whether employees could read employment literature.

Every article or study cited in this paper expressed or implied concern with reading deficiency among vocational education students. Not one writer challenged the fact that large numbers of post-secondary vocational students are seriously deficient in reading skills. Equally, the overwhelming majority of writers expressed or implied the need for "relevancy" in vocational reading programs. That relevancy, however, was not referenced to the practice of an occupation, but instead to the study of an occupation.

Based upon the preceding chapters, it is reasonable to conclude that there is no evidence of occupational orientation to the resolution of reading problems in post-secondary occupational education. An inevitable conclusion about reading in secondary vocational education appears to apply to post-secondary vocational education:

Historically, reading problems have been laid at the door of the English teacher. And if that failed, and usually such isolated efforts are doomed to fail, the...reading specialist was rushed in to solve remedial reading cases. The assumption...is a myopic view that has hamstrung reading instruction...for years...For students in vocational-technical programs, trade area teachers must be expected to provide reading instruction (Frye and Bates, 1975).

In order to effect change, vocational educators must make reading in occupational education relevant and abide by the promise of occupational success to students completing vocational programs. The employment realities of reading skill must be top priority. There is literature peculiar to each occupational specialty that must be read in the practice of that occupation. As such, reading is a vocational skill. To deny occupational reading instruction or to foist off

curricular materials as relevant occupational literature is to perpetuate the academic myth and mystique in vocational education.

Students in vocational programs are told essentially, "If you satisfactorily complete this course of study, master the competencies of the occupation it instructs, and develop the skills needed to complete its tasks, you will be prepared to be employed." The students are then given the actual tools and instruments and materials they would use when employed and instructed in their use. Reading the literature peculiar to that employment -- the instructions, codes, contracts, specifications, safety warnings, directions, contra-indications -- is equally a vocational skill. The actual literature that will be used in the practice of the occupation must, therefore, be the literature upon which reading skill instruction is based. When reading skills match the degrees of difficulty of that literature, relevancy will be achieved.

There exists an opportunity for post-secondary vocational education to lead, instead of react to, the struggle against functional illiteracy. It cannot be denied that hands-on activities in vocational subjects are powerful motivators of students. These activities, if utilized to promote reading, can facilitate a positive residual effect on reading outside occupational literature interests. The successes of one, stimulated by the power of interest in pursuing an occupational goal, can effect the successes of another reading focus, which have been diminished by irrelevancy.

The power of the mobility of success is equally applicable to the generation of failure. If the hands-on activities are used by

post-secondary vocational educators to demean the importance of reading or circumvent the demands of attention to literature, promotion of functional illiteracy can be served. The vocational educator who lamely, perhaps even impotently, bemoans student unwillingness to read and consequently circumvents textbooks and other literature, effectively furthers the disinterests of illiteracy. That so called educator is no educator at all, but a trainer.

The objective of occupational education cannot be to produce cogs for the wheels of industry. Students are rejecting simple training by dropping out. Society rejects the slavish accommodation of industry and manifests that rejection in postures of alienation. The institution that relegates occupational education to the basement and permits training to supercede education is not deserving of the classification of a higher education institution. Occupational education cannot and must not be allowed to facilitate "warm bodies" for the unilateral whims of corporate interests.

Denial of the total education of an individual supports the production of socially incompetent cogs. There is no totality to education, whether occupational or academic in orientation, if functional literacy is not a significant objective. If post-secondary occupational education is to rise above a training posture, reading must be accepted as a vocational skill and provision for learning to read must be contained in the curriculum.

CALL FOR RESEARCH

Overview

In practice, some very general, but devastating, problems inhibit resolution of reading deficiencies of students in vocational-technical education. These same general problems are also inhibiting relevancy in vocational education reading research.

Elitism, the most general, provides serious constraints to the direction and focus of research and practices in vocational education. The separation of academic and vocational interests promote an educational atmosphere of fruitless justification and turf protection. The Bureau of Occupational and Adult Education has condemned this divisiveness. "The separatist concept of the 'academic' versus the 'vocational' delivery system within our public school setting is no longer useful. Both academic and vocational programs should complement and further one another in producing persons who are prepared to function responsibly in a working world" (Federal Register, June 13, 1979, p. 33961).

Faculty selection processes in vocational education are based almost completely upon credentials in an occupational specialty. There is little, if any, attempt made to ascertain an ability to teach. Certainly, beyond the ability to "instruct" performance skills, there is a serious lack of evaluation of teaching regarding all the skills required to practice an occupational specialty.

Teacher education institutions have failed to provide vocational educators with the skills required to address reading in the

vocational curriculum. Staff development for faculty in post-secondary education has been nearly absent and, when available, has failed to address the realities of basic skills instruction for vocational faculty.

Vocational educators look at reading and mathematics as skills prerequisite to vocational programs. These educators have consistently demonstrated an unwillingness to include reading in particular as part of the vocational curriculum. In some cases, this has been due to an admitted inability, mostly for lack of educational preparation on the part of the faculty. In others, it is argued that reading instruction belongs elsewhere in the educational process.

Reading specialists are provided with inadequate vocational preparation. Reading, therefore, is viewed by the specialist as the same skill for employment as it is for recreation. Reading specialists are skilled in theoretical reading, but not in science, technology, and occupational specialties.

Research and development activities have been mostly confined to reading as a curricular issue. How difficult are textbooks? Can the students read educational materials? How can the problems of reading deficiencies in vocational curricula be overcome. There has been a noticeable absence of research and development activities which address the reading required in employment.

Specifics

Amount and Kind. How much literature accompanies an occupational specialty? What is the nature of that literature? Each occupational

specialty must be examined to determine how much reading and of what kind is required of its employees.

Degree of Difficulty. Readability analysis could well be like the person who looks for a lost item two blocks from where it was lost because the light is better there. Many readability formulas are based upon syllabication and sentence length. Are these the criteria for determining the reading skill required for occupational reading? Research must examine how difficult occupational literature is to read, based upon an analytical procedure that has been determined relevant to the demands of occupational reading.

Reading for Entry, Survival, Upward/Lateral Mobility. Research is required to determine the reading skills necessary at various levels of employment; different levels of employment demand different skills. What are these differences in relation to reading?

Bilingual/ESL. What is the most efficient method of approaching the vocational reading needs of students whose native language is other than English? The research should not be theoretical, but should be predicated upon the findings of the investigations cited in this paper.

Vocational Reading Specialty. It cannot be assumed that a reading specialist has the credentials to address any kind of reading. Occupational reading intervention may require special preparation of the specialist in order to be effective.

Transferability/Clustering. Research is needed to determine how best to accommodate reading skills development which would facilitate

transferability. What are the reading requirement commonalities of jobs within clusters? What reading skills would make lateral transfer within clusters an option for the employee otherwise confined to a terminal job?

These are but a few research and development recommendations which could be made. Others, much more specific, however, are dependent upon the results of these. The literature indicates that so little has been done in vocational reading research and development that future efforts are limited only by the interests and imaginations of the investigators. There is one consistently surfacing need: relate the research directly to the employment need, not to the artificial interests of the educational institutions.

Reference Notes

- Note 1: Lockheed Missiles & Space Co., Inc. Dialog Data Bases, Subject Guide, October, 1978.
- Note 2: Thornton, E. J. Carpentry Literature: Readability vs Reading Ability. Master's Paper. State University of New York, College of Technology, Utica, New York, 1977. In Occupational Education Forum (C. William Garner, Frederick G. Welch, eds.), University Park: The Pennsylvania State University, Spring, 1979.
- Note 3: Interview by author with Margaret Thompson, Reading Specialist, Williamsport Area Community College, November, 1979.

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