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"WOULD YOU BELIEVE"--RESEARCH IN VOCATIONAL EDUCATION.

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NEW EMPHASIS ON RESEARCH IN VOCATIONAL AND TECHNICAL EDUCATION OFFERS GREATER OPPORTUNITIES FOR (1) INCREASED NUMBERS AND KINDS OF NEEDED RESEARCH PROJECTS, (2) DISSEMINATION OF USEFUL OCCUPATIONAL FINDINGS WITHIN THE VARIOUS DISCIPLINES OF EDUCATION, (3) DETERMINATION OF SIGNIFICANT STUDENT FOLLOWUP DATA, AND (4) IDENTIFICATION OF STUDENT CHARACTERISTICS INFLUENCING OCCUPATIONAL DECISIONS, MOTIVATIONS, GUIDANCE, AND JOB PLACEMENT. LARGE CITIES PRESENT VERY PRESSING AND DIFFICULT PROBLEMS WHICH RESEARCH MIGHT HELP SOLVE -- (1) HOW TO PRESERVE, RESTORE, OR IMPROVE ECONOMIC STABILITY, AND (2) HOW TO COORDINATE THE EDUCATIONAL-SOCIAL-CULTURAL FORCES TO CREATE A PROCESS FOR ORDERLY DEVELOPMENT OF THEIR COMPLEXES OF COMMUNITIES. VOCATIONAL EDUCATION CONTINUES TO OFFER INNER-CITY POPULATIONS INCLUDING DISADVANTAGED STUDENTS THE BEST OPPORTUNITY TO QUALIFY FOR OCCUPATIONS WHICH WILL COMPRISE THE LARGEST CATEGORIES OF FUTURE EMPLOYMENT. ALTHOUGH THERE IS GROWING INTEREST IN RESEARCH PROJECTS AND INNOVATIVE PROGRAMS FOR CONVERTING THE DISADVANTAGED INDIVIDUAL INTO THE ADVANTAGED, RESEARCH IS STILL NEEDED TO IMPROVE THE PRESTIGE OR STATUS OF VOCATIONAL EDUCATION, AND TO HELP VOCATIONAL EDUCATION IMPLEMENT NEW CONCEPTS AND PROCESSES, ESPECIALLY ON HIGH SCHOOL AND POST-HIGH SCHOOL LEVELS, IN URBAN CENTERS. FURTHER STUDY AND RESEARCH ARE NEEDED IN THE AREAS OF SECONDARY YOUTH, SPECIAL NEEDS OF YOUTH, YOUTH PREPARING TO ENTER THE LABOR MARKET, TRAINING OR RETRAINING OF YOUTH AND ADULTS, AND SERVICES REQUIRED TO ASSURE QUALITY INSTRUCTION SUCH AS PREPARATION OF TEACHERS MATERIALS, RESEARCH STUDIES, AND GUIDANCE. (WB)

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The Big City - Big Problems and Big Opportunities

What is the nature of the big city? Over-simplified descriptions can be made: many large cities are getting old; "big cities are decayed;" newspaper headlines and other evidence dencte the presence of social-economic malignancy in the urban centers.

Big cities have disturbing characteristics that impinge on education: expanding, self-perpetuating slums resulting from in-migration; non-cooperation between desultory agencies of government; many local industrial plants are out-moded; less opportunity for slum populations to obtain factory work as industry moves away to suburban and rural areas; high rates of unemployment and crime; social dynamite on the streets; families of semi-professional and skilled workers move away from older residential areas to the perimeter as they achieve economic mobility; the profession and middle class "earn their money downtown.....but they take their pay checks home to a bucolic land of well-tended lawns and well-scrubbed kids." In short, big cities suffer from inner city decay, dispersal of job producing industry, flight of talented people, and breakdown in relationships between agencies of government.

Only lately has Big City faced the full realities of devising more appropriate ways of matching educational programs and people, opportunities and needs. In city slums, many kids live and play amid the cities' noise and smoke, and in "alleys hung with last year's posters." These are the children who have been ignored and who get lost in the educational statistics, but "show up later as other numbers: figures on drop-outs, figures on unemployment, figures on crime and relief and military service rejection rates," as stated by Harold Howe II, U.S. Commissioner of Education.

The decadent core-city is the major problem of our nation if the criteria are large expenditures of funds and priority attention given to it by the federal, state and local agencies. But experience teachers that we cannot purchase social-economic corrections solely by lavish monetary spending. We have the example of "slum housing--its destruction and replacement in many cities by new public housing did not mitigate other remaining problems of people, prosperity and developing community potential.

People have historically congregated in large cities because they are known to be job-producing centers.

It has been stated "work and jobs exist because there is a population to be served. The larger the population, the more needs there are to be met; hence more jobs. The changing age composition and other characteristics of the population will also affect to some extent the kinds of goods and services that will be needed, which in turn influence the kinds of jobs that will develop." This concept aptly fits Big Cities with their in-migrations and exploding populations. The misalignments in jobs and manpower, as statistics indicate, are not in work opportunities and jobs, but in shortages of individuals qualified to perform the kinds of jobs that are present and developing. In spite of excellent economic conditions, an unemployment rate of 6% prevails

in the 20 largest cities of our nation. In virtually all large cities there are thousands of well paying job opportunities unfilled while manpower reserves of many thousands of individuals are pushed out of the labor market for lack of education, skills or work habits. They are functionally disqualified.

An obvious task then is getting the Big City students and adults to value and achieve more education. Masses of the inner-city population are under-educated or poorly educated. Nationally, in the larger cities' school systems some 30% of the students who are in the 9th grade drop out before they finish the 12th grade or graduate; "drop-out" rates in disadvantaged areas are a larger percentage. Does the "drop-out" know that he is committing "economic suicide"?

"We are indeed a generation of sleep walkers," said William E. Dickinson, "if we think we can build a viable, free society by educating the college-bound population only while we accumulate a human scrap heap of drop-outs, social misfits, youth that feel unwanted, that hate themselves and everybody else. Boy, do we have the machinery for producing violence!"

In the large cities the educational attainment of many adults 25 years or over is not impressive; their education is often inadequate for obtaining employment in modern technology which tends to require increased education and technical skills. In Los Angeles, according to the 1960 census data, the age group 25 and over comprises 61.4% of the total city population and of these adults: 2.2% have not completed any schooling; 5.9% are not functionally literate (not progressed further than fourth grade); 14.8% have not graduated from elementary school; and 46.6% have not graduated from high school.

Summary--in large cities facing decadence there are two primary, perplexing and difficult problems to be solved: (1) how to preserve, restore or improve its economic stability; (2) how to link up the educational-social-cultural forces to create a process for orderly development of its complex of communities In the attempt to solve these fundamental problems there are vital challenges for vocational-technical education and the corollary educational research activity.

The Disadvantaged Student - Educational Prospect or Problem?

There must be increasing opportunities in vocational education for disadvantaged youth and adults. Who are they? They may be defined in terms of "extremely low family income, location or residence, most often living in slums, or extremely poor and isolated rural communities." These individuals have always been of great concern to vocational educators.

As much of the vocational education effort in large cities has been conducted in secondary and technical high schools located in older sections, the disadvantaged students historically have been exposed to vocational education. Unfortunately, some of the buildings were old and equipment frequently outmoded. These specialized trade programs were not always held in high repute even though the student job placement records were usually creditable.

In a New York City program evaluation of 1960, derived from a study of 4,411 first year graduates from the daytime trade preparatory programs, it was indicated that 64% of all graduates were placed in the occupation for which they were trained or in a closely related one; "of these enrolled in the industrial training program, over 84% were placed within a year after graduation."

Also, much favorable data was collected in regional, graduate follow-up surveys such as that conducted annually in the 13 states comprising the North Atlantic region; over a 9-year period, 1951-1959, an average of 84% of all graduates of industrial cooperative training programs were employed in the occupational programs for which they were prepared." Results of the same surveys indicated in 1959 "only 5% of graduates of trade and industrial programs were unemployed as compared with 15% of high school students in the United States who graduated in the same year."

Because of the rather frequent proximity of vocational schools to slum neighborhoods, some members of disadvantaged groups are "on strike" against preparing for trades. They believe that they are forced into a type of educational opportunity that is limited to entry to low-level occupations; rationalize that they are being deprived of the broad educational preparation leading to more desirable skilled, semi-profession and professional occupations. Many are rejecting vocational education opportunities.

Why do youth leave high school before they learn a vocational skill? The answer is obvious--they can't learn vocational skills in most high schools. It's not in the curriculum.

Two boys were interviewed at Jordan High School located in Watts shortly after the riot in August, 1965. One lad said, according to newspaper reports, "the school should offer more courses in specific skills, and things like apprenticeships" and another said, "the curriculum isn't right....the emphasis is upon the academic... you don't make it you feel left out. You adopt a "What's the Use" attitude."

It would seem apparent that Big City disadvantaged youth and adults should be enabled for reasons of morale and equalization of opportunity to attend schools offering a good general education and a wide selection of occupational courses, ranging from the semi-skilled trades through highly technical, semi-professions.

An important factor in considering vocational education and disadvantaged youth or adults, is the prevalence of the Negro population in the metropolitan centers. With its deep-seated urge for educational opportunity, economic advancement and social justice, activist Negro groups spearhead much of the new ferment of the inner-city. They sometimes reject re-establishment of vocational schools in urban centers as this type of school reminds them of the "separate, but equal" schools and the social image they associate with those schools. The minority Negro is on an academic educational "kick". How long before its leadership will recall the historical truth that all earlier Big City in-migration groups (and immigrants) followed a similar evolutionary pattern of adjustment by increased participation in general education, development of competence in vocational skills, achievement of economic stability as the means for enriching their lives, for increasing their individual welfare and for gaining community stature? In this pattern of adaption of in-migration groups to Big City environment, vocational education is a keystone.

In looking ahead to America's next twenty years, Peter F. Drucker, as far back as 1955, forecast that the status of the Negro minority would change fairly drastically: "Twenty years hence, the rapid industrialization of the south--combined with the continuous emigration of Negros from the south--should mean that the problems of race relations will be those of industrial centers, and especially of northern industrial centers....we can also expect the Negro's fight for equal opportunity and fair treatment to shift from a demand for equal employment opportunities to a demand for anequal opportunity for advancement."

In the light of historical experience, vocational education promises to continue to perform in the role as a great American equalizer; it offers inner-city populations the best opportunity to qualify for skilled, white collar, middle management, and semi-professional occupations that will comprise the largest categories of employment in future decades.

Research projects and innovative programs for training disadvantaged students are few, but there is growing interest in developing such activities. Special curriculum could be devised--both general education and technical for such vocational students; tutorial or other forms of assistance to learning could be instigated. How many of such students are actually enrolled or are they blocked by present admission standards?

Academic education; "more of the same" is not the answer for most of the less abled student and many disadvantaged students.

There are in Big City junior colleges many instances where from 30-40% of student body are in the lowest ten percentile group of academic ability as identified by scores on S.C.A.T. These students unrealistically enroll in "transfer" curricula. Such students are usually sent to a reading clinic course.

A recent 5-year study of low ability students, made by East Los Angeles Junior College with a large Mexican-American population, indicates that only 16% of this low ability group, who complete a reading class will either earn an A.A. degree, or transfer to a 4-year college. The other 84% will drop out of school, or fail scholastic probation.

The drop-out r te for those who have not completed a reading class may be even higher....." "It is obvious that this study reaffirms many others, indicating that a high percentage of students although admitted to the post-high school level of education do not find success in the standard academic curricula and this situation results in repeated failure and discouragement." Realistically such students need courses which concentrate on personal and vocational guidance, to become more aware of their abilities and limitations, and to develop a more realistic self-concept.

It would appear that guidance into vocational education could better fulfill the aptitudes or abilities of such students. More emphasis should be upon preparing them for entrance into appropriate occupations so they could become self-supporting, self-reliant, under the encouraging experience of personal success in the world-of-work.

In the November 5, 1966 Business Week article, "A Different Unemployment Problem" the fact that the economy is cited as being under strain for "an inability to match the right to the right jobs in a world of changing technology. The article states "and this is the heart of the structural problem--unemployment rates have stayed remarkably high for less experienced workers. As against the 2% unemployment rate for married men, the rate for women is 4.8%; for teenagers 12.2%; for Negro teenage boys 24%; for Negro teenage girls 38%. None of these groups has had a significant drop in unemployment over the past 10 months. They still lack the skills and the basic preparation for rapid absorption into the ranks of the employed.

It is becoming increasingly clear that the future of the U. S. economy will depend more and more on the development of effective programs to give youngsters and other groups where unemployment is high the training they need to qualify for productive work.

Can research help vocational education to convert disadvantaged individuals into "advantaged" people?

Public Image - Can Research Provide Answers?

It has well been said that "prestige or status of an educational institution usually has to be earned, and the development of prestige takes time. The early-day prestige and the status of vocational programs were low. Today programs range from relatively low prestige to many that command high respect by their community. Improved buildings, modern well-equipped programs, equality of general teaching conditions with those of academic programs is becoming common; post-high school adult vocational technical programs and those in the community college have contributed to increased prestige.

Prestige of Programs

"Prestige is an important factor in all vocational education programs, for, traditionally, they have been looked down upon by many academic educators and the public. The postsecondary vocational or technical school has distinct advantages over the high school vocational programs in this respect. The title of the school, the attractiveness and functional working of the school plant, the maturity and quality of the students, the placement record, the quality of the equipment and of the library facilities, the labor standards observed in the programs, the quality of the staff, and many other factors affect the prestige of the school." Accreditation is an important item.

"Offering certain types of credentials for graduates, such as the Associate in Arts degree, helps in raising the prestige of the school. Mature persons like to be associated with an institution that ranks high in the eyes of the community. Recruitment of students is facilitated by high prestige."

Organized labor, professional groups of business men, employers, manufacturers, suppliers and a great variety of community occupational interests are favorably impressed. The members of Congress have consistently viewed vocational-technical education favorably because of its value to individuals and the general welfare in peace time and war.

But it is a fact of life that vocational education competes in a never ending battle for its share of attention against the extreme attention paid to science and mathematics, and the social emphasis upon higher education caused by the parental-social drive to have their youth continue into higher education. It seems that "all too many parents and youth are led to believe that in failing to go on to college, they have missed the high road of American life....." and"the only passport to happiness".

A classic example of the criticisms directed at vocational education are these extracted from a metropolitan newspaper article entitled "Job training in schools called weak". The article states: "Local business man blamed the school system for turning out graduates weak in vocational training"--- "we note among vocational graduates an ability or reluctance to be resourceful, to apply initiative in problem solving, to go beyond the manual"....."we are concerned about the weaknesses in spelling, writing, reading, oral communications, basic mathematics and the ability to listen critically and follow

directions"---He said, "young people are not being prepared with marketable skills"---and "the vocational-educational system has not kept pace with industrial progress." The sensible reader properly concludes--"Vocational education isn't doing the job," "It's ineffective," or "I don't think I want my son enrolled in vocational education." But there is more to this story.

What the reader doesn't know is what hurts the image of vocational education. There is a corollary to this newspaper article; the "local businessman" hires high school graduates from nearby school systems who some 10-15 years ago closed out their federally-aided vocational programs that emphasized employment skill training; these schools replaced skill training programs with Industrial Arts programs.

Thus the criticism of the "businessman" was beating atainst a non-existent "vocational" straw-man; he was unaware that the graduates to whom he referred as "vocational" were products of Industrial Arts programs and general education disciplines. This illustration may indicate how ambiguous is the term "vocational education", and how little it is understood as an educational discipline.

Research cannot substitute for hard-earned reputation, but it might investigate and perhaps isolate for study those values and factors in society, business and education that have the most far reaching impact on vocational education.

Is there any relativity between school image and community relationships? Samuel M. Burt, who has concluded an extensive national study on Industry Participation in Vocational Education for the W. E. Upjohn Institute for Employment Research observes that "while a number of schools and school systems can cite situations in which industry-education cooperation has been effective, there is little, if any, meaningful, sustained, coordinated and systematic participation and involvement of industry as a "way-of-life' for occupational education in a vast number of school systems". From his study, he indicates that the disaffection of industry, and the general public itself for secondary school vocational education must be blamed on the educators. He reports they have a lack of knowledge regarding the structure and motivation of business-industry; they do not provide adequate staff for developing industry-education cooperation; and they have poor organizational structure on which to properly relate to industry and to build such cooperation.

Research - "Looking Backwards"

At the national level the paucity of research in vocational education has long been noted. As long ago as in 1938, the Advisory Committee on Education observed that there was a lack of data and tangible evidence to evaluate the national program of vocational education. Again in 1963, the Panel of Consultants on Vocational Education stated "objectives and standards are quite valueless if, as criteria of appraisal, they cannot be compared with data that indicate whether, or how efficiently, purposes are being achieved." Neither criticism contradicts the well known fact that many vocational educators have taken seriously the responsibility for placing students in employment, and the attendant responsibility to maintain placement records and to make follow-up studies or reports. Although the Panel of Consultants found that such activities are common in individual schools and local communities, in some states, and within a few regional groups of states it properly reported "there are no data which permit quantitative and qualitative analysis of this vital aspect of education." Research activity and data are needed to close this gap. Increased research procedures are needed to provide continuous, comprehensive judgment of the contributions and progress of vocational education.

It is undeniable that research at the national and state levels has played only a tertiary role in vocational education. In 1963 the report of the Panel of Consultants on Vocational Education concluded: ".....the leadership of vocational education has not been committed to the necessity for continuous research. Those who control vocational education funds, preoccupied with immediate operational responsibilities, often do not attach importance beyond those necessary in the current program.....a considerable amount of research has been superficial, with little depth or penetration and, moreover, "relatively little research has pooled the resources of different disciplines that have bearing on vocational and technical education, such as sociology, economics, psychology, and labor market analysis."

For reasons unknown, the U.S. Office of Education in the past did not initiate a determined leadership for research. This set the tone for a passive attitude towards research and experimentation. State departments of education, centralized school system administration, and local school administrators were seldom pushed for research data.

A source of disappointment in its impact on research in vocational education is the University Schools of Education. Much of their research activities seem to be in isolation, apart from the fields of operation. To a great extent their contributions to research in vocational education result from the requirements for the Master's degree or doctoral studies. The Master's requirements often involve minor studies. Doctoral dissertations, limited in scope and depth, represent far more extended research projects. The dissemination of the findings of university research, both for the Master's and Doctor's degrees, is extremely limited.

The scarcity of useful research packaged for vocational education by graduate schools is lamentable. As an example, what production should be expected of

the university professors of vocational education or others who are well qualified to conduct research themselves? But, it is explained, they face these realities: restrictive teaching loads and other assigned duties; acceptance of outside paid consulting services to supplement low salaries; pressures of "publish or perish"; conflicts between teaching schedules and the energy and time required for meaningful research; and lack of funding required for research. Whatever the explanations, the effects of the limited involvements of professors in major research projects designed for vocational education have become tragically clear: there exists a vacuum in vocational research leadership, and a dearth of impressive, large-scale projects useful as guideposts to the present national expansion in vocational education. And where is there to be found significant studies in depth regarding the role of the vocational program in the Big city?

On the schoolhouse operational levels, research is evident in "home-made", practical, utilitarian forms. The continuing development of highly specialized programs requires ongoing changes in procedures, "tailored" curriculums, and instructional content as these are inherent to a viable, vocational program. Commonly applied types of research are: community surveys, occupational skills analysis, and program-instruction evaluation. They are creative, educational experimentations, if not acceptable as sophisticated research.

If research, in its liberal meanings, "encompasses study, investigation, or assembling of facts not readily available," then much of the vocational research performed at the city administrative or local school level should not be scorned.

It is pointed out that the interest in research by administrators and supervisors of vocational education has been irregular and their contributions limited. To understand why they are "action prone" and not research oriented one must look to their backgrounds and school environment. As operational administrators they are respected in local school systems as "go-getters", efficient organizers, and have the reputation for "getting the job done". Vocational education leaders are selected for their ability to cooperate with business and industry and to be "practical-minded" individuals; they have occupational experience in the world-of-work; they have a biased value-judgment towards training--"does it prepare the student with sufficient job skills and knowledge for entry and advancement in the occupation"? Their interest in major research projects for vocational education is very recent--and only since federal funding became available; many are skeptical of the information derived from formal research--"will it pay off in results if applied to existing programs"? Under pressure by community employers and local interests to provide trained personnel they have learned that it is quicker to modify an existing program than to arrange for and utilize formalized research that moves slowly and delays new programs.

Furthermore, vocational educators have been mostly recruited from the operational, trades, business, service, semi-professional and engineering, and agricultural occupations. They are seldom occupationally experienced in research. Ordinarily, their first concern in educational/vocational research is generated under the force of two sets of circumstances: (a) when they face the administrative obligation to solve educational/training problems that require applied research or (b) when they undergo their own program of university graduate study that requires research activity.

Several summary observations can be made about earlier periods of research and these are broadly descriptive: (1) mostly applied research, such as occupational and educational surveys, curriculum and course study development, evaluation of local programs; (2) the number of large studies has been small; (3) little attention has been given to basic research in the sciences and other disciplines that underlie and influence the psychology of learning, and motivation of learning; (4) experimental research under controlled conditions has been minimal; (5) most research has been of little penetration--meanings, import, and conclusions of the data have not been significantly emphasized or put into practice; (6) much vocational research is "home-made" and without utilization of the services of psychologists, sociologists, economists, employment specialists whose experience might increase the value of the research.

Research - Looking Forward

If educational research belongs "where the action is", research should be involved in secondary and post-high school Vocational Education (in large urban centers). It is in this environment that social pressures will force education to become more centered in the needs of individuals and adapted to meet inner-city societal conditions. Vocational education will be directly affected; big city programs will have to be financially structured to confront the rapidly changing technology, equate with new business-industry patterns and standards, as well as reflect apparent trends in occupational distribution of employment in the nation's economy. United States Labor Department statistics and reports are accurate guideposts to changes in the ages, characteristics, technical and educational requirements, mobility and distribution of the working population. Fortunately, we have ample warning of the impacts of technology upon education, training, and employment.

Administrators of big city vocational-technical education have a major responsibility for the acclaim or criticism accorded to vocational education; theirs are by far the most expansive programs. The big city schools enroll the largest numbers of participants engaged in such practical education; it is in these schools that change or research makes the largest public impact.

Vocational educators neither depreciate nor oppose research--at least at the operating levels of the program. They don't have to be "sold" on the virtues of research. The evident day-to-day utilization of modest but practical forms of research indicates an acceptance of research as an effective administrative tool in the planning, organization, performance, and evaluation of occupational programs.

Increased research should help vocational education to implement the latest technical concepts, knowledge of employment and basic economics, new materials and industrial process, types of instruments, machines and control processes associated with automation and applications of scientific information to a wide range of occupations.

In the recommendations for improvement made by the Panel of Consultants on Vocational Education at the conclusion of the national study they noted, "it will be necessary to diversify and expand training in each of the present occupational categories. As this expansion develops, there will be overlapping of categories and a need for training in additional occupations."

A new direction and emphasis that should be encouraged in vocational research is institutional research--although a considerable amount has always existed. As committees or teams of faculty-administrative-researchers investigate institutional purposes, objectives, students' characteristics, educational programs, student placement records, and community relationships, there emerge many insights and useful information. Such typical questions as these become identified as matters of concern and indicate the value of institutional research for inter-organization change and as a communications tool.

1. How does a program of institutional research get started? Do you "bootleg it" at first? Should small studies come first and then budget and staff later? Who should logically be the guiding force? Can we support a program of institutional research out of what is now being spent?

2. Should regular student characteristics reports be compiled? How should the results be disseminated? To whom? Should a staff meeting be called to report and discuss the findings? Should "feeder" high schools have this information? What should be done about the weak, less skillful learners?

3. Can we compare students and departments? Is the "C" average meaningful? Should one-third of all students be put on probation? What research topics do these suggest? Are grading practices uniform in departments?

4. Are the present required reports and forms to be completed for State Departments of Education collecting comparable information? Is this enough information? Too much? What value are they to us in practice?

5. What are the causes of failure (and resulting probation) among vocational-technical students? What existing data correlates with subsequent failure and probation? What about the available counseling services and the readjustment of students within school?

6. How can a high school counselor sort out the students who will become successful in a vocational program? Are we articulating well with high school counselors and department chairmen?

7. Could we predetermine the causes of failure for each type of student? Do aptitude scores, personality scores, academic scores, interest scores, or a multiple set of these best predict success or failure?

Research cannot only solve problems but it can also create them. Occasionally, research only results in compounding the administrator's frustrations. One recent example is the introduction of the teaching-machine into the curriculum of a college technical program. Research indicated the validity of machine-programmed instruction, and it was visualized that it could be used for remedial, general education, and related and supplemental technical subjects. Thereupon, vocational educators enthusiastically promoted the introduction of these machines into instruction. After some bitter experiences, they are now pausing to reconsider their decision. What happened? The machines worked well; students took to programmed instruction with zeal; the faculty well supported the innovation. But soon, follow-on research revealed the limitations of switching instruction to machine programmed learning--it's

not machines, students, nor the faculty. The culprit is "an undersupply of good programs". Too often programmed materials have turned out to be "pick-ups" from industry training programs; materials are not appropriate for vocational students; and the instructional content is not technically oriented toward occupations. Result--machine programming is dying! The frustrated administrator does not know where to go from here. Can research rectify such a common situation? Can research play a role in implementing programmed learning in occupational curricula via teaching machines?

And just around the corner are the education-oriented computers, already under experimentation. At present this is overly expensive electronic hardware and costs per capita make it financially not feasible. But what if the hardware price cheapens? R. Louis Bright, Associate Commissioner for United States Office of Education Bureau of Research, thinks that at a ceiling of 25¢ per student hour on computer costs "they can appear in the typical public school budget". What is going on in research for vocational education in respect to teaching--programming via electronic computers? If this technique is found adaptable to general education, is it also adaptable to vocational subject? What are its most valuable potentials? These or some other "far out" computer experimentations would be welcomed by vocational educators.

The Panel of Consultants on Vocational Education reported a series of specific recommendations which offer the possibility for important, endless amounts of educational study and exploration well suited to applications of research. The list of recommendations included these main categories: (a) youth in high school, (b) youth with special needs, (c) youth and adults who have completed or left high school and are full-time preparing to enter the labor market, (d) youth and adults unemployed or at work who need training or retraining, (e) services required to assure quality instruction such as preparation of teachers, materials, research studies, guidance.

The desirable improvements recommended by the panel form a rather neat inventory of goals and needs. This list invites analysis by any serious-minded researcher or project director. For instance, as a starting point evaluations of Estimated Action and Research Situation related to each recommendation could be made for any local district or school by utilizing the check list and the suggested rating form. Although representing only superficial evaluations, the exercise could lead to suggesting the obvious areas of need for research or inquiry.

Needed Improvements in Vocational Education

A Checklist of Estimated Action and Research Situations Related to Recommendations of the Panel of Consultants on Vocational Education, 1963

Action Taken

A - Fully Implemented
B - Partially Implemented
C - In Planning Stage
D - No Action

Research Situation

A - Model data/penetration
B - Adequate data/penetration
C - Little data/penetration
D - No data/penetration

	ACTION TAKEN				RESEARCH SITUATION			
	A	B	C	D	A	B	C	D
A. To improve and redirect vocational education in the high school--								
(1) Vocational education programs should be made available to more students in secondary schools								
(a) All high school students should have access to vocational education programs.								
(b) Programs should be developed for more occupations.								
(c) Youth with special talents or with special needs should be permitted to attend schools where these talents can be adequately trained and these needs properly met.								
(2) Specialized vocational schools should be provided in metropolitan centers and area vocational schools in other locations to provide a diversity of occupational training programs.								

Source: Education For A Changing World of Work, Report of the Panel 1933, U.S.O.E. publication 80021, Page 226-242

Addendum

Panel Recommendations for Improvements for Vocational Education - A Selected and Editorialized List:

To improve and redirect vocational education in the high schools--

1. Vocational education programs should be made available to more students in secondary schools.

   a. All high school students should have access to vocational education programs.

   b. Programs should be developed for more occupations.

   c. Youth with special talents or with special needs should be permitted to attend schools where these talents can be adequately trained and these needs properly met.

2. Specialized vocational schools should be provided in metropolitan centers and area vocational schools in other locations to provide a diversity of occupational training programs.

3. Quality standards should be maintained in vocational education programs.

   a. Students should be selected for specific education programs only when their aptitudes, interests, and achievements indicate they will be able to attain the required occupational skill.

   b. No person should be certified as having completed a program if his achievement does not make it possible for him to obtain and hold a job and advance to a better one.

   c. Followup studies should be conducted to determine the relevance of the educational program to job placement, the ability to hold a job and advance to a better one.

   d. The course content should be developed from an analysis of the occupation for which training is to be given and is subject to constant review.

   e. Continuous cooperation should be maintained with industry, labor, management, and public employment services to develop job specifications and employment opportunity data.

4. Basic vocationaleducation programs should be designed to provide education in skills and concepts common to clusters of closely related occupations. The curriculum should be derived from analyses of the common features of the occupations included; these students should later receive specialized or more advanced vocational training.

5. Changes should be made in existing programs to bring them more nearly into accord with present day needs:

a. Preemployment training programs should be developed for distributive occupations in addition to the present cooperative work-study programs.

b. Homemaking education should develop unique and more effective service to girls in disadvantaged families in large cities.

c. Standards should be developed to differentiate classes in business education which train for employment from those which train for personal use.

d. Vocational agricultural education should provide increased emphasis on management, finance, farm mechanization, conservation, transportation, processing, marketing, and similar topics.

e. The time scheduled for a course or curriculum should be determined on the basis of the needs of the occupations for which the programs are designed.

6. Attention should be given to developing such occupational fields as homemaking, service occupations, health occupations, technical occupations appropriate to the high school level, and expansion of cooperative work-study programs.

<u>To improve and redirect vocational education to serve youth with special needs--</u>

1. New occupationally oriented programs of vocational education should be added to the school curriculum for students who cannot profit from instruction in the traditional programs.

2. Cooperative (school-work) programs should be organized, so that the student may have the advantage of school experience coordinated with employment.

3. Diversity and flexibility should be the keynote of such programs, and instruction should be highly individualized in order to assure the occupational stability of such students.

4. Appropriate vocational guidance should be made available to each person, and each one trained and employed should be followed up to determine the value of training provided.

5. Specially trained teachers who understand disadvantaged youth and who are occupationally competent in the specialized vocational areas should be employed.

6. Experimental and pilot programs should be planned and conducted to develop practices to serve these students.

To improve and redirect vocational and technical education beyond the high school--

1. Vocational and technical education should be made available to more youth and adults by--

   a. Providing more vocational and technical curriculums for students who have completed or left high school and able to spend full time in improving their occupational competency.

   b. Providing schools which maintain a diversified curriculum and serve individuals without restrictions as to their place of residence.

2. Technical education should be emphasized, improved, and expanded by--

   a. Increasing programs designed to prepare individuals for useful employment in technical occupations requiring scientific or technical knowledge and skills.

3. Quality standards for vocational and technical education beyond the high school should be maintained. Special attention should be given to--

   a. Determining that there is a reasonable expectation of employment in the occupation for which the person is to be trained.

   b. Developing course content, determining the type and amount of equipment, and providing for the flexibility inherent in the newer employment fields.

   c. Placing those completing training and checking to see that their work performance is satisfactory.

To improve vocational education for out-of-school persons--

1. Training opportunities for out-of-school youth and adults should be expanded by--

   a. (1) Emphasis on retraining the unemployed.
      (2) Supporting unemployed individuals while they are undergoing training.
      (3) Permit employed or unemployed persons to be trained or retrained for employment.

   b. Increasing the number of occupations for which training is provided.

   c. Developing training centers in areas where vocatonal programs are not available.

   d. Providing programmed learning, itinerant instructors, traveling classrooms, and/or correspondence study where classes cannot be established but the need is justified.

2. Apprenticeship programs should be expanded and improved by--

   a. Encouraging apprenticeship training for both traditional and other occupations.

   b. Requiring well-organized related instruction for apprenticeships.

   c. Maintaining updated instruction materials and equipment.

   d. Using the joint apprenticeship committees, to work with the schools to develop policy, approve related instruction, and to evaluate these programs.

3. General education and vocational education leadership should be alerted to the importance of providing vocational education opportunities for employed and unemployed workers.

<u>To improve the selection, training, and retention of teachers--</u>

1. That vocational teachers be selected with the following qualities:

   a. Competence in the occupation which they will teach.

   b. Evidence of ability to influence the learner to be a skilled worker and a good citizen.

   c. Evidence of ability to teach and to complete a program to make them proficient as teachers.

2. That the inservice growth of vocational teachers be provided for by--

   a. Continuing the teacher training and supervisory activities of State departments of vocational education.

   b. Expanding the vocational teacher training activities in higher education institutions.

   c. Providing for regular seminars and improvement workshops for vocational teachers.

   d. Requiring that teachers maintain and upgrade their occupational skills.

3. That salary schedules for vocational education teachers be high enough to meet the salary conditions of the occupations from which these persons must be selected.

4. That the State board for vocational education evaluate the selection, training, supervision, and inservice growth of teachers in order to maintain a standard of excellence.

5. That institutions of higher education, and the vocational divisions of the State department of education, accept responsibility to train persons for vocational and technical teaching.

The production of instructional materials for vocational courses be recognized as vital--

1. One or more instructional material laboratories be established to produce and distribute vocational instructional materials.

   a. Programmed learning aids, visual aids, and newer methods of the presentation and use of materials should be considered in the production of instruction materials.

   b. All materials developed should be made available to private publishers for maximum distribution.

2. It be a responsibility of the U. S. Office of Education through the Division of Vocational and Technical Education to--

   a. Establish and administer instructional materials laboratories through contractual arrangements with a State department of education, a college, a university, or a large school district.

   b. Develop policies for the operation, coordination between centers, production of materials, and distribution of the materials produced.

   c. Finance the operation of these centers.

3. An adequate quantity and quality of supplies, tools, instruments, and equipment be recognized as essential to good instruction. Standards of evaluation should consider the quantity and quality of supplies, tools, instruments, and equipment available.

To make professional counseling services available--

1. That counseling services be made more effective by--

   a. Providing counseling services prior to age levels in which vocational training is offered.

   b. Providing professionally trained counselors who have had meaningful work experience in sufficient numbers to offer individual services to all students.

   c. Recognizing that certain groups of students need special counseling services--potential dropouts, minority groups, migrants.

   d. Maintaining adequate counseling facilities and sufficient occupational information.

   e. Developing industrial arts programs or exploratory experiences for students before it is necessary for them to make a choice of a vocational course.

2. That counselor training programs provide--

   a. Specific training for vocational counseling.

   b. Requirements of work experience for counselors.

3. That counseling services by public employment agencies and community agencies be correlated with counseling in vocational schools.

4. That an adequate staff to provide consultative service on occupational information and vocational guidance be maintained--

   a. In the U. S. Office of Education.

   b. In State departments of education

   c. These staffs to (1) develop, secure, and distribute occupational information; (2) to provide consultative services concerning the vocational aspect of guidance; and (3) to give leadership to the promotion of better vocational guidance and counseling.

5. That the Occupational Outlook material prepared by the U. S. Department of Labor be fully utilized in all phases of vocational counseling.

Every effort should be made to develop methods or accept changes to improve this educational service. To improve vocational education services--

1. The States and the Federal Government develop an adequate and standardized system of reporting.

   a. Information should be readily available to indicate enrollments by age, sex, year in school, year in training, occupation for which training is given, completions, placement by occupation, type of school, size of school, size of community, etc.

   b. Financial reports should make it possible to determine unit costs, source of funds, and classification of expenditures.

   c. Similar information should be available concerning teachers, supervision, instructional materials, and any research or experimental projects.

2. Extensive research and program development be performed where adequate facilities and research personnel are located or can be assembled. Such centers would usually be located at universities. Developmental projects will more often be located in local school districts. These activities can only be performed where persons are knowledgeable concerning research methods and have facilities for proper control and evaluation of the activities under study.

3. Research be encouraged, initiated, and coordinated at the national level. The results of research and development should be made available on a nationwide basis. An effort should be made to prevent duplication or extensive overlapping of research efforts.

4. The local school district, the State, and the Federal Government each maintain a plan for evaluation.