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IDENTIFIERS Illinois

ABSTRACT

This report contains a nine-page narrative and related materials of an Illinois project to address the problem of preparing vocational education personnel to modify the learning environment for the physically disabled. These Phase I activities are reported: (1) establishment of an advisory committee, (2) selection of project staff, (3) design of project-monitoring and -evaluating system, (4) evaluation and monitoring of the project, (5) review of literature regarding access to vocational education, (6) onsite visitations to exemplary programs, (7) development of a procedure for identification of barriers (based on Accessibility Decision-Making Models), (8) development of a system to assess capabilities and limitations of disabled, (9) development of adaptive aids and devices, (10) development of a handbook. Appendixes include the project-monitoring evaluation report; listing of resources and references; list of exemplary projects contacted; accessibility decision-making models and description; building evaluation form for accessibility for the handicapped; a brief note on assessment of the physically disabled; adaptive aids, devices, and technology; and table of contents of Accessibility to Laboratories and Equipment for the Physically Disabled: A Handbook for Vocational Education Personnel. (YLB)

SURMOUNTING ARCHITECTURAL BARRIERS TO THE HANDICAPPED IN VOCATIONAL EDUCATION

PHASE I

PROJECT FINAL REPORT

JUNE 30, 1980

Department of Industry and Technology

College of Professional Studies

Northern Illinois University

De Kalb, Illinois 60115

Thomas L. Erekson, Project Director

Conard L. White, Assistant Project Director

The research and development activities reported in this document were performed under a contract with the Illinois Board of Education, Department of Adult, Vocational and Technical Education, and the Department of Industry and Technology, College of Professional Studies, Northern Illinois University. The opinions and conclusions expressed in this final report do not reflect, nor should they be construed as policy or opinion of the Illinois State Board of Education or its staff.

Contract number: R-32-10-X-0434-399

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Surmounting Architectural Barriers to the Handicapped in Vocational Education

Introduction

Recent federal and state laws have mandated access for physically disabled students to vocational education programs. However, a vast majority of vocational education personnel have not had any preparation in modifying the learning environment for physically disabled students.

This project was initiated to address the problem of preparing vocational education personnel to modify the learning environment for the physically disabled. The following major objectives were identified for Phase I of the project.

1. To develop a checklist for determining architectural and instructional barriers common to vocational education.

2. To develop a system to assess the physical capabilities and limitations of the handicapped, to be used by vocational teachers in developing instructional programs for handicapped students.

3. To design, develop, test, and evaluate various adaptive aids and devices that make vocational labs, equipment, and work stations accessible to and useable by the handicapped, for the purpose of demonstrating common sense solutions for use by vocational teachers in making their programs accessible to the handicapped.

4. To develop a handbook describing techniques and aids for teaching the physically handicapped in vocational education, and to produce the project final report.

There were several activities identified to fulfill the major objectives. The following activities were the major procedures implemented to complete Phase I of the project.

1. Establish an advisory committee and review the literature pertaining to making vocational education accessible.

2. Visit exemplary programs where the handicapped have been provided an accessible vocational education.

3. Develop a procedure for identifying barriers to the handicapped and a system to assess the capabilities of the handicapped student.

4. Develop and test various adaptive adis and devices that will make vocational education labs and equipment accessible to the handicapped.

5. Compile and develop a handbook for making vocational education labs and programs accessible to the handicapped.

Project Activities

The research and development activities for Phase I of this project can best be reported by describing the activities for each procedure identified in the project proposal.

1. Establish Project Advisory Committee

The project advisory committee was established immediately after confirmation of funding in late April, 1980. The individuals selected to serve on this committee included representation from the following populations:

1. Each of the five occupational clusters
2. Comprehensive High School teachers
3. Area Vocational Center teachers
4. Community College teachers
5. University Teacher Educators
6. Special Education personnel
7. Vocational Education Administrators
8. Physically disabled persons
9. Parents of the physically disabled

This committee met at the start of the project to advise the project staff with regards to plans, resources, and products. Also, each committee member consulted with the project staff on an individual basis. This provided in-depth information about accessibility concerns and problems for most areas of vocational education.

The advisory committee reviewed and evaluated the handbook that was developed by the project staff. This review was completed prior to printing copies for field testing in Phase II of the project. (See Appendix A for a listing of the members of the project advisory committee.)

2. Select and Employ Project Staff

Staff for the project was selected and employed. This included supportive personnel and consultants. (See Appendix B for a listing of the project staff.)

3. Design Project Monitoring and Evaluating System

The monitoring and evaluating system was an internal system that specified certain expectancies and how their attainment will be judged. Due to time constraints, this system centered around the twelve major procedures/tasks of the project.

4. Evaluate and Monitor Project

The project was monitored and evaluated internally by the project director in accordance with the plan developed. (See Appendix C for evaluation report.)

5. Review of Literature - Accessible Vocational Education

An extensive review of the literature regarding access to vocational education was completed. This included reviewing the current literature from special education, vocational rehabilitation, and vocational

education to find techniques, aids, devices, etc., for effective vocational programming for the physically handicapped. (See Appendix D for a listing of major references and resources.)

6. On-Site Visitations to Exemplary Programs

Exemplary programs where the physically disabled had access to vocational education were identified by the project advisory committee, other contacts in special education, and through the review of the literature. These programs were visited by the project staff to observe first hand successful ways and means for making vocational education labs and equipment accessible. These visitations were extremely valuable in providing information and resources for the compilation of the handbook. (See Appendix E for a listing of programs visited and/or contacted.)

7. Development of a Procedure for the Identification of Barriers

The procedures and criteria for the identification of barriers to vocational education labs and equipment for the physically disabled were developed centering around the Accessibility Decision-Making Models (figure I-1). These models were developed by the project staff after reviewing the literature and consulting with the project advisory committee. (See Appendix F for a description of the models.)

In addition to the accessibility decision-making models, there were several checklists available to determine if a building complies with the codes and standards for accessibility. The Capital Development Board of the State of Illinois has prepared an accessibility checklist that coincides with the Illinois standard for access. It is recommended that this form, AC-1, be utilized to identify barriers to the physically disabled. (See Appendix G for a copy of form AC-1.)

8. Develop an Assessment System

A system to assess the capabilities and limitations of the physically disabled was investigated. Assessment includes both "formal" in-depth evaluation completed by a trained specialist and "informal" teacher-made assessment. Formal assessment includes validated psychometric tests and work samples. Informal assessment includes teacher-made paper and pencil tests, work-sample performance experiences, and interviews. Examples of teacher-made assessment instruments and procedures for establishing an assessment system are described in A Handbook for the Identification, Assessment and Evaluation of the Special Needs Learner in Vocational Education, Albright, et. al., 1978. (See Appendix H.)

9. Develop and Test Adaptive Aids and Devices

Various adaptive aids and devices were constructed and evaluated by the project staff. The intent was to have these aids tested by physically disabled students in vocational education labs. This was not possible because the funding contract was approved too close to the end of the school year. This did not allow enough time to design and construct aids and then test them in the public schools. However, several aids were designed, constructed, and evaluated by the project staff.

In addition to designing aids and devices that could be constructed "in house," commercially developed aids and devices were sought and evaluated. The project staff found several "new technology" items that make the disabled student more mobile and autonomous in the school setting. (See Appendix I for a listing of adaptive aids and new technology constructed and/or evaluated by the project staff.)

10. Develop a Handbook for Making Vocational Education Accessible

A handbook that describes the techniques and procedures for making vocational education labs and equipment accessible to the physically disabled was developed by the project staff. The handbook includes several sections that are designed to guide vocational education personnel in modifying the learning environment for the physically disabled. The handbook was evaluated by the project advisory committee and other persons involved in vocational education and/or special education. The handbook is currently undergoing final revisions preparatory to duplication for field testing in Phase II of the project. (See Appendix J for a listing of the major sections of the handbook.)

11. Duplicate Handbooks

After final revisions and approval by DAVTE, 100 copies of the handbook will be duplicated for use in Phase II field testing.

12. Prepare and Duplicate Final Reports

This final report was completed and twenty copies were duplicated and delivered to DAVTE.

Potential Impact

The ultimate impact and benefit of this project will be for physically disabled individuals who are provided increased access to vocational education programs of their choice. This will be accomplished by disseminating the materials developed and inservicing vocational education and special education personnel. Phase II of this project is intended to

accomplish these activities to increase vocational education opportunities for the physically handicapped. Measures of impact on vocational education teachers, special education teachers, physically disabled students, guidance personnel, school administrators, and teacher educators will be reported as part of the Phase II fianl report.

Problems

Most research and development projects are not immune to unforseen problems. This project was no exception as several problems surfaced during the operation of the project.

1. Funding Contract/Time-Frame

The project was originally proposed to run for five and one half months (January 15, 1980 - June 30, 1980). Due to circumstances beyond the control of the project director and the contract officer, the funding agreement was not approved until April 3, 1980. In addition to the late approval date, the contract was not received by Northern Illinois University until late in the month of April, 1980. Establishing a university account, hiring personnel, obtaining materials and supplies, etc. took valuable time at a critical stage of the project. This impacted all aspects of the project. However, the extra efforts and willingness of the project staff have compensated for most of these impacts. Also the willing and understanding cooperation by the funding agency, DAVTE, has been most helpful.

Phase II of the project has been approved for funding, university accounts have been established and it appears that Phase II will proceed without impact from this problem.

2. Project Personnel

The personnel hired for the project were very skilled and helpful in the completion of the project. However, when the proposal was written, the project director had intended to utilize additional personnel resources at Northern Illinois University. This additional assistance was to come from students enrolled in undergraduate courses in Industrial Design (IN&T 213). These students were to be given a major design problem in the area of equipment modification and/or use by the physically disabled. The intent was to have several ideas presented and/or developed to be suggestive of aids that could be constructed to make equipment accessible. However, because of the late date of the funding agreement approval, this activity was not feasible to initiate during the spring semester. Plans for phase II do include utilizing this resource.

3. Handbook Development/Duplication

The development of the handbook required more time than the three months allowed in the funding agreement. Collecting data, developing aids and devices, reviewing the literature, finding "new" technology, preparing illustrations, writing, and refining a handbook requires a great deal of time. This activity has had to exceed the time-frame of the funding agreement. However, final revisions and duplication should be accomplished by September 15, 1980. This will not hinder the field testing and evaluation to be completed during the fall of 1980 as a part of Phase II of the project.

Conclusions

Several conclusions have been made based upon the review of the literature, the visitations to the exemplary programs, and the development of the handbook. They are:

1. Information about making vocational education labs and equipment accessible to the physically disabled is needed by vocational education and special education personnel.
2. Accessibility information needs to be presented in a usable format and disseminated to vocational education and special education personnel.
3. Vocational education personnel are willing to involve physically disabled students in vocational education programs after they are informed about means and methods for modifying the learning environment.
4. The handbook developed in this project needs to be field tested.

Recommendations

Based upon the conclusions presented above, the following recommendations are made:

1. Phase II of this project should be initiated and completed. This includes field testing the handbook, disseminating the handbook, and providing inservice activities for vocational education and special education personnel.

APPENDIX A

Project Advisory Committee

Project Advisory Committee

Shirley M. Asher
Director, Rockford School of Practical
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Rockford Area Vocational Center
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Steven M. Hardy
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Maine East High School
Park Ridge, Illinois

Linda Murphey
Associate Director
NW Illinois Career Education Service Center
De Kalb, Illinois

Eldon Myers
Farm Management Instructor
Kishwaukee Community College
Malta, Illinois

Ellen Powel
Department of Nursing
College of Lake County
Grayslake, Illinois

Jerry Schutter
Industrial Arts Therapist
Blind Rehabilitation Center
Hines Veterans Hospital
Maywood, Illinois

APPENDIX B

Project Staff

Project Staff

Project Director:	Thomas L. Erekson
Assistant Project Director:	Conard L. White
Research Associates:	Gary E. Lintereur
	Roger W. Cliffe
Graduate Assistants:	Mark Scheldrup
	Mark Nelson
Undergraduate Assistants:	William Halfpenny
	Janet Applehoff
	Cynthia Romanchek
	Betsy Hoppin
Graphics/Printing Consultant:	David C. Morris
Secretaries:	Margret Heerman
	Loveda Paulus
Writing Consultants:	Steven Hardy
	Ellen Powel

APPENDIX C

Project Monitoring Evaluation Report

Project Evaluation

The proposal for this project indicated that three types/forms of evaluation would be employed. These included a). Program Management Objectives, b). Evaluation of Project Objectives, and c). Evaluation of Products Produced. Each of these three evaluations were employed and reported as follows.

a). Program Management Objectives

Due to the condensed time-frame for the project, the Program Management Objectives utilized for project monitoring were the twelve major procedures described in the project proposal. The extent to which each was accomplished is reported in the main body of this document.

The only major deviation from the proposed procedures was the unavailability of physically disabled students to test the aids and devices constructed to increase access. These students were unavailable because the public school year was ending as the aids were being constructed. This should not greatly hinder the project as Phase II includes field testing of the handbook and devices.

b). Evaluation of Project Objectives

The objectives for this project were evaluated by the advisory committee to determine their appropriateness. This was one of the major activities at the first advisory committee meeting. The advisory committee strongly supported the objectives for both Phase I and Phase II of the project. The feeling was that the Phase I objectives (listed

on page 1 of this document) were excellent and the products produced were greatly needed by vocational education teachers. After reviewing the objectives for Phase II (field testing and dissemination) the committee indicated even stronger support for the project objectives. They indicated a need for project information to be disseminated for use in both pre-service and in-service vocational teacher education.

A second aspect of evaluation of the project objectives was to determine the extent to which each has met the objectives for the project. The results can be found in this final report and in the handbook.

Objective 1: See Appendix F and Appendix G

Objective 2: See Appendix H

Objective 3: See Appendix I

Objective 4: See Appendix J

c). Evaluation of the Products Produced

The products produced by this project are being evaluated by the project advisory committee. Their written evaluations are not completed at this time. They will be included as part of the overall evaluation and refinement prior to duplication in Phase II of this project and the reactions will be included in the Phase II final report.

APPENDIX D

Resources and References

Materials in Print

Aiello, B. Places and Spaces: Facilities Planning for Handicapped Children. Reston, Virginia: Council for Exceptional Children, 1920 Association Drive, 1976. (ERIC reference: ED 123 838).

Albright, L., Fabac, J., and Evans, R. A System for the Identification, Assessment and Evaluation of the Special Needs Learner in Vocational Education. Champaign, Illinois: Bureau of Educational Research, College of Education, University of Illinois, 1978 (Available through Curriculum Publications Clearinghouse, 47 Horrabin Hall, Western Illinois University, Macomb, Illinois 61455).

ANSI A117.1 Making Buildings and Facilities Accessible to and Usable by the Physically Handicapped. New York, New York: American National Standards Institute, Inc., 1430 Broadway.

Barrier-Free Site Design. Washington, D.C.: U.S. Department of Housing and Urban Development, Office of Policy Development and Research, 1977. (ERIC Reference: ED 173 984)

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Chasin, J. Home in a Wheelchair: House Design Ideas for Easier Wheelchair Living. Bethesda, Maryland: Paralyzed Veterans of America, 4330 East-West Highway, 1977 ($2.50) (ERIC Reference: ED 150 795).

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Gugerty, J.J. et. al. Tools, Equipment and Machinery Adapted for the Vocational Education and Employment of Handicapped People. Madison, Wisconsin: Wisconsin Vocational Studies Center, University of Wisconsin, 1980.

Jones, M.A. Accessibility Standards Illustrated. Springfield, Illinois: Capital Development Board of the State of Illinois, June, 1978, ($3.00) Third Floor, W.G. Stratton Building, 401 South Spring Street, (ERIC Reference: ED 163 738).

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Kliment, S.A. Into the Mainstream: A Syllabus for a Barrier-Free Environment. Washington, D.C.: U.S. Government Printing Office, 1976.

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Mobile Homes - Alternative Housing for the Handicapped. Washington, D.C.: U.S. Department of Housing and Urban Development, Office of Policy Development and Research, 1977.

Mullins, J.B. A Teacher's Guide to Management of Physically Handicapped Students. Springfield, Illinois: Charles C. Thomas, Co., 1979.

Physically Handicapped--Adaptive Aids and Equipment/Communication Systems/Architectural Design: A Selected Bibliography. Reston, Virginia: Council for Exceptional Children, Exceptional Child Bibliography Series Number 655.

Schwartz, S.E. Architectural Considerations for a Barrier Free Environment. Gainesville, Florida: College of Education, University of Florida, 1977 (ERIC Reference: ED 153 048).

Steinfeld, E. Barrier-Free Access to the Man-Made Environment - A Review of Current Literature. Syracuse, New York: Syracuse University School of Architecture, October, 1975. (ERIC Reference: ED 123 855).

Tica, P.L. & Shaw, J.A. Barrier-Free Design: Accessibility for the Handicapped. New York, New York: Institute for Research and Development in Occupational Education, The Graduate School and University Center, City University of New York, September, 1974. (ERIC Reference: ED 108 452).

Tindall, L.W. et. al. Puzzled About Educating Special Needs Students? A Handbook for Modifying Vocational Curricula for Handicapped Students. Madison, Wisconsin: Wisconsin Vocational Studies Center, University of Wisconsin, 1980.

Trotter, C.E. Planning Facilities for Physically Handicapped Children: Fifth Annual Conference. Knoxville, Tennessee: The School Planning Laboratory, University of Tennessee, 1974 (ERIC Reference: ED 102 763).

Wachter, P., Lorence, J., and Lai, E. Urban Wheelchair Use - A Humen Factors Analysis. Chicago, Illinois: Access Chicago, Rehabilitation Institute of Chicago, 345 East Superiro Street, 1976.

Yater, V.V. Mainstreaming of Children With a Hearing Loss. Springfield, Illinois: Charles C. Thomas, Co., 1977.

Organizations

Alexander Graham Bell Association for the Deaf, Inc.
3417 Volta Place N.W.
Washington, D.C. 20007
(202) 337-5220

American Council of the Blind, Inc.
501 North Douglas Avenue,
Oaklahoma City, OK 73106
(405) 232-4644

American Diabetes Association, Inc.
1 West 48th Street
New York, NY 10020
(212) 541-4310

American Foundation for the Blind
15 West 16th Street
New York, NY 10011
(212) 924-0420

American Printing House for the Blind
P.O. Box 6085
1839 Frankfort Ave.
Louisville, KY 40206
(502) 895-2405

Architectural and Transportation Barriers Compliance Board
Mary E. Switzer Building, Rm. 1010
330 C. Street, S.W.
Washington, DC 20201
Public Information Office (202) 245-1591

Association for Education of the Visually Handicapped
919 Walnut Street
Philadelphia, PA 19107
(215) 923-7555

Council for Exceptional Children
1920 Association Drive
Reston, VA 22091
(703) 620-3660 (800) 336-3728

Epilepsy Foundation of America
1828 L Street, N.W. Suite 406
Washington, DC 20036
Advocacy and Client Referral (202) 293-2930

Materials Development Center
Stout Vocational Rehabilitation Institute
University of Wisconsin - Stout
Menomonie, WI 54751
MDC Information Service (715) 232-1342

Muscular Dystrophy Association, Inc.
810 7th Avenue
New York, NY 10019
Director of Patient and Community Services
(212) 586-0808

National Amputation Foundation, Inc.
12-45 150th Street
Whitestone, NY 11357
Executive Secretary (202) 767-0596

National Association for Visually Handicapped
305 East 24th Street, 17-C
New York, NY
(212) 889-3141

National Association of the Deaf
814 Thayer Avenue
Silver Spring MD 20910
Public Information Officer (302) 587-1788

National Association of the Physically Handicapped, Inc.
76 Elm Street
London, OH 43140

National Center for a Barrier Free Environment
8401 Connecticut Avenue N.W.
Washington, DC 20015
(703) 620-2731

National Center for Law and the Handicapped, Inc.
1235 North Eddy Street
South Bend, IN 46617
(219) 288-4751

National Center, Educational Media and Materials for the Handicapped (NCEMMH)
Ohio State University
Columbus, OH 43210
(614) 422-7596

National Easter Seal Society for Crippled Children and Adults
2023 West Ogden Avenue
Chicago, IL 60612
Information Center (312) 243-8400

National Federation of the Blind
218 Randolph Hotel Building
Des Moines, IA 50309
(515) 243-3169

National Foundation--March of Dimes
1275 Mamaroneck Avenue
White Plains, NY 10605
(914) 428-7100

National Institute for Rehabilitation Engineering
97 Decker Road
Butler, NJ 07405
Technical Director (201) 838-2500

National Multiple Sclerosis Society
205 East 42nd Street
New York, NY 10017
(212) 532-30[redacted]

National Paraplegia Foundation
333 North Michigan Avenue
Chicago, IL 60601
(312) 346-4779

National Society for the Prevention of Blindness, Inc.
79 Madison Avenue
New York, NY 10016
Information and Referral Specialist
(212) 684-3505

President's Committee on Employment of the Handicapped
Washington, DC 20210
Office of Information
(202) 653-5010

Recording for the Blind, Inc.
215 East 58th Street
New York, NY 10022
Circulation Department (212) 751-0860

St. Paul Technical Vocational Institute
235 Marshall Avenue
St. Paul, MN 55102
Program for Deaf Students
(612) 227-9121

Spina Bifida Association of America
343 South Dearborn, Suite 319
Chicago, IL 60614
Information and Referral Department
(312) 663-1562

United Cerebral Palsy Associations, Inc.
66 East 34th Street
New York, NY 10016
Director of Program Services
(212) 481-6350

Equipment Suppliers

American Foundation for the Blind
15 West 16th Street
New York, NY 10011
(212) 924-0420

Fred Samons, Inc.
Box 32
Brookfield, IL 60513

R. J. Mobility Systems and Conversion Specialists
715 South 5th Avenue
Maywood, IL 60153

Telesensory Systems, Inc.
3408 Hillview Avenue
Palo Alto, CA 94304
(415) 493-2626
- Dave Witter, Midwest Representative
1624 Timber Trail
Wheaton, IL 60187

Typewriting Institute for the Handicapped
3102 West Augusta Avenue
Phoenix, AZ 95021

Communications Center for the Disabled
225 W. Randolph St. HQ IE
Chicago, IL 60606

APPENDIX E

Exemplary Programs Contacted

Programs Visited/Contacted

State Schools

1. Illinois School for the Deaf
   Jacksonville, Illinois

2. Illinois School for the Visually Impaired
   Jacksonville, Illinois

3. Missouri School for the Visually Impaired
   St. Louis, Missouri

4. Wisconsin School for the Visually Impaired
   Janesville, Wisconsin

Local Educational Agencies

1. Hinsdale South High School
   Program for Hearing Impaired
   Clarendon Hills, Illinois

2. Rockford Area Vocational Center
   Rockford, Illinois

3. Indian Valley Vocational Center
   Sandwich, Illinois

4. DeKalb High School
   DeKalb, Illinois

5. Sterling High School/Whiteside Area Vocational Center
   Sterling, Illinois

6. Maine East High School
   Park Ridge, Illinois

7. Kishwaukee Community College
   Malta, Illinois

8. College of Lake County
   Grayslake, Illinois

9. Waubonsee Community College
   Sugar Grove, Illinois

10. Northwestern Illinois Association for Special Education
    DeKalb, Illinois

11. DeKalb County Special Education District
    DeKalb, Illinois

12. Special Education District of Lake County

Hospitals

1. Edward Hines Veterans Administration Hospital
   Maywood, Illinois

2. Illinois Children's Hospital School
   Chicago, Illinois

Universities

1. Program for Hearing Impaired
   Northern Illinois University
   DeKalb, Illinois

2. Department of Special Education
   Northern Illinois University
   DeKalb, Illinois

3. Department of Special Education
   Chicago State University
   Chicago, Illinois

4. Department of Agriculture and
   Industrial Education
   Montana State University
   Bozeman, Montana

5. Material Development Center
   University of Wisconsin-Stout
   Menomonee, Wisconsin

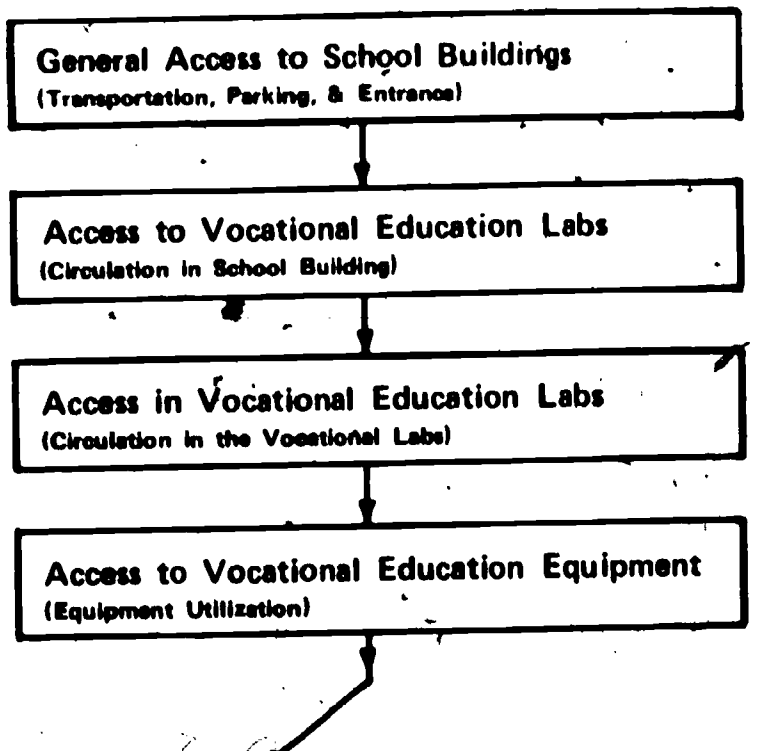
6. Wisconsin Vocational Studies Center
   University of Wisconsin-Madison
   Madison, Wisconsin

APPENDIX F

Accessibility Decision-Making Models

ACCESSIBILITY TO VOCATIONAL EDUCATION LABS & EQUIPMENT: MODELS FOR DECISION-MAKING

ACCESSIBILITY TO LABS:



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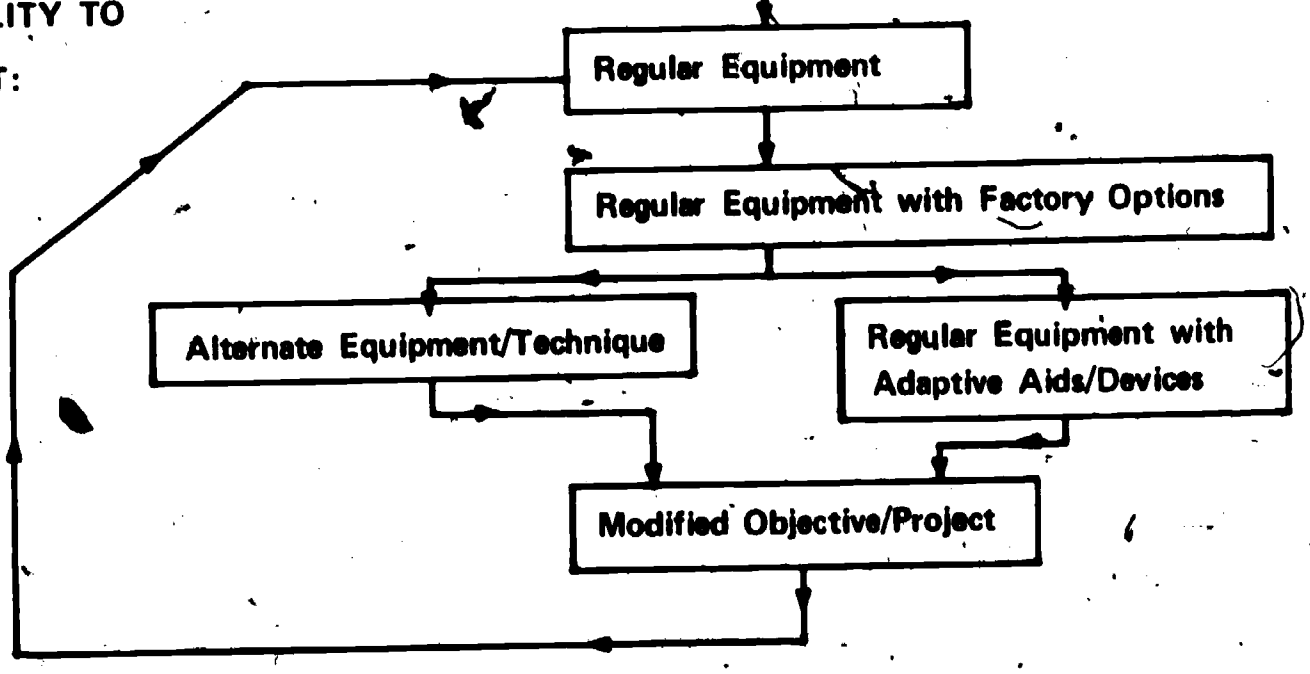

Figure I-1

DESCRIPTION OF THE ACCESSIBILITY DECISION-MAKING MODEL

The Accessibility Decision-Making Model (figure 1) is presented to depict the logical sequence of steps necessary to make vocational education labs and equipment accessible to the physically handicapped. Because of the wide range of differences throughout Illinois in vocational programs, school physical plants, disabling conditions of students, etc., the model allows for transportability and application to various educational settings.

The following brief descriptions of each level of the model are intended to present a general overview. Other sections of the handbook provide more detailed information about the various levels of the model.

General Access to School Buildings

The physically disabled student cannot have access to vocational education if he/she does not have access or entrance to the school building that houses vocational laboratories and the other related classrooms and facilities. Therefore, the first step in the Accessibility Model is to identify and eliminate barriers in transportation to school, parking, exterior walks and ramps, and exterior entrances. See section IV for detailed information about general access barriers and methods to identify and eliminate them.

Access to Vocational Education Labs

After the disabled student has access and entrance to the school buildings, the next consideration in the model is interior circulation. The question is "can the disabled student get to the vocational education laboratories?" Access in the school building to these labs, if they are on the second floor (or more likely in the basement) may require an elevator,

a ramp, a chairlift, or some other procedure for mobility. Other related concerns for interior circulation include accessible lavatories, drinking fountains, cafeterias, auditoriums, etc. See section IV for detailed information about interior circulation barriers and methods of identifying and eliminating them.

Access in Vocational Education Laboratories

After providing the disabled student with access to the vocational lab, the next consideration is entrance to and access within the lab. To gain entrance, the doorway must have a 32" minimum clear opening. Once inside the lab, several factors such as aisle width, accessible work stations, visual and sound warning devices (i.e., fire alarms), accessible lockers, etc. must be considered. The placement of desks, tables, and/or equipment, is critical for access in many instances. "Safe aisles" must allow mobility for visually impaired students and must be wide enough to allow for wheelchairs. See section V for detailed information about lab layout to eliminate these barriers.

Access to Vocational Education Equipment

Once the disabled student has gained entrance to the lab and mobility throughout it, the next consideration is lab equipment. Access to equipment is depicted graphically in the lower part of figure 1. It starts by having the disabled student use the regular equipment in the lab. Use of regular equipment where possible is very important because it is "regular" equipment that will be available in business and industry where the disabled student will be employed. However, there are some pieces of equipment that cannot be reached and/or used safely by some disabled students.

There are in reality two options to be considered in solving this problem: (1) modify the disabled students so they can use regular equipment, or (2) modify the equipment.

There are several recent technological advances which can increase disabled students' mobility and ability to use "regular" equipment and furnishings in vocational labs. The implications of these "new technology" items should be considered before making equipment modifications, since some modifications may restrict use by the able-bodied student. Of course, the cost of new technology may be prohibitive for a local educational agency. In such cases, the equipment will need to be modified in some way for some disabled students to participate in a vocational program.

The first level of modification should be a factory option since factory options to regular equipment will be more readily available for use in employment, and since they do not hinder the able-bodied student. Examples of factory options include a flashing light instead of the return bell on a typewriter for use by the deaf, or a light on a band saw to illuminate the cutting surface for the low vision student.

If there are no factory options available that will make certain types of equipment accessible, then two alternatives are suggested for consideration. First, the teacher might construct some type of adaptive aid or device to make regular equipment accessible. Examples include some type of jig or fixture to hold the material being worked, or perhaps a ramp and platforms to raise the wheelchair student to a desirable height.

The second option is to use an alternate piece of equipment i.e., a smaller version or a different piece of equipment--to achieve the same results. For example, a router and router table could be used instead of a shaper, or a portable sabre saw instead of a band saw.

If neither of these options can be used to make the equipment accessible, the next step is to review the specific objectives and reasons for requiring the use of the specific piece of equipment. Perhaps the objective needs to be modified. For example, in an auto body program, there might be an objective stating that each student will paint a complete car. It would be difficult for a parapalegic to paint the top of the car. Therefore, if the objective were modified to indicate that all students would be able to paint a complete product, the parapalegic student could paint small items, such as motorcycles, to learn the competencies of auto painting. To do this, the student could use regular equipment and therefore would have access to the vocational program. See section VI for detailed information about making equipment accessible.

APPENDIX G

Building Evaluation Form for Accessibility for the Handicapped

FOR
ACCESSIBILITY FOR THE HANDICAPPED

NAME OF BUILDING _____ CDB PROJECT NO. _____

STREET ADDRESS _____ CITY _____

EVALUATOR _____ % REVIEW _____ DATE _____

STD. REF.	ITEM	YES	NO	CODE	REMARKS
3.6	**PARKING**				
3.6.9 3.6.2	1. Are there designated and marked accessible stalls close to building?			1	
3.6.4	a. If yes, are the stalls a min. 12'-6" wide or 20'-6" for 2 adjacent stalls?			2	
3.6.5	b. If yes, is there a min. of 2 or 2% of total up to 400 or 8 + 1% of total over 400?			3	
3.2.2 3.2.3	2. Is the parking area surface firm and smooth?			4	
3.2	**EXTERIOR WALKS AND RAMPS**				
3.1.1	1. Is there a walk from parking area to the major entrance?			5	
3.2.1	a. If yes, it is a minimum of 5'-0" wide?			6	
3.2.2	b. If yes, is it free of curbs or if curbs exist are there curb ramps?			7	
3.2.4	2. Do all slopes have a rise of less than 1-20?			8	
6.1.5	a. If no, do any rise more than 9"?			9	
6.1.1	b. If no, do they have level rest areas according to Section 6.1.1?			10	
6.3	c. If yes to 2a, are there handrails according to Section 6.3?			11	
3.2.6	3. Are all cross slopes less than 1-50?			12	
3.2.2	4. Are the surfaces of all walks and ramps firm and smooth?			13	
3.2.9	5. Is the path area free of hazards or are the hazards identifiable?			14	
3.2.8	6. Are they level at doors and do they extend a min. of 1'-6" past pull side of door?			15	
3.2.7	7. Are they free of gratings or if gratings exist, are the slots 3/8" or less in width and in the direction of travel?			16	
4.1	**DOORS**				
4.1.3	1. Do all entry, exit and passage doors have a minimum clear opening width of 2'-8"?			17	
4.1.5	2. Is the space between doors in series a min. of 4'-0" plus the width of one door?			18	
4.1.5	3. Do both doors in series open in same direction?			19	
4.1.1	4. Is the floor level a distance of 4'-0" or more on push side of door?			20	
4.1.1	5. Is the floor level a distance of 5'-0" or more on pull side of door?			21	

STD. REF.	ITEM	YES	NO	CODE	REMARKS
4.1.1	6. Are walls on pull side of doors at least 1'-6" from jamb?			22	
4.1.12	7. Is the bottom rail of all doors a minimum of 10" high?			23	
4.1.10	8. Are all thresholds a maximum ½" high or less?			24	
4.2.1	9. Is all opening hardware mounted 3'-0" to 3'-8" high?			25	
4.2.8	10. Is hardware knurled or have applied abrasive on fire exits, emergency, and doors to hazardous areas?			26	
5.1 —	INTERIOR CIRCULATION				
5.1.4	1. Do all corridors have a clear path 5'-0" wide or more?			27	
5.1.6	2. Do all corridors have a clear height of 7'-6" or more?			28	
5.1.1	3. Is there access to all areas without stairs, ramps or elevators?			29	
	4. If no to 3, are there stairs? If yes to this, answer the following:			30	
6.2.1	a. Are the risers 7" or less?			31	
6.2.1	b. Are the treads a minimum of 11" wide?			32	
6.2.3	c. Are the risers free of square edged nosings?			33	
6.2.6	d. Are there handrails 2'-6" to 2'-10" high and at 2'-0" if school is elementary?			34	
6.2.6	e. Does the handrail extend 1'-0" past the top and 1'-0" + one tread past bottom?			35	
6.3.7	f. Is there a tactile star on top of railing at main exit?			36	
6.2.10	g. Is there a barrier under bottom flight of stairs if occurring in a circulation path?			37	
	5. If no to 3, are there ramps? If yes to this, answer the following:			38	
6.1.1	a. Are any slopes greater than 1-20?			39	
6.1.5	b. Do ramps that rise more than 9" have handrails on both sides?			40	
6.1.5	c. Are the handrails 2'-6" to 2'-10" high and at 2'-0" if school is elementary?			41	
6.1.6	d. Does the maximum rise of slopes comply with Table 6.1.1?			42	
	6. If no to No. 3, is there an elevator? If yes to this, answer the following:			43	
7.1.10	a. Is the door and cab accessible?			44	
7.1.6	b. Are there visual and audible signals: Up — white, one ring; Down — red, two rings?			45	
7.1.5	c. Is call button maximum 3'-6" above floor?			46	

STD. REF.	ITEM	YES	NO	CODE	REMARKS
7.1.4	d. Is there tactile floor designation on each jamb?			47	
7.1.14	e. Are controls mounted with highest button max. 4'-6" above floor and emergency button max. 2'-11" above floor?			48	
7.1.17	f. Is there an emergency telephone mounted in cab, max. 4'-0" above floor?			49	
7.1.15	g. Are there car position indicators?			50	
7.1.14	h. Are there tactile floor numbers beside floor buttons?			51	
7.1.16	i. Are there handrails on side walls of cab 2'-6" to 2'-8" high?			52	
6.3.9	7. Is there any unenclosed floor opening, landing, or balcony? If yes, answer following:			53	
6.3.9	a. Do unenclosed floor openings or landings have a guard rail 3'-6" min. height?			54	
6.3.9 a	b. Do balconies have a guardrail minimum 2'-2" high?			55	
8.1	TOILET ROOMS				
8.1.7	1. Is there at least one stall in each restroom 5'-0" x 5'-0" (Fig. 8.1.7) or 3'-0" wide (page 166)?			56	
8.1.9	2. Is there min. 2'-6" clearance under lavatory with water supply insulated if water above 105 degrees F.?			57	
8.1.10	3. Does lavatory have faucet that is operated by lever action?			58	
8.1.12	4. Is there one urinal in each men's room with elongated lip max. 1'-5" above floor?			59	
8.1.13	5. Is the bottom edge of one mirror maximum 3'-2" above floor?			60	
8.1.14	6. Are all dispensers mounted maximum 3'-4" above floor to highest operable part?			61	
9.1	DRINKING FOUNTAINS				
9.1.1	1. Are there drinking fountains in accessible areas?			62	
9.1.2	2. Is the orifice max. 3'-0" high or max. 2'-6" if school is elementary?			63	
9.1.4	3. Does the control have lever action to operate?			64	
10.1	SHOWER ROOMS				
	1. Are showers provided? If yes, answer the following:			65	
10.1.1	a. Is there one stall min. 3'-0" x 3'-0" according to figure 10.1.1 for each sex?			66	
10.1.2	b. Are gang showers available without curbs?			67	
10.1.4	c. Are water controls single lever?			68	
10.1.6	d. Are soap dispensers mounted a max. 3'-4" above floor?			69	
10.1.5	e. Is the max. water temp. 105 degrees F. or less?			70	

STD. REF.	ITEM	YES	NO	CODE	REMARKS
12.1	**SIGNAGE**				
12.1.1	1. Are tactile signs provided for room use, corridor and location identification?			71	
12.2	**EMERGENCY WARNING SIGNALS AND ALARMS**				
12.2.1	1. Are both visual and audible signals and alarms provided?			72	
12.2.5	2. Are fire alarm activating controls mounted between 3'-4" and 4'-0" above floor?			73	
11.1	**TELEPHONES**				
11.1.1	1. Is highest operable part max. 4'-6" high with side access, 4'-0" high with front access.			74	
15.1	**APPLIANCES**				
15.1.1	1. Is the highest operable part 3'-4" to 4'-0" above floor?			75	
16.3	**SPECIAL EQUIPMENT**				
16.3.3	1. Are 2% of lockers not over 4'-0" high with 3'-6" clear access in front?		✓	76	
16.3.5	2. In each lab, is there one station with clear space under 2'-6" high, 3'-0" wide, 2'-0" deep?			77	
16.3.6	3. Are aisles between library stack areas a minimum of 3'-6" wide?			78	
16.7	**AUDITORIA, ASSEMBLY HALL, STADIA**				
16.7.1	1. Is there an auditorium, assembly hall or stadium? If yes, answer the following:			79	
16.7.1	a. According to all previous standards are all areas accessible?	✓		80	
16.7.2	b. Are there special seats and wheelchair spaces according to tables 17.7.2, 16.7.6, and 16.7.7?			81	
16.8	**SERVICE COUNTERS**				
16.8.2	1. Is there a place at all service counters which is 3'-0" above floor?			82	
16.8.4	2. Is the clear space in front of all counters at least 2'-8" wide?			83	
16.9	**CAFETERIAS**				
16.9.3	1. Is the tray sliding counter a max. of 3'-0" above floor?			84	
16.9.2	2. Do tables have a min. 2'-6" clearance under top?			85	
16.9.3	3. Is the clear space between chairs a min. of 3'-0"?			86	

APPENDIX H

Assessment of the Physically Disabled

Assessment of the Physically Disabled

Assessment of special needs students is described in detail in the handbook entitled, A System for the Identification, Assessment and Evaluation of the Special Needs Learner in Vocational Education by Albright, Fabac, and Evans. This handbook is an excellent resource and should be consulted when establishing an assessment system for physically disabled students (copies are available from the Curriculum Materials Publishing Clearinghouse at Western Illinois University, Macomb, Illinois).

The following items should be considered in addition to formal, validated psychometric tests and work samples when assessing the physically disabled.

Orthopedically impaired:

1. How mobile is the student?
   (wheelchair, crutches, braces, etc.)

2. How developed are fine and gross motor skills?
   (upper torso, arms, hands, and fingers)

3. How about range of motion and reach?
   (side reach, forward, up and down)

4. Does the student have strength and endurance?
   (grasp, lifting ability, etc.)

5. What work height is the best?

Visually imapired:

1. How does the student read and write?
   (Braille, large print, tape recorder)

2. How well developed are the student's orientation and mobility skills? (long cane, guide dog, memory, etc.)

3. How does the student absorb information best?
   (touch, descriptions, combination, etc.)

Hearing impaired:

1. How does the student communicate?
   (speech read, sign language, both - responds orally, etc.)

2. Does the student use a hearing aid?

3. Can the student function without a hearing aid?
   (loud machine noise may restrict use of a hearing aid in lab)

4. Does the student work well with an interpreter?

APPENDIX I

Adaptive Aids, Devices, and Technology

Adaptive Adis and Devices

1. ramp and platform
2. wheelchair cart
3. auxillary machine tables
4. machine warning lights
5. typewriter return bell strobe light
6. accessible workbench
7. table raising leg supports
8. reachers
9. alternative small tools
10. wheelchair auxillary seat
11. bowl holders
12. wheelchair writing board

New Technology

1. Levo Standup Wheelchair
2. Mainstreaming Wheelchair
3. Amigo Wheelchair
4. Talking Calculators
5. Opticon
6. Telephone Technology for the Disabled
7. Path Sounder

APPENDIX J

Accessibility to Labs and Equipment

for the Physically Disabled:

A Handbook for Vocational

Education Personnel

A Description of the Major Sections

Accessibility to Labs and Equipment for the Physically Disabled:

A Handbook for Vocational Education Personnel.

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