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ABSTRACT

This document summarizes a literature review on articulation and seminar work on the feasibility of articulation agreements in secretarial and office education programs in Montana. Seminar participants (representatives of business education departments in Montana secondary and postsecondary schools) agreed on the competencies necessary to fulfill entry-level office responsibilities and to advance on the career ladder. The following conclusions are among those reported: (1) competencies that would be responsive to evaluation by a competency profile are in keyboarding/typewriting, symbol or alphabetic shorthand, word processing, machine transcription, graphics, office procedures, telecommunications, applications software, computer programming, and recordkeeping; (2) the ratings of the skills on those profiles should be skilled, moderately skilled, limited practice, exposure only, and no exposure; (3) schools should develop task course equivalencies indicating what tasks would fulfill the requirements for particular courses; (4) a test should be developed or identified to determine students' knowledge in business communication, business mathematics, and personal finance; (5) a database should be established for all articulated courses; (6) secondary schools should be included in the articulation process; (7) a second seminar should be held; and (8) a statewide advisory committee from business and industry should be established. Six appendices include the Office of Education task list, standards of performance, and advanced placement credit application. (The document contains 15 references.) (CML)

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~ Time to Commence ~

Articulation in

Vocational Technical

Education in Montana

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FOREWORD

With the rapid increase in technology and the need to broaden the educational base of the workers in our society, it has become apparent that the training program for today's labor force must span a period of many years. The training should be continuous and sequential. Trainees who have mastered skills at one level should not be required to repeat the same training at another school but rather should be able to enroll in advanced training through an articulation plan.

This articulation of students among programs in Vocational-Technical education has received much attention in the past few years. Consequently, the Center for Vocational Education Research, Curriculum and Personnel Development conducted a review of the literature to identify the happenings in articulation in Montana and other states. This was followed by a seminar with representatives of business departments from secondary and post-secondary schools in Montana to discuss the feasibility of articulation agreements in secretarial and office education programs among the schools. This report is a summary of the findings.

We are appreciative of the cooperation and information provided by the many individuals who participated in the seminar. The Center is especially appreciative of the excellent work Dr. Thelma Anderson did in serving as the principal investigator of the project.

A. W. "Gus" Korb, Director
1989

An important commitment of the Montana Center for Vocational Education in its curriculum development component is to assist with articulation in curriculum among the various school levels in Montana.

Articulation has been defined as a "planned process linking two or more educational systems within a community to help students make a smooth transition from one level of instruction to another without experiencing delay or loss of credit (Bushnell, 1978)."

It is evident that such a process benefits students, parents, taxpayers, employees, and both the "sending" and "receiving" institutions. Each step of this planned process culminates in a set of validated competencies that are recognized as legitimate by employers or "receiving" institutions. Costs of time and dollars are reduced, learners are treated with respect for what they have already learned, and duplication of coursework is avoided.

Among the goals listed in the current Montana State Plan for Vocational Education are those specifically related to articulation, indicating that in secondary schools competency measures will be specified for all occupational programs, and that competency testing for secondary vocational education completers will be initiated (29). The Plan also includes a directive for the development of coordinated agreements between secondary and postsecondary institutions to provide for the forward progress of students, and to also establish procedures to facilitate transfer of credits for technical and vocational courses between two- and four-year institutions (33).

Because planning for articulation agreements has been identified as a major need in Montana, an investigation of articulation practices throughout the nation was instituted. The National Center for Research in Vocational Education identified articulation activities in 29 states, some of which were in response to state mandates. They reported in some detail on programs at sites in 16 of these states.

"Every current articulation effort examined has at least one common characteristic: to eliminate, as much as possible, unnecessary duplication of training across two levels . . .

. . . Via advanced placement and/or credit, students can complete their postsecondary training faster. Some of the articulation efforts, however, go beyond saving students time and money. Such programs eliminate duplication in order to make room in the curricula to teach more advanced skills that could normally be taught in a traditional program (1985:2)."

Models for articulation are described by the Center and may be reviewed in Appendix i.

Various strategies are employed to assess the preparation of students for more advanced learning, some as simple as syllabi review and verification by the sending institution. Others are more complex and may entail a competency profile (check-off list/rating scale) for each student, provided by the sending institution to the receiving institution. Testing for skill level at either the sending or receiving institution is another alternative.

A joint project in Michigan is perhaps the most sophisticated effort reviewed. (See Appendix 2 for application form, news release, task list, task course equivalencies, and standards of performance.) The level of achievement is described by the following terms:

- Introduced - The material has been presented via lecture or demonstration, but practice or competency developed in the skill has not been attempted.
- Involved - The student is actively engaged in the skill development process.
- Productive - The student can perform this skill but not with the required degree of competency.
- Employable - The student can perform the skill with the speed, accuracy and other required criteria at the job entry level.
- Not Applicable - This skill is not taught as part of the vocational program at this school or otherwise not appropriate.

Attention is called to the task course equivalency which states that for articulated credit, students must demonstrate competency at the "employable" level for each task listed.

The Curriculum and Instructional Materials Center (CIMC) of the Oklahoma State Department of Vocational and Technical Education is portrayed in its catalog as the "developer of the nation's best competency-based instructional materials in vocational education." CIMC provides fully developed competency-based curriculum materials for all occupational programs, together with competency profiles. On the profiles, specific job competencies for each area are rated as follows:

- | | |
|------------------------|--|
| 4 - Skilled | Can perform independently with no additional training. |
| 3 - Moderately Skilled | Has performed independently during the program; limited additional training may be required. |
| 2 - Limited Practice | Has practiced during training program; additional training is required to develop skill. |
| 1 - Exposure Only | General information provided with no practice time; close supervision needed and additional training required. |
| 0 - No Exposure | No information nor practice provided during training program; complete training required. |

Oklahoma is one of eleven states comprising the Mid-America Vocational Curriculum Consortium (MAVCC). MAVCC is a non-profit organization which develops competency-based instructional materials mutually needed by the states. Participating states besides Oklahoma are Colorado, North Dakota, South Dakota, Nebraska, Kansas, Texas, Iowa, Missouri, Arkansas and Louisiana. This consortium recommends the competency profile developed by Oklahoma's CIMC as the final component of a competency-based instructional system.

Another evaluative device alluded to earlier was the competency test. Each MAVCC publication includes measurable behavioral or performance objectives, teacher and student activities, information sheets, transparency masters, assignment sheets, and job sheets. Also included are practical tests, designed to aid the teacher in evaluating performance activities, and criterion-referenced unit test based on the unit's specific objectives.

MAVCC's materials are available to ordering institutions from any state. (From 7/1/87 through 12/13/88, Montana schools purchased MAVCC materials totaling \$15,082.50.) However, those schools in the states which are members of the consortium may order the materials at a substantially reduced price. Exploring membership in MAVCC would appear to be a worthy objective for the State of Montana.

Concrete documentation would appear to validate job skills in a credible, usable manner to either an employer or a receiving institution.

The National Occupational Testing Institute (NOCTI) currently offers measurement services to schools, businesses and industry, through the Teacher Occupational Competency Testing series (TOCT), the Student Occupational Competency Achievement Test (SOCAT) series, and Industrial Occupational Competency Test (IOCT).

SOCAT written performance examinations are available in nearly all occupational areas. These tests have been nationally endorsed, validated, and designed specifically for vocational program completers. SOCATS are administered by qualified school staff members, are processed by NOCTI, and the results are returned to the school.

SOCATs are designed to measure entry level skills, while IOCTs are designed to measure journeyman-equivalent level skills. IOCTs provide a more in-depth level of trade competency for upgrading and/or advancement of current employees or as a diagnostic evaluation of strengths or weaknesses for training or retraining.

More well-known examinations for testing knowledge acquired outside the traditional college classroom such as the College Level Examination Program (CLEP), the American College Testing Proficiency Examination Program (ACT/PEP), and the Advanced Placement Program are not designed to test occupational skills in an articulation process. With CLEP, the exceptions are in the areas of business and computers, with some tests for elementary computer courses, and for Principles of Accounting, Business Law, Management, Marketing, Money and Banking, and Economics.

The ACT/PEP offers test in 14 courses in business, most of them upper division, but no testing in other areas considered to be occupational.

Except for computer science and economics, the Advanced Placement Program is designed to test primarily in the area of liberal arts.

At the present time in Montana, not all units of the University System accept the results from all of these tests.

Section 301.5.4 of the Montana University System Policies and Procedures Manual states that, "Units of the Montana University System, including the community colleges, may give credit for education received from non-collegiate institutions on the basis of the Guide to the Evaluation of Education in the Armed Services and the National Guide to Educational Credit for Training Programs, both published by the American Council on Education."

Meyer, in addressing awarding college credit for non-college learning in the Jossey-Bass Series in Higher Education asserts that "knowledge is valid regardless of source," and proceeds to elaborate:

"The process of granting credit for prior learning is clearly one of assessing and evaluating an individual's experiences or knowledge by one or more faculty members who have a set of standards against which to measure experiences, and a set of tools to accomplish this end (emphasis added - 1975:5)."

Whether the set of standards and the set of tools be tests, competency profiles, or simple syllabus comparison, the need for planning for articulation in Montana is clear.

While transfer agreements (formal and informal) between community colleges and units of the University System are fairly common, formal articulation agreements between vocational-technical centers and these other institutions are limited. No agreements exist with secondary schools.

In 1984, the business and office faculty at the five vocational-technical centers did an exceptional job of exchanging and documenting curriculum and competency information. In addition, information received from Jeff Wulf, Industrial Education Specialist for the Office of Public Instruction indicates that auto mechanics programs at all five centers have a standardized curriculum using CIMC

materials. While this kind of horizontal articulation is to be applauded, it emphasizes Parnell's complaint that "High school instructors talk to high school instructors, community college instructors talk to community college instructors, and university instructors talk to university instructors (1985:44)."

It is vertical articulation that is severely limited in Montana.

Identified existing formal articulation agreements between vocational technical centers and units of the University System and community colleges are the following "block transfer" agreements with Northern Montana College.

Great Falls Vocational-Technical Center
Business
Nursing

Helena Vocational-Technical Center
Automotive Technology
Diesel
Nursing

(See Appendix 3 for examples.)

Other "block transfer" agreements in nursing are in the process of being developed with community colleges and other vocational-technical centers.

Based upon recommendations from other states to start with one program as an articulation model, the Montana Center for Vocational Education Research, Curriculum, and Personnel selected Secretarial and Office Education as that model. This choice was made for two reasons:

1. All vocational-technical centers, all community and tribal colleges, and nearly all branches of the university system offer these programs.
2. Secretarial and office administration is one of the most rapidly growing fields of employment.

While the Occupational Outlook Handbook (1988-89: 246) states that "employment of secretaries is expected to grow more slowly than the average for all occupations through the year 2000, due primarily to productivity gains made possible by automation," it does predict an exceptionally large number of job openings for secretaries based on replacement needs. The Handbook indicates that secretaries will be in "great demand."

Schmidt (1985) refutes the assumption that sophisticated equipment will replace workers, indicating that equipment that facilitates information processing tends to expand job opportunities.

The Bureau of Labor Statistics "projects that more new positions for information processors (traditionally identified as secretaries, typists) . . . will be created in the 1990's than for another other occupation (Daggett, 1987: 5)."

The Montana Supply/Demand Report (October, 1988: 11) ranks "Secretaries, Other" eighth of the twenty high-growth occupations listed.

Since it is established that there is and will be a need for these employees, schools are confronted with the challenge of preparing them for jobs in the most efficient and effective manner possible. The response to this challenge appeared to be some sort of articulation effort.

The National Center for Research in Vocational Education, in its publication, Avenues for Articulation, lists ten principles for articulation success:

1. Leadership and commitment from the top
2. Early faculty involvement
3. Relationships based on mutual respect and trust
4. Mutual benefits to all partners
5. Written articulation agreements
6. Open, clear and frequent communication
7. Modest initial goals
8. Clearly defined responsibilities
9. Competency-based curricula
10. Common focus on mutual goals rather than individual turf

In light of these recommendations, the first step in the development of the model was the Montana State Plan for Vocational Education, with its support to articulation from both the Office of Public Instruction and the Board of Regents.

The director of Montana's Center for Vocational Education, Dr. A. W. "Gus" Korb, then wrote letters to administrators at all units of the University System, the community colleges, the accredited tribal colleges, all five vocational-technical centers, and three selected high schools. In his letter, he requested their support for a curriculum development seminar focusing on articulation of secretarial and office education programs, and asked that they appoint a business faculty member to attend such a seminar to be held at the Great Falls Vocational-Technical Center on April 21, 1989.

Response was enthusiastic, and when the names of the appointees arrived, they were sent a letter by Dr. Thelma Anderson coordinator of the seminar, with background information and specific topics to be considered for discussion.

A list of these topics follows:

CURRICULUM DEVELOPMENT SEMINAR
GREAT FALLS VOCATIONAL-TECHNICAL CENTER
APRIL 21, 1989

CONCERNS TO BE ADDRESSED

1. What is the rationale for this seminar?
2. What can we hope to accomplish?
3. Why articulate?
4. What institutions should articulate programs?
5. How should institutions articulate programs?
 - a. Comparison of syllabi
 - b. Tests
 1. CLEP
 2. DANES
 3. ACT - Proficiency Examination Performance
 4. Advanced Placement Exam
 5. Locally prepared challenge tests
 6. ACE's National Guide to Educational Credit for Training Programs
 7. Program-specific competency exams
(at sending institution or receiving institution?)
 - c. Competency profiles based on task lists
(See examples)
6. Should all competencies be evaluated same way?
7. How should credit be granted?
8. Should credit be granted immediately or held in escrow?

Prior to the meeting, literature was reviewed, on-going programs were explored, and samples of materials were

obtained. One copy of the Database of Competencies for Business Education Curriculum Development K-14, published by the National Business Education Association, was provided for each school represented at the seminar.

Sixteen schools, the Office of Public Instruction, and the Montana Center for Vocational Education were represented. The list of participants follows:

CURRICULUM DEVELOPMENT SEMINAR
April 21, 1989
Participant List

Eastern Montana College	Lorrie Steerey
Western Montana College	Cheri Jimeno
University of Montana	Bill Patton, Billie Herrin
Montana State University	Dan Hertz
Northern Montana College	Dennis LaBonty
Great Falls Vo-Tech Center	Nancy Peterson, Kay Craig
Helena Vo-Tech Center	Jim Burk, Ted Plaggemeyer
Missoula Vo-Tech Center	Lynn Stocking, Claudia Moore
Billings Vo-Tech Center	Randy Schmitz
Butte Vo-Tech Center	Vince Quinlan
Salish-Kootenai College	Mary John Taylor, Moselle Paulson
Flathead Valley Comm. College	Marilyn Knutson
Miles Comm. College	Janette Potts, Carol Hofeldt
Hardin High School	Julie O'Dell
Stanford High School	Sheila Crossmer
Whitefish High School	Cheryl Stebbins, Anna Gee
Office of Public Instruction	Marion Reed
Center for Voc. Ed.	Gus Korb, Thelma Anderson

In general, the group agreed that:

1. A method to eliminate duplication of coursework of equivalent value would accomplish a major step toward articulation.
2. Articulation contributes to accountability--to taxpayers, legislators, parents, and students.
3. Articulation makes sense; sounds easy; is tough.
4. Course-by-course transfers of English 101 or American History 101 between two- and four-year schools is fairly simple.

5. Occupational programs are more difficult. A course description for an 8-credit Electronics I course may be limited in describing what the student can do at its conclusion.
6. A need exists for identification of the skills, bodies of knowledge, and competencies in current programs in secretarial and office education in Montana.
7. Adequacy of these bodies of knowledge to careers, jobs, and other opportunities is essential.

The group reviewed earlier research in articulation in Montana by Dr. Daniel Hertz of Montana State University, current work on the new Montana Business Education Curriculum Guidelines K-12 by Dr. Bill Patton of the University of Montana, and the NBEA Database of Competencies for Business Education Curriculum Development K-14.

Based on this information and the expertise represented by this group, specific competencies related to particular courses were formulated and reviewed by the entire group (Appendix 4).

Hertz's research, Patton's investigation of business education curriculum guidelines in other states, and the NBEA Database were similar in content. Since NBEA had validated its competencies as those essential for entry-level employees in the business offices of America by having them reviewed by the Education, Employment and Training Committee of the Chamber of Commerce of the United States, the adequacy of these bodies of knowledge appeared to be appropriate.

The participants then considered the various evaluative devices previously discussed. Some concern was expressed that the competency profile (check-off list/rating scale) might constitute a burden on teachers, resulting in their resistance to adoption of the procedure. A class or program Progress Chart from the Oklahoma Occupational Testing Center designed as the source document for the competency profile was reviewed (Appendix #5). There was some agreement that it resembled a regular "grade book," except that information entered denoted skill level rather than a percentage grade.

The participants were in accord that the same evaluative device might not be appropriate for all competencies--that while a competency profile would be a valuable tool for evaluating such skills as keyboarding, word processing,

alphabetic or symbol shorthand, or machine transcription, it would not be a satisfactory device for a course such as business law or management. The subject of accounting proved particularly thorny. Some four-year institutions in Montana accept the CLEP test in accounting; some do not. Schools who do accept this test consider its successful completion to be equivalent to the three quarters of Principles of Accounting, and there is no provision for measuring the skill level of a student who has had one quarter of accounting. (SOCAT does have such a test, which is accepted at Ferris State University in Michigan. IOTC has no business tests.)

Challenge tests developed at receiving institutions were discussed. Unless teachers receive released time for preparing such tests, their development is limited.

Information was shared with the group concerning the Regent-approved ACE Guide to Educational Credit for Training Programs, and an example was provided which has potential for business educators in advising students--particularly those non-traditional students with substantial experience as secretaries. Upon successful completion of the Certified Professional Secretaries Examination, a prospective student could be granted credit, as follows:

Sem.
Hrs.

3	Human Relations and Psychology
3	Business Law
3	Economics
3	Management
1	Marketing
1	Human Resource Management
4	Accounting
3	Office Procedures and Administrative Management
3	Business Communications
6	Office Technology
3	Automated Office Administration
3	Communications Technology

The last 12 credits involve word processing, data processing, executive travel, planning, office systems design, reprographics, and communications techniques.

This list totals 36 semester hours (54 quarter hours).

One participant emphasized that "trust" should be a major component of an articulation process, and this reporter enthusiastically supports that concept. Being involved in the "block transfer" articulation agreement for business

between the Great Falls Vocational-Technical Center and Northern Montana College illuminated just how valuable such trust can be. Syllabi were reviewed in depth and faculty talked to each other; more crucially, they listened to each other. Success of students who have since benefited from the process attests to its effectiveness.

Trust or respect for the validity of the competency profile is also essential. Investigation of profiles used at articulation sites indicates that sending institutions are inclined to evaluate with rigor, rather than with leniency.

Because of time limitations, the question of a procedure for the granting of credit was not addressed. A multitude of strategies are used at sites throughout the nation, generally depending upon the level of the schools involved. Some transfer the actual grade and credit; some give a "T" for transfer or a "P" for pass, and credit. Others simply waive the course(s) and deduct the receiving institution's credit award from the number of credits required for the program. Nearly all schools hold those credits in escrow until a varying number of courses have been successfully completed at the receiving institution.

The group who participated in the Curriculum Development Seminar in Great Falls performed a valuable service toward the progress of an articulation effort in Montana.

While articulation and competency-based curricula have not yet been mandated in Montana, a need for such an approach is rigorously supported in the State Plan for Vocational Education. A major concern for educators is the non-existence of secondary-postsecondary articulation. Not a single high school has been involved in such a process. A agreement between Flathead High School, Flathead Valley Community College, and Northern Montana College was considered unacceptable and is currently inoperative.

The majority of articulation efforts investigated nationwide were those linking secondary occupational programs with two-year associate degree occupational programs, and technical centers with two-year associate degree programs.

Attention is directed to the recently developed cooperative agreement between the North Dakota State School of Science and 19 high schools and vocational centers (Appendix 6).

Dale Parnell began his professional career as a secondary-school teacher, and has served as vice-principal and principal, superintendent of schools, Oregon

Superintendent of Public Instruction, President of San Joaquin Delta College in California, and Chancellor of the San Diego Community College System. He is currently President and Chief Executive Officer of the American Association of Community and Junior Colleges.

A series of quotations from his book, The Neglected Majority (1985), illuminates the need for including the secondary schools in the articulation process and the success of such efforts:

"Occupational Employment Projections" lists the 20 fastest growing occupations from 1988 through 1995. None can be classified as low skill, and only two or three obviously require a baccalaureate degree for entry. The remainder of these fast-growth jobs are occupations for which some postsecondary education is training, but not necessarily a baccalaureate degree, is preferred or required (12)."

"When 75 percent or more of our high school graduates do not complete the baccalaureate degree, and 25 percent of those who begin high school do not even finish, one must question the validity of the current educational program for the great mass of individual in the middle quartiles of the typical high school student body. What kind of educational program will meet the needs of these three out of four students? (17)." (Reporter's note: It is this group of students who represent the "neglected majority" from whom the book derives its title.)

"It is estimated that over 70 percent of all high school graduates will eventually attend a postsecondary institution of one kind or another for one or more years (14)."

"The Twelfth Grade Throwaway. With so much to be learned and so many new skills to be developed, students must make better use of the twelfth grade (45)." (Reporter's note: Parnell concedes that increasing graduation requirements may help to alleviate a small part of this problem.)

". . . leaders . . . are now observing that excellence in technical education cannot be achieved in two college years, given the current preparation level of the students entering the program. Wouldn't it make educational as well as economic sense for schools and colleges to utilize the twelfth grade more wisely (45)?"

"Not enough people see the high school as a human resource development laboratory, a place in which to prevent human waste (24)."

"Unfocused learning remains one of the prime barriers to achieving excellence for a host of high school students (37)."

"Most colleges and states have now developed college-credit transfer-articulation agreements that allow students to transfer credits with slippage (96)." ". . . with much success (97)."

"The associate degree program links learning that has come before with learning that will come after. Therefore, those concerned with framing the associate degree requirements must not approach the task in isolation. . . . The students should experience little or no loss of continuity, or loss of credits when moving from one level of education to another--high schools, community colleges, and colleges and universities--(103)."

Parnell makes a compelling argument for articulating secondary occupational programs with associate degree occupational programs to produce a competent technician, and poses this provocative question:

"Who will keep our airplanes flying
our water flowing
our hospitals operating
our trains tracking
our computers clicking
our cars running
our laws enforced
our goods and services sold
in a society saturated at every level with
technology and information?"

In this vein, he concludes, "Dear Lord - I just pray that the airframe and power-plant technicians that serviced this plane had excellent education and training programs--and that they enjoy their work (138)!"

CONCLUSIONS AND RECOMMENDATIONS

A planned process for coordination of secretarial and office education courses at all educational levels in Montana is essential. Planning was begun and a framework for proceeding was accomplished at a curriculum development seminar in April, 1989. Participants agreed on the competencies necessary to fulfill entry-level office responsibilities and to advance on the career ladder. Evaluation devices to measure the level of competence will vary according to course content, profiles being appropriate for some, while others will be more accurately measured by some type of examination.

Development of Competency Profiles

The competencies developed and included in this report are grouped under 17 general headings:

Keyboarding/Typewriting	Business Mathematics
Business Communications	Computer Programming
Word Processing	Recordkeeping
Machine Transcription	Accounting
Graphics	Business Law
Office Procedures	Management
Telecommunications	Marketing
Applications Software	Personal Finance
Symbol or Alphabetic Shorthand	

Ten of those listed would be responsive to evaluation by a competency profile: keyboarding/typewriting, symbol or alphabetic shorthand, word processing, machine transcription, graphics, office procedures, telecommunications, applications software, computer programming, and recordkeeping. A recommendation is made that such profiles be developed based on these competencies and a rating scale similar to that used by Oklahoma be made a part of the profile. Skilled (4), Moderately Skilled (3), Limited Practice (2), Exposure Only (1), and No Exposure (0). Progress charts as source documents should be provided to faculty of the sending institutions to facilitate the preparation of the profile for each student.

Individual schools could develop task course equivalencies indicating what tasks (by number) would fulfill the requirements for a particular course.

A recommendation is made that the developed competency profiles for secretarial and office education and other occupational programs be made available through the Center for Vocational Education at Northern Montana College, with the assistance of staff from the offices of the Commissioner of Higher Education and the Superintendent of Public Instruction.

Receiving institutions can then determine where a student can be placed in a particular program. For example, if a student is evaluated as "skilled" in all competencies listed for machine transcription, which carries three credits at the receiving institution, and 96 credits are required for the associate degree, the student will need 93 credits for the degree, no matter if four credits were received at the sending institution or 60 hours were required to obtain the competency.

Development a. Utilization of Tests

A recommendation is made that tests be identified or developed to determine a student's knowledge in business communications, business mathematics, and personal finance. None has been identified by the Center at this time. The appropriateness of developing such tests for use at all Montana institutions needs to be addressed, since the need to avoid compromising security is critical.

Business law does not appear to present a problem, since experience has indicated that business law at the secondary level is generally not an appropriate course for articulation at the collegiate level. This course or these courses are presently freely transferred among units of the University System and the community colleges. Several options exist for articulation of business law between the vocational-technical centers and two- and four-year institutions: the ubiquitous CLEP test, which is considered the equivalent of two quarters of business law with the commensurate knowledge gained, a test developed in the state such as those suggested for other subjects (as personal finance) for one-quarter course equivalency, or syllabus review and agreement between institutions.

As suggested earlier in this report, because articulation of accounting courses is perplexing, no firm recommendation is made. Again, as with law, the first three quarters of accounting are generally accepted between and among the units of University System and the community colleges. It would appear that the SOCAT test which Ferris State University in Michigan accepts as the equivalent of the first quarter of accounting would be appropriate. And again, a CLEP test for the three-quarter sequence is available.

The Center is receptive to suggestions concerning the second quarter of accounting. (The contemplated move to the semester system would seem to indicate that no permanent decision regarding accounting articulation can be made at this time.)

The course in management is offered at some institutions as an upper-division course and at others as a lower-division course, where it is required for particular associate degree programs. No recommendations encompassing all institutions is made for this course.

The American Assembly of Collegiate Schools of Business states that "Four-year institutions that want to grant upper-division credit for courses taken in the first two years can validate the learning through CLEP tests, written examinations, successful completion of an advanced course in the subject field or other validation techniques (26)."

Milton R. Blood, AACSB director of accreditation says that "Articulation agreements that spell out the appropriate course sequencing are in the interests of students and help the institutions to focus on common educational goals (26)."

Database Establishment

A strong recommendation is made that a database be established for all articulated courses, so that the success of students who entered programs under such agreements can be tracked. Complicated evaluation measures may not be needed once the process is stabilized.

Program changes, faculty changes, and administrative commitment would require continuing oversight of the articulation effort.

Secondary Schools

The need to include secondary schools in the articulation process is urgent. A recommendation is made that such linkage between secondary and postsecondary schools in Montana be vigorously pursued, so that secondary schools can become a vital part of Montana's educational continuum.

Second Seminar

A second curriculum development seminar for secretarial and office education to refine and expand suggestions and decisions made at the first seminar is recommended. At that time a sample competency profile should be presented for review. Discussion at the annual meeting of the Montana Business Education Association in the fall of 1989 would also prove beneficial.

MAVCC and CIMC

Other occupational programs will establish their own sets of standards and sets of tools to measure these standards. For all occupational programs, a thorough knowledge of curriculum materials available through MAVCC and CIMC is recommended, and a strong case should be made that Montana take advantage of the benefits to be derived by joining the eleven other states in the Mid-America Vocational Curriculum Consortium (MAVCC).

Advisory Committees

A final recommendation would be the establishing of statewide advisory committees from business and industry for each occupational program offered in the schools of Montana, and that periodic meetings be held with these committees and educators to assure that the human resource the educator received has the right "value added" to meet the needs of the eventual employer.

Time to Commence

The Center is aware that articulation agreements are made between individual institutions. This report provides a framework to commence.

APPENDIX 1

Time-Shortened Programs

Most of the articulation efforts investigated by the project are designed to facilitate advanced placement in postsecondary programs for students who master foundational skills in high school. Students save some tuition money and complete the postsecondary part of the program faster, but their skill levels do not advance beyond those of a traditional program.

Advanced placement model. These time-shortened programs resulting in advanced placement range from the fairly simple and informal to the very complex with formal contractual agreements. For example, a basic "grassroots" time-shortened effort is underway in Sidney, Michigan, between Montcalm Community College and several local high schools and an area vocational center. College instructors meet with their secondary counterparts to review course syllabuses. They then agree on which high school courses are more or less equivalent to introductory college courses. Matriculating students receive college credit via a written recommendation from their high school instructors.

A more complex time-shortened program is ready to go at Palatine, Illinois. There, three local high school districts and William Rainey Harper Community College are spearheading an articulation effort they call a Regional Vocational Education System (RVS). Planning has involved faculty and administrators from all of the institutions, local employers, and the State board of education, as well as consultants hired to conduct needs assessments and a feasibility study. The articulation has an administrative structure with a full-time program manager. Program planning committees coordinate existing curriculum components at the participating institutions and integrate them into jointly planned area programs.

The RVS at Palatine shares facilities and equipment to reduce costs and maintain or expand training opportunities for students. Inservice workshops on articulation concepts and procedures are a planned component. Also, because the RVS is on the leading edge of Illinois' articulation policy (due to become mandatory in 1988), the program receives most of its planning monies from the State; however, it must also cope with evolving State guidelines. Formal written agreements bind the participating institutions.

One of the most ambitious and successful types of time-shortened programs is the competency-based secondary-postsecondary program. Occupational curricula that are competency-based lend themselves readily to training any students—secondary, postsecondary, or adult—regardless of age. With this in mind, some articulation efforts respond to declining enrollments and fiscal pressures by training high school and postsecondary students with the same curricula (and often together in the same classes). Some of these programs share faculty and equipment; others operate at independent facilities or institutions (e.g., Hennepin Technical Centers) that serve both secondary and postsecondary students.

Most time-shortened programs are not competency based, however; rather, they are course based. That is, entire courses are articulated, based on coordinated syllabuses or task lists. Few time-shortened programs significantly modify existing curricula at either level.

Time-shortened programs have many advantages besides saving students time and money. The cooperating institutions themselves often save money by sharing facilities, equipment, and even faculty. Some schools use the articulation effort as an opportunity to retain or improve existing training programs. Two-year colleges and technical institutes claim that articulation tends to attract more and better high school graduates to the postsecondary programs. High schools often find that articulation helps them provide broader training opportunities for their students. Finally,

reach a "master technician" level of competence in a step-by-step progression of coordinated curricula by the end of grade 14.

To achieve this ambitious outcome, vocational technical "2 + 2" programs must blend the resources of both the secondary and postsecondary institutions. This may involve creating a jointly operated training facility; writing new, comprehensive, competency-based curricula for all 4 years; building strong, close working relationships among participating administrators and faculty; sharing instructors; maintaining exceptionally close relationships with local employers; investing substantial planning time and funding; and creating and managing complex formal operational and funding structures.

Perhaps the premiere example of a true vocational technical "2 + 2" program is in Bakersfield, California, among Bakersfield College, nine local high schools within the Kern High School District, and the Kern County Regional Occupational Program (ROP). The articulation responds to the expressed needs of local employers for better trained technician-level employees, specifically to work in the highly mechanized agriculture industry that is central to the county's economy. Bakersfield's "2 + 2" offers a career ladder agriculture training program in the 11th-14th grade level. The program culminates in a 2-year associate degree whose strong general education emphasis should facilitate potential transfer to a 4-year college or university.

Advanced skills programs often involve significant curriculum revisions. The programs benefit from preexisting working relationships across the participating institutions. Because such programs specifically serve local high-technology training needs, it is important to conduct local needs assessments, predetermine potential enrollments, and find funding for the program up front. A joint advisory board and program coordinator are also important to the process.

Other Forms of Articulation

Time-shortened and advanced skills articulation programs serve what is called *vertical articulation*, which helps students move up to the next level (secondary to postsecondary) in an educational program. Other forms of articulation also exist, but are not addressed directly by this project. They include the following:

- **Horizontal articulation**—when students move from one campus or program to another of the same type
- **Reverse articulation**—when students enrolled in an institution normally considered to be at an advanced level return to an institution of education they usually would be expected to have graduated from earlier (Maricopa Community College 1985, n.p.)

Many types of cooperative activities exist between educational institutions that do not involve a significant amount of secondary-postsecondary program coordination, yet relate to it and seem to lead toward it. These include contracting to offer classes to other institutions, 2-year college or technical institute articulation with 4-year colleges (the original form of "2 + 2"), sharing of facilities, enrichment programs, and dual enrollment programs. These activities usually improve communications between cooperating institutions and help them better serve their students and community.

by making postsecondary training programs faster and more attractive to students, articulation can help keep future technicians from seeking training—and usually employment—outside the local area.

Advanced Skills Programs

Advanced skills programs also aim at avoiding duplication of training, but the purpose is not to speed students through the curricula more efficiently. Rather, advanced skills programs streamline fundamentals in order to make room in the curricula to teach more advanced skills than students would normally get in a traditional occupational program. Most of these programs have a high-technology emphasis, deliver more concentrated and more advanced content, and graduate students at a "master technician" level. A misnomer that is often applied to all advanced skills programs (and many time-shortened programs as well) is "2 + 2," even though many programs do not involve a structured learning sequence from grade 11 through grade 14.¹

The project found two main types of advanced skills programs: (1) core curriculum (or "pre-tech") programs and (2) true vocational technical "2 + 2" programs in which the entire occupational training curriculum begins in grade 11 and terminates at the end of grade 14.

Core curriculum model. The main purpose of core curriculum or "pre-tech" programs is to produce better prepared high school graduates for entry into postsecondary technical training programs. Core curriculum programs give secondary students a broad basic background in technology—a strong "core" of concepts and skills—but do not restrict students to making an occupational choice in their junior year. Many such programs include agreements that enable matriculating students to bypass postsecondary introductory courses and take more advanced courses than the 2-year training program would allow. Although the preparation is broader, high school students still receive sufficient specific skill training for entry-level employment.

An example of an articulated core curriculum program is Oklahoma City's articulation effort, which is built on the Principles of Technology "tech-prep" curriculum developed by the Center for Occupational Research and Development (CORD) and the Agency for Instructional Technology. The articulation responds to community needs for more and better trained technicians for high-technology industries in the Oklahoma City area. It also is part of a local economic development effort to attract new high-tech industries to the city.

Appendix E contains a sample curriculum for a pre-tech "2 + 2" program.

Vocational technical "2 + 2" model. True vocational technical "2 + 2" programs focus strongly on developing advanced skills for high-technology occupations. As Bottoms (1984) explains,

Advanced-level technical and skilled workers need a broad base of knowledge that cannot be developed in two years at either the secondary or postsecondary level. A four-year program is needed to develop their ability to learn in the specific occupational field, and to link this education closely with planned experiences in the employment setting. (pp. 8-9)

Starting in grade 11, vocational technical "2 + 2" programs arrange the study of mathematics, science, communications, technology, and specific technical skills so as to avoid duplication and

¹The term was borrowed from the original "2 + 2" programs linking college preparatory programs (grades 13-14) to baccalaureate degree programs.

APPENDIX 2

TASK LIST - OFFICE EDUCATION

A. TYPING

1. Types straight copy: 40 wpm, 1 err/min for 5 min
2. Types straight copy: 50 wpm, 1 err/min for 5 min
3. Types straight copy: 60 wpm or above, 1 err/min for 5 min
4. Types 1 page business letter, mailable form
5. Types 1 page letter mailable in 20 min
6. Types and corrects carbon copies
7. Addresses envelopes/labels per postal regulations
8. Prepares business reports mailable @ 10 wpm
9. Prepares 1 page report with footnotes in 20 min.
10. Prepares business forms, mailable copy
11. Types statistical data, centered & mailable form
12. Prepares error-free reproduction masters

B. INFORMATION PROCESSING

14. Proofreads accurately
15. Writes correct grammar
16. Punctuates documents correctly
17. Spells correctly
18. Creates/edits on electronic typewriter
19. Stores/retrieves on electronic typewriter
20. Formats/prints on electronic typewriter
21. Applies automated data base techniques
22. Demonstrates awareness of integrated software
23. Applies automated spread sheet techniques
24. Creates, edits on microcomputer
25. Stores/retrieves on microcomputer
26. Formats/prints on microcomputer
27. Maintains records/logs

C. OFFICE MACHINES

29. Transcribes machine dictation, mailable form
30. Operates 10 key calc w/touch system with 95% accuracy
31. Computes decimals and percentages on calculators
32. Operates duplicating/copying machine
33. Collates and distributes duplicated copy

D. OFFICE PROCEDURES

35. Files and retrieves alphabetically with 100% accuracy
36. Files and retrieves numerically with 100% accuracy.
37. Files and retrieves geographically with 100% accuracy
38. Files and retrieves by subject with 100% accuracy
39. Sorts and delivers mail efficiently
40. Locates information in directories accurately and efficiently
41. Calculates and affixes correct postage
42. Prepares mailing lists
43. Schedules appointments, meeting needs of all
44. Makes and confirms reservations, meeting needs of all

45. Performs basic receptionist duties and greets visitors
46. Uses reference materials and resources
47. Composes business communications
48. Prepares copy for news articles and business reports
49. Organizes work area
50. Demonstrates efficient use of supplies and equipment
51. Demonstrates efficient use of time
52. Demonstrates ability to set priorities
53. Demonstrates an awareness of office safety
54. Understands and applies professional dress and grooming
55. Demonstrates knowledge of business ethics/confidentiality

E. TELEPHONE

57. Receives, screens, transfers and places call properly
58. Records messages including all necessary information
59. Distributes messages within required time limit

F. SPECIAL SKILLS

61. Takes shorthand: 60 wpm, 3 min trans, 95% accuracy @ 10 wpm
62. Takes shorthand: 80 wpm, 3 min trans, 95% accuracy @ 10 wpm
63. Takes shorthand: Office style trans, mailable @ 10 wpm
64. Applies basic payroll procedures
65. Applies basic billing procedures
66. Applies automated accounting techniques
67. Transcribes medical forms and communications
68. Transcribes legal forms and communications
69. Applies automated accounting techniques
70. Applies automated data base techniques
71. Demonstrates awareness of integrated software

G. EMPLOYABILITY SKILLS

73. Lists sources for locating employment opportunities
74. Prepares a resume, letter of application, job application
Demonstrates knowledge of job seeking follow-up activities
(present in Standards of Performance, but not on SPR)
75. Lists factors to consider in accepting a job offer
76. Lists employee responsibilities and requirements
77. Demonstrates basic interviewing skills
78. Describes proper procedure for terminating a job
79. Employed in co-op job related to program

STANDARDS OF PERFORMANCE

DUTY: Typing

TASK: Types Straight Copy (Timed Writing)

ACHIEVEMENT INDICATORS/CRITERIA:

1. Sets appropriate margins.
2. Sets line-space regulator for double spacing.
3. Sets tab stop for five-space indention.
4. Begins typing when signal is given.
5. Stops typing when signal is given.
6. Does not correct errors.
7. Does not strike over.
8. Proofreads carefully. Circles all errors.
9. Types at least 40/50/60 gross words per minute for five minutes with no more than five errors.

Note:

Students who qualify at 40 wpm will be eligible for credit in Beginning Typing 101 and may enroll in Typing 102.

Students who qualify at 50 wpm will be eligible for credit in Intermediate Typing 102 and may enroll in Typing 203.

Students who qualify at 60 wpm will be eligible for credit in Advanced Typing 203 and may enroll in other secretarial course offerings, e.g. Legal Typewriting.

SPECIAL DIRECTIONS: Student performs at any one or all of the following speed levels: 40, 50, 60 wpm.

CERTIFICATION OF COMPETENCE: Students who demonstrate competence in the above skills will be recognized as employable, i.e., the student can perform the skill with the speed, accuracy and other required criteria for competency at the job entry level. When a dotted line appears on this page, students who demonstrate competence in the skills above that line will be recognized as productive, i.e., the student can perform the skill but not with the required degree of competency.

Washtenaw County Articulation Project

WASHTENAW COMMUNITY COLLEGE
WASHTENAW COUNTY SCHOOL DISTRICTS
CBE ARTICULATION

Task-Course Equivalencies

PROGRAM AREA: Office Education

COURSE TITLE: Beginning Typewriting - SO 101

CREDIT HOURS: 3

<u>DUTY</u>	<u>TASK NO.</u>	<u>DESCRIPTION</u>
Typing	1,4 thru 9,11	For articulated credit in <u>SO 101</u> students must demonstrate competency at the "employable" level for each task listed here. If the student does not achieve this level in every task, but is at the "productive" level in a small number of tasks, the student may be recommended for articulation credits at the discretion of the high school instructor and the college instructional coordinator.

PARTICIPATING INSTRUCTORS:

Barbara Dixon-Huron
Karen Howley-Huron
Doris Williams-Huron

Gerry Beamish-Milan
Barbara Evans-Pioneer
Jane Galan-Pioneer

Artemis Alex-RCTC
Sandie Mayer-Saline
Anna Belle Hunt-Whitmore Lake

SPECIAL INSTRUCTIONS:

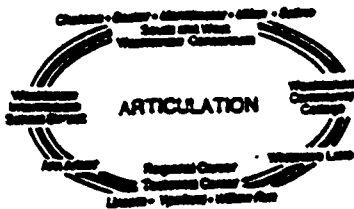
Where applicable, utilize achievement indicators/criteria through Beginning Level.

Signed Wanda Burch
(WCC Instructor)

Date 4-21-87

Signed Mari S. Juster
(WCC Instructor)

WISD-12/86:TCE



Washtenaw Community College Washtenaw Intermediate School Districts Articulation Application for Advanced Placement Credit

SS# _____ Date _____ Telephone (Area Code) _____

Name _____
LAST FIRST MIDDLE

Address _____
NUMBER AND STREET CITY STATE ZIP CODE

High School _____ Year Graduated _____

This certifies that the above-named student has satisfactorily met all performance standards outlined in the _____ Program and is recommended for advanced placement credit in the following Washtenaw Community College Course(s):

Course Title	Course Number	Cred Hours
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Signatures (Washtenaw Intermediate Vocational Technical Center):

HIGH SCHOOL INSTRUCTOR DATE

HIGH SCHOOL COUNSELOR DATE

High School Counselors

For WCC Office Use Only

1. Please sign and attach to this form:
 (a) WCC Admissions Application (with fee).
 (b) Student Performance Record.
2. Retain GOLD copy of this form.
3. Return forms to:
 Office of Admissions
 Washtenaw Community College
 4800 East Huron River Drive
 P.O. Box D-1
 Ann Arbor, MI 48106-0978

Course Title	Number	Hours
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Approved:

INSTRUCTIONAL COORDINATOR/DEAN

PROGRAM AREA

DATE



GET A HEADSTART IN COLLEGE THROUGH VOCATIONAL EDUCATION!

If you successfully complete any of these high school vocational courses:

Auto Mechanics	Child Care
Culinary Arts	Distributive Education
Drafting	Electronics
Graphics	Machine Shop
Office Education	Welding and Fabrication

you may be able to receive college credit—up to 18 hours—**AT NO CHARGE** from Washtenaw Community College (WCC).

HOW DOES IT WORK?

You can receive college credit through Washtenaw County's Articulation Program. Here's how it works.

Teachers at Ann Arbor, Chelsea, Dexter, Lincoln, Manchester, Milan, Saline, Whitmore Lake, Willow Run and Ypsilanti high schools and WCC agreed that if you successfully complete one of the high school vocational education courses listed above, you can apply for college credit toward a certificate or associate degree at WCC.

IT'S SIMPLE...

You turn in an application form (signed by your high school vocational teacher and counselor) and your vocational Student Performance Record to WCC. Once the application is accepted, and after you complete 6 other credits at WCC, the articulated credits are entered on your WCC transcript.

There is no charge for credits and no competency test, just a one-time \$10 application fee. **And, YOU CAN APPLY FOR ARTICULATED CREDITS UP TO 24 MONTHS AFTER YOU GRADUATE FROM HIGH SCHOOL.**

\$\$\$\$\$SAVE MONEY.

Through the Articulation program you can earn as many as 18 hours toward an associate degree or 9 hours toward a certificate program—**AT NO CHARGE**. That's a potential maximum savings of \$522, based on WCC's Winter 1989 in-district tuition rate of \$29 per credit hour. Since the program started, Washtenaw County high school graduates have saved nearly \$19,000 in tuition costs!

GET A HEAD START!

Articulation gives you a head start in your chosen field. You can move into advanced courses right out of high school, by articulating entry level college courses.

There are over 30 courses for which you may receive WCC credit and, next year, courses from Computerized Accounting and Health Occupations will be added.

WANT MORE DETAILS?

For more information about how you can take advantage of Vocational Articulation in Washtenaw County, see your high school counselor, high school vocational education teacher, OR, call Ginny Dawson at the WCC Admissions Office, 973-3544

ASK ABOUT ARTICULATION TODAY!



**WASHTENAW
INTERMEDIATE
SCHOOL DISTRICT**

APPENDIX 3

A student completing the six-quarter Administrative Assistant/Secretary program at the GFVTC will receive 33 credits toward the Associate of Science Degree in Secretarial Technology at Northern Montana College.

The following courses are required to complete the business and selective course requirements.

BUS	100	Introduction to Business	3
BUS	261	Principles of Accounting I	3
BUS	271	Business Law I	3
BUED	184	Health Services Terminology I	3
	Or		Or
BUED	215	Legal Terminology	3
BUED	185	Health Services Terminology II	3
	Or		Or
BUS	272	Business Law II	3
BUED	243	Simulated Model Office	3
BUS	245	Personal Finance	3
			21

96 credits are required for the degree.

#17:88

ARTICULATION AGREEMENT
BETWEEN
NORTHERN MONTANA COLLEGE
AND
HELENA VOCATIONAL TECHNICAL CENTER

DIESEL PROGRAM

Students at the Helena Vocational Technical Center completing the HVTC Diesel program with a grade point of 2.5 will be granted 48 credits upon completion of the following courses:

DIES 115 Fuel Injection
DIES 271 Diesel Engine Components
DIES 272 Diesel Engine Repair
AUTO 257 Automatics
AUTO 264 Electrical Systems II
METL 140 Industrial Welding Process
(will not have to take if HVTC certified)

Upon completion of the general education requirements, students will be granted an Associate of Science Degree in DIESEL. Bachelor of Technology in Diesel follow Associate degree without loss of credit.

HVTC students will not have to repeat the following diesel classes at Northern Montana College.

AUTO 134 Electrical Systems I
DIES 114 Introduction to Engines
DIES 214 Hydraulics and Pneumatics I
DIES 216 Heavy Duty Power Trains
DIES 219 Heavy Duty Brakes and Suspension
AUTO 265 Heating and Air Conditioning
DIES 273 Diesel Shop Practices

William C. Merwin
William C. Merwin, President
Northern Montana College

Feb 27 1989
Date

Alex D. Capdeville, Director
Helena Vocational-Technical Center

Date

APPENDIX 4

SECRETARIAL AND OFFICE EDUCATION COMPETENCIES

B1 - Keyboarding/Typewriting

1. Identify parts and demonstrate functions
2. Keyboard numbers, letters, & symbols with proper techniques
3. Keyboard straight copy - 30 wpm; 1 err/min for 5 min.
4. Keyboard letters and memoranda
5. Address envelopes/labels
5. Keyboard manuscripts/reports
6. Demonstrate centering and tabulation techniques
7. Proofread accurately
8. Respond to editing symbols
9. Keyboard from rough draft copy-letters and memos
10. Keyboard from rough draft copy-manuscripts and reports
11. Keyboard from rough draft copy-tables
12. Transfer thoughts to paper
13. Keyboard straight copy - 50 wpm; 1 err/min for 5 min.
14. Keyboard copy with math calculations and numbers
15. Keyboard letters and memoranda (mailable)
16. Keyboard manuscripts and reports (mailable)
17. Keyboard statistical data, centered (mailable)
18. Prepare business forms (mailable)
19. Respond to correspondence
20. Detect and correct typographical and spelling errors
21. Prioritize and complete in-basket activities
22. Prepare personal data sheet, write letter of application, and participate in personal interview
23. Operate 10-key calculator with touch system

B2 - Symbol or Alphabetic Shorthand

1. Transcribe correct outlines for dictated theory test with 20 min/95% accuracy
2. Transcribe unfamiliar dictation, proofread and correct errors - 3 min/80 wpm/ within 10 min. 95% accuracy
3. Transcribe three unpreviewed average-length non-technical letters in mailable form - minimum transcription rate 20 wpm
4. Transcribe three unpreviewed average-length letters, including technical and alpha-numeric material, 80 wpm, in mailable form, minimum transcription rate 20 wpm.

B3 - Machine Transcription

1. Identify parts of transcribing machine and demonstrate
2. Transcribe letters and type envelopes (minimum 40 wpm)
3. Transcribe manuscripts/reports (minimum 40 wpm)
4. Operate the dictation machine

B4 - Word Processing

1. Describe functions available on the system
2. Identify terms and functions common to computer operations
3. Prepare and handle disks properly
4. Demonstrate keying in, storing, retrieving, and printing.
5. Create, revise (single-word, insert/delete), spell check, and produce a simple document
6. Create, revise (block moves and search and replace), spell check, and produce a three-page document.
7. Make format change decisions
8. Set up and move columns in tabular format
9. Paginate documents
10. Highlight data, use subscript and superscript, and move files
11. Merge documents

B5 - Graphics

1. Determine when a graphic format of communications is appropriate
2. Present data in graphic format using an appropriate software package
3. Import data from other software packages into a graphics program

B6 - Office Procedures

1. Display proper telephone techniques
2. Record information accurately
3. Outline procedure for screening and transferring calls
4. Outline procedure for arranging conference calls
5. Demonstrate or explain electronic mail function
6. File and retrieve alphabetically, numerically, geographically, and by subject
7. Secure requested information from files
8. Prepare cross-reference sheets for selected documents
9. Index, code, sort and file documents
10. Process incoming and outgoing mail
11. Demonstrate proper procedures for handling guests and callers
12. Prepare itinerary and make necessary travel arrangements
13. Prepare business expense statement

B7 - Telecommunications

1. Access a public data base
2. Demonstrate the ability to load or access an electronic communications program
3. Demonstrate the ability to use telecommunications media and device

B8 - Applications Software

1. Demonstrate proper care and handling of hardware and software
2. Create, proofread, store, retrieve and print data
3. Copy files
4. Evaluate and select appropriate software for specific programs
5. Load and execute demonstration spreadsheet program
6. Enter data and formulas at desired locations
7. Retrieve, update, save, and print data
8. Move and edit information in spreadsheet program
9. Write oral documentation of spreadsheet
10. Format a balance sheet, complete with breakeven analysis.
11. Design a spreadsheet template
12. Answer "what if?" questions
13. Load and apply the program to a typical task
14. Apply a data base management program to prepare mailing lists or filing system
15. Create a data base, such as mailing list or filing system
16. Initiate field search
17. Search the data base and perform calculations
18. Create report format for reports using data base program

B9 - Computer Programming

1. Analyze a complex problem, construct a flow chart, write a program in the prescribed language, test and debug the program, assembling the necessary documentation

B10 - Recordkeeping

1. Complete a columnar business record (extensions, adding, verifying, footing and ruling)
2. Reconcile a bank statement
3. Key data on an electronic calculator
4. Record handwritten data legibly
5. Add, subtract, multiply and divide dollar amounts w/out calculator
6. Prepare an income and expense statement
7. Prepare a monthly budget for a family
8. Arrange documents in numerical order
9. Arrange documents in alphabetical order

10. Locate and record information from sources such as catalogs or parts lists
11. Explain purpose and use of business forms and documents
12. Demonstrate familiarity with accounting and recordkeeping terms
13. Compare types of records systems
14. Analyze documents and explain effect on business
15. Identify accounts receivable owing and prepare statements

NDSCS, 19 schools sign cooperative education agreements

Students from 19 local, area and other high schools and vocational centers in Eastern North Dakota can receive college credit at the North Dakota State College of Science for certain high school courses.

Underway in its the first full year at NDSCS is an articulation program which allows students to take competency tests for college credit while in high school.

The agreements call for a link between high school business, vocational and technical education courses and similar post-secondary level courses at NDSCS.

According to Marilyn Fredericksen, coordinator of the NDSCS Articulation Program, cooperative agreements have been signed by 19 school districts and their vocational center with NDSCS. He said the plan represents an effort by NDSCS to bridge a gap between the two levels of education in North Dakota and it opens a line of communication between college and high school teachers on educational curriculums.

Schools joining the NDSCS program includes four multiple school vocational centers, Richland County Multi-District Vocational Center, Wahpeton; Southeast Area Multi-District Vocational Center, Oakes; North Valley Multi-District Vocational Center, Grafton; and James Valley Multi-District Vocational Center, Jamestown. Other participating school districts are Fargo, Oaker, Milnor, Lidgerwood and Sargent Central of Forman.

Member schools of the Richland Center are Wahpeton, Hankinson, Fairmount and Wyndmere. Those in the Southeast Center are Oakes, Hecela, S.D., Houghton, S.D., Verona Schools and Grafton, Hoople Valley and Minto belong to North Valley. James Valley members are Jamestown, Montpelier, Pingree-Burham and Wimbledon.

Other vocational centers and schools in the

state are expected to join the program in the coming months.

Fredericksen said 14 other high schools and vocational centers are studying the cooperative plan with agreements nearly completed with some schools. Others are still meeting with NDSCS faculty to work out final details.

Eligible secondary courses and their post-secondary counterparts listed in the agreements vary from school to school. They include courses in Accounting, Secretarial, Automotive Technology, Machine Tooling Technology, Graphic Arts Technology and Electronics Technology.

To participate in the program, students are required to apply for competency testing with their vocational or secondary teachers. A standardized test has been developed by postsecondary faculty in each respective area and if a student passes the test, he is given college credit upon enrollment at NDSCS.

The NDSCS program, which was approved last spring by the North Dakota State Board of Higher Education and State Board for Vocational Education, offers an exciting challenge for students to advance their college education, Fredericksen said. The program eliminates duplication of courses from one level to another and provides for a smooth transition to college, including better career planning and advisement, he said.

Fredericksen said the program brings high school and vocational center teachers and NDSCS instructors together to study the devetailing of the courses. These meetings open a relationship of mutual respect and trust, he said.

A review of each agreement is held each year. Recently, 40 vocational center directors, school superintendents and teachers from member schools and NDSCS evaluated their pacts and list of approved courses.

R-AC students surpass national test average

Eight sophomores in Refrigeration and Air Conditioning Technology were notified recently that they surpassed the national average in passing a national competency examination. According to department instructor Irv Moeller, NDSCS Refrigeration students, the only test-takers in North Dakota, scored an average of 77.50, compared to a national average of 62.72. A score of 60 is passing.

Kevin D. Blazek, Wyndmere; Mark A. Gilbertson, Hawley, Minn.; Brent D. Hansen, Hot Springs, S.D.; Joel D. Krause, Wyndmere; David L. Score, Wahpeton; Glenn A. Torgerson, Sidney, Mont.; Donald Zundel, Edgeley; and Jeff Overby, Lisbon. Only 284 of the 476 passed the standardized competency test.

The test covered 100 questions on system design, installation start-up, preventative

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SOURCES FOR CURRICULUM MATERIALS

Curriculum and Instructional Materials Center (CIMC)
State Dept. of Vocational and Technical Education
1500 West Seventh Avenue
Stillwater, OK 74074-4364
1-800-654-4502

Mid-America Vocational Curriculum Consortium (MAVCC)
Same address as CIMC
1-800-654-3988

The National Center for Research in Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, OH 43210-1090

The Center for Vocational Education Research, Curriculum, and
Personnel Development
Northern Montana College
Havre, Montana 59501
(406) 265-3738.