

INFORMATION PROCESSING INSTRUCTION IN  
VIRGINIA COMMUNITY COLLEGES

by

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(ABSTRACT)

This was a study of the information processing instruction in Virginia Community Colleges. The purposes of the study were (a) to obtain baseline information about the information processing instruction programs, and (b) to evaluate the information processing programs using the information processing "content" portion of the Standards for Excellence in Business Education. The respondents in the study were secretarial science program directors in the Virginia community colleges. Responses to the survey instrument were received from 22 of the 32 mailed (69%).

For the responding institutions, 2314 students were enrolled in courses that involve word processing. Sixty-six percent of the students were younger than 25. There were 57 instructors of information processing in the community colleges; two male and 55 female. Fifteen were full time, 42 part-time. Six of the faculty had doctor's

degrees, 42 had master's degrees, six had bachelor's degrees. Of the 419 computers used for word processing, over one-half were IBM compatible. In addition, 106 dedicated word processors were in use. WordStar computer software was used by one-half of the community colleges. Other software most used included WordPerfect and Display Write. Word processing was the most-offered secretarial science course.

The secretarial science program directors rated their information processing instruction programs to "meet" or "exceed the standard" in 112 of the 113 items in the "content" portion of the Standards published by the U. S. Department of Education. The one item that was rated "below standard" was an item dealing with data communications instruction.

The Standards items were divided into 12 subtopics. The subtopic to receive the highest rating was "Employability Traits and Attitudes." The subtopic to receive the lowest rating was "Computer Programming."

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## CHAPTER 1

### THE PROBLEM

Because our nation is rapidly shifting to an information based society, office technology has been thrust upon employers and business educators. Educators who train office workers must prepare them for the real world of working with computers. In many instances, business programs have simply added hardware, with the effect that teaching office technology, and especially information processing, has just happened without much planning or evaluation. The Office of Vocational Education of the U. S. Department of Education became so concerned with this problem that it sponsored a major project to develop standards for business education. An outcome of that project was Standards for Excellence in Business Education (National Business Education Association, 1985), to assist in evaluating business education programs and information processing in particular. They were developed for the purpose of evaluating business education programs and information processing programs in particular.

#### Statement of the Problem

The community college system was established in Virginia in 1965. Twenty-three community colleges at 33



campuses now exist in Virginia (See Appendix A for list of community college campuses). Electronic information processing was first offered in the Virginia community colleges in 1982. To date, no state-wide evaluation of information processing instruction has been conducted. An assessment of the present information processing instruction is needed in order to assist the community colleges in determining the strengths and needs of their programs. Computerized information processing instruction has developed so rapidly that even if the secretarial science faculties wished to do so, they may not know how to go about evaluating their programs.

Therefore, the overall purpose of this study is to determine how information processing instruction is being implemented in Virginia community colleges. The specific objectives of the study are (a) to obtain baseline information about the information processing students, courses offered, education and experience of faculty, and computers and computer software used at the community colleges, and (b) to evaluate information processing instruction in the Virginia community colleges, using the Standards for Excellence instrument published by the U. S. Department of Education.

To accomplish the above two objectives, this study

addressed the following research questions:

1. Baseline Demographic Information

- a. What computers and computer software are being used for information processing instruction in the Virginia community colleges?
- b. What secretarial science courses are being offered in the Virginia community college secretarial science programs?
- c. What kind and how much information processing training do Virginia community college information processing instructors have?
- d. Do Virginia community college information processing instructors have job experience in information processing?

2. Program Evaluation

How do the Virginia community college secretarial science program directors rate their information processing instruction programs in the "content" portion of information processing section of Standards for Excellence items published by the U. S. Department of Education?

### Significance of the Study

Kell and Sawaia (1969, pp. 72-74) state that education is an investment in resources and must be constantly evaluated for greater productivity. Appraisal is based upon comprehensive review of current objectives and the means for attaining them. They also state that business and office education must be sensitive and responsive to the explosion of knowledge permeating business.

The Virginia Employment Commission (March, 1985) predicts that there will be 47,480 job openings for secretaries and 17,110 for typists, with a total of 261,960 openings for clerical workers in Virginia between 1980 and 1990.

Mallinson (1985) states that in 1983 there was one automated work station for every 10-15 workers; that by the 1990s, the ratio will more likely be one to one; and that in the last four years, 389 word processing software packages have been released for use with personal computers. Silvestrai, Lukasiewicz and Einstein (1983, p. 45) note that industry forecasts indicate there will be more than 10 times as many computers in use during the next decade than exist today.

From the above, it is apparent that future office workers must become competent in information technology. To compete economically, Virginia must be in the forefront in providing information processing training. Instruction in information processing instruction was introduced in the Virginia community colleges in 1982, and no evaluation has thus far been conducted. This study will evaluate the curriculum to ensure the teaching of essential competencies in information processing, and will provide baseline data for future evaluations of information processing instruction in Virginia community colleges. In addition, if business teacher educators know what hardware and software are being used in the community colleges and what additional training is needed by the instructors, the results of the study will assist them in planning instruction.

#### Limitations of the Study

The length of the entire Standards for Excellence survey instrument was 94 pages. Only the "content" portion of the information processing section which contained 23 pages was used for this study.

#### Definition of Terms

When IBM introduced the Magnetic Tape Selectric

Typewriter (MTST) and the MagCard Selectric Typewriter (MCST) in the 1960s, a phrase was coined by an IBM employee in Germany, "TEXTVERBAREITUNG," which means word processing. Since that time, information and word processing have become household words (Kleinschrod & Turner, 1981, p. 6).

To better understand the terms used in the word and information processing programs, the following terms are defined:

Information Processing--Information processing is "a collection of word and data processing equipment, procedures, software, data and people that integrates the subsystems of the organization and provides information to the user" (Policies Commission for Business and Economic Education, 1986).

Word Processing--According to the American National Standards Institute, word processing is the "transformation of ideas and information into a readable form of communication through the management of procedures, equipment and personnel" (Policies Commission for Business and Economic Education, 1986 p. 1).

Evaluation - For purposes of this study, the definition of evaluation is comparing a program to established practices or standards.

## CHAPTER 2

### REVIEW OF RELATED LITERATURE

This chapter will review selected literature and research so that a foundation for the proposed study may be established. It is divided into three areas (a) information processing, (b) evaluation of information processing instruction programs, and (c) other related literature. It also includes a summary.

#### Information Processing

Information processing has come about very rapidly and much has been published about it. The National Business Education Association (1985) devoted its 1985 Yearbook to "Information Processing in the Business Education Curriculum."

In an article in that publication, "Implementing an Information Processing Program," Wood states that much of the computer education that has been delivered to date has come through in-service and conference settings where college credit was not offered. About half of the states now have some teacher certification requirement for teaching computer related business education courses at the secondary level. In addition, Wood states that the agencies that have developed and offered information

processing in-service training will need to continue their efforts to offer introductory content to those who will need it and advanced content to those teachers who have learned the fundamentals.

Wood (1985, p. 77) further states that:

Course content needs to be modified to include the impact of change for a nation turning from a society and work force involved in and dominated by industrial and agricultural pursuits to one where information processing is the major industry.

In an article, "Implications of Information Processing for Two-Year College Programs" Meggison (1985) discusses the role of business education in two-year colleges. He states that the majority of students are enrolled in business and office education programs to prepare them to transfer to baccalaureate institutions or to enter the job market with specific occupational skills. Two-year colleges also provide formal and informal continuing education experience for persons in the specific geographical area.

Meggison describes three groups of workers typically found in information processing occupations in today's offices: (a) young people entering the work force as their first full-time employment experience, (b) older workers

who now find the information processing field a viable career alternative, and (c) people presently employed in offices who now want technological training (Meggison, 1985, p. 25).

He further states that most persons attending are degree students seeking an associate degree at completion of two years of study. He emphasized that business educators must be prepared for more drastic changes in the remainder of this century and accept the fact that curriculum, lesson plans, and related instructional materials must be kept current and reflect recent and projected developments to modern office technology.

The Policies Commission for Business and Economic Education is a national commission with representatives from three major professional business education organizations--Business Education Division of the American Vocational Association, Delta Pi Epsilon, and the National Business Education Association. It exists to "identify and define both existing and emerging issues in business and economic education" (Policies Commission, p. 1). It also develops recommendations for achieving selected goals, clarifying issues, and unifying efforts of various business education groups represented by the commission.



Regarding word processing in two-year and other postsecondary vocational instruction, the Commission stated:

Two-year college and other postsecondary vocational instruction should include not only those areas taught at the secondary level but also the introduction to and application of advanced word processing applications.... (p. 11)

In an article, "The Future of Information Processing," Berg (1985) discusses five major segments that hold the key to the impact automated technology will have upon the total information flow. They are information, software, hardware, human resources, and information resource management. Berg emphasized that information has taken on a new dimension since technologies have been developed. Berg further states that the competition in the hardware and software will have a positive impact--more powerful and easier to use word processing software, more on-line storage capacity and greater cost effectiveness. Berg said that integrating an organization's human resources with today's technology will be a delicate job. Human resources are critical to all organizations and will lead

to a positive work situation and will benefit the individual workers and the organization. Business educators will have to know and understand the five major segments of information processing.

### Evaluation of Information Processing Instruction Programs

There is a paucity of research regarding evaluation of information processing instruction programs. One evaluation system was developed for business education, though it was developed in 1954 (Delta Pi Epsilon). The curriculum has changed greatly since then. It listed broad subjects in business education with criterion statements which had several "evidence" (standards) statements that were to be rated.

Pertaining to this study specifically, four publications were reviewed and used as a basis for this study: "National Standards Project in Business Education: An Overview," (Calhoun, Dewar, Harper & White, 1984); Standards for Excellence in Business Education (National Business Education Association, 1985); "Implementing National Standards for Excellence in Business Education: Next Steps" (Calhoun, Dewar & Finch, 1985); and Standards for Excellence in Business Education: Executive Summary (East Carolina University, 1985).

These publications describe in detail how the Standards project was developed and implemented. In January, 1984, a contract to develop standards of excellence in business education was awarded by the U. S. Department of Education to the School of Technology at East Carolina University, Greenville, North Carolina. The purpose of the project was to develop qualitative standards of excellence for the business education program area of vocational education. The project focused on two major objectives: (a) to develop program standards of excellence common to business education programs, and (b) to develop instructional standards of excellence common to information processing, including word processing and data processing. The standards were directed toward secondary, postsecondary, and adult levels. They were designed for use by business educators, and district or state level business educators for program planning. In addition, the standards may be used in revising and updating courses and programs (Calhoun, et al., 1985, pp 3-6).

An advisory group was formed, composed of representatives of business, education, and industry from North Carolina. It provided sites for collection of standards data from information processing installations and reviewed the standards as they were developed.

The standards were developed and validated by a nationwide sample of business educators, the technical advisory group, and representatives from the private sector. The subcontract for regional validation was carried out by NBEA (National Business Education Association). A cross-section of business educators was involved in the validation process at professional meetings. The standards were then disseminated in the fall of 1985.

The Standards for Excellence (National Business Education Association, 1985, p. 9) are statements of validated (a) program, and (b) information processing standards. The program standards are organized into nine topical areas and include 247 standards (statements) that are categorized as follows:

<u>Topic</u>	<u>No. of Standards</u>
Philosophy and Purpose	16
Organization and Administration	29
Curriculum and Instruction	76
Instructional Staff	15
Financial Resources	12
Instructional Support Systems	48
Public Relations	24
Student Development Services	21
Evaluation	6

The information processing instructional standards are organized into six topical areas with 188 standards, as follows:

<u>Topic</u>	<u>No. of Standards</u>
Organization	3
Content	113
Related Content	24
Methods and Resources	21
Instructional Support System	21
Evaluation	6

Detailed instructions for using the Standards are found in the Standards publication and also in an article, "Implementing National Standards for Excellence in Business Education: Next Steps" (Calhoun, et al., 1985, pp. 3-4). Instructions are also provided for interpreting and using the results.

A search was conducted to determine what other states have done in information processing instruction. In the publication "The Business Education Standards for Excellence" (Wyoming State Department of Education, 1984), Wyoming has prepared a three-part package to improve its programs to meet the entry-level requirement of employers in Wyoming.

### Other Related Literature

In an article about how business education can help teachers become better attuned to the needs of business, industry, and government, Walden (1986) states that on-the-job work experience is proposed as a component of business teacher education which can help teachers gain an understanding of the work place. He suggested planned, supervised, directed work experience for business education teachers as both a pre-service and in-service requirement. He suggested that on-the-job experience provides excellent opportunities for business teachers to collect examples and illustrations that can add realism to the classroom. Temporary work places are resource labs and the opportunities for classroom enrichment are unlimited. This may be one way to revitalize teachers and to better prepare new teachers.

In a special issue of News Letter that concerned a study funded by the Virginia Occupational Coordinating Committee, a service of the Virginia Employment Commission, "Changing Job Skills in Virginia: The Employer's View," trends in the work place were discussed. The authors gave a view of employers in Virginia, especially concerning the

spread of technology. The employers identified six interrelated trends in the work place (Martin & Tolson, 1986, p. 1):

1. Required skills are becoming more technical.
2. Computers are an important tools throughout the occupational spectrum.
3. Occupations are becoming more specialized.
4. Teamwork is becoming more important.
5. Employers are becoming more client-and customer-oriented.
6. The pace of change is rapid.

The employers stressed the need for increasing numbers of employees to be computer literate. They divided those workers into two groups: (a) specialists who work in computer-related occupations, and (b) employees who use computers in jobs and in other fields. How computers have revolutionized office work is also discussed. The employers' third recommendation was:

Computer skills should be taught to all students. These should include a basic understanding of the way the machine is constructed, the logic it uses and as much hands on experience as possible. (Martin & Tolson, 1986, p. 1) [italics added]

### Summary

This chapter has dealt with literature related to the proposed study. The areas covered were information processing, evaluation of information processing instruction programs, evaluation of vocational education, and other literature related to office technology education.

The review of literature provided a basis for this study, the purposes of which were to (a) obtain baseline data regarding Virginia community colleges' information processing students, faculty, course offerings, computers, and computer software; and (b) evaluate information processing programs in the Virginia community colleges using the Standards for Excellence in Business Education instrument that was published by the U. S. Department of Education.

Business educators and others are so concerned with information processing that the National Business Education Association devoted its 1985 yearbook entirely to information processing. Several chapters in that publication were reviewed.

Four publications regarding information processing instruction programs that concerned this study specifically were reviewed and used as a basis for the research design and methodology.



## CHAPTER 3

### PROCEDURE

One objective of this study was to obtain baseline information about information processing students, education and experience of faculty, courses offered, and computers and computer software used at the Virginia community colleges. Another objective was to evaluate information processing instruction programs in Virginia community colleges, using the information processing content portion of Standards for Excellence in Business Education instrument.

#### Procedures Used

A survey instrument was developed. The first section of the survey instrument concerned demographic data and program information from each community college regarding instructors, students, courses, and computers and computer software.

The second section of the survey instrument concerned the program evaluation part of the study and used a portion of the Standards of Excellence instrument. The entire information processing instructional standards of the Standards instrument were organized into 188 standards

which were categorized into five topics--organization, content, related content, methods and resources, and evaluation. Because of the length of the entire Standards instrument, only the "Content" topic was used for this study. The 113 content portion included 12 subtopics: terminology, careers, cycles and functions, hardware, software, trends and issues, employability knowledge and skills, employability traits and attitudes, computer literacy, management and supervision, computer programming, and integrated information systems.

For each of the 113 standards, the secretarial science program directors were asked to read each standard statement and mark the appropriate symbol to indicate whether their program or course exceeds, meets, or falls below the standard. For processing the data, the numerical value of 3 was assigned to "Exceeds Standard," the value of 2 was assigned to "Meets Standard," and the value of 1 as assigned to "Falls Below Standard."

Instructions for implementing the survey instrument in this study were taken from two sources: (a) Standards for Excellence in Business Education, (National Business Education Association, 1984) and (b) an article written by the Standards project director, Calhoun, et al., in Business Education Forum, in November, 1985.

A list of all Virginia community colleges and telephone numbers was compiled (See Appendix A). A telephone call was made to identify the secretarial science program director, or the person who would be most knowledgeable about the information processing instruction.

Another telephone call was made to the secretarial science program director at each community college to request that the survey instrument be completed. All program directors agreed to complete and return the survey instrument.

A packet was mailed on April 1, 1986, to the program directors which included the survey instrument and a letter of support from Lois E. Wells, Assistant Vice Chancellor, Instructional Programs and Services of the Virginia Community College System (See Appendix D).

After one month, a follow-up letter was mailed to those secretarial science program directors who had not returned the survey instrument (See Appendix E). A total of 22 survey instruments were returned (69%).

### Data Analysis

Data were collected to examine information processing offerings in Virginia community colleges. Statistical analyses were descriptive and consisted of sums, means, standard deviations, percentages, and frequency distributions.

The background part of the survey included information on students, faculty, computers and computer software used, and courses offered. Analyses were made of background information on the community colleges surveyed. The program evaluation part of the survey consisted of 113 items from the "Content" portion of the Standards for Excellence instrument. The "Content" portion was subdivided into 12 subtopics, (a) terminology, (b) careers, (c) cycles and functions, (d) hardware, (e) software, (f) trends and issues, (g) employability, knowledge and skills, (h), employability traits and attitudes, (i) computer literacy, (j) management and supervision, (k) computer programming, and (l) integrated information systems. Data analyses included computing mean ratings of the responses to the individual items and computing mean ratings and standard deviations for the 12 subtopics.

## CHAPTER 4

### FINDINGS OF THE STUDY

One objective of the study was to obtain baseline information about the information processing students, education and experience of faculty, computers and computer software used, and courses offered in Virginia. This demographic information was obtained through the development of an ancillary section which accompanied the primary survey instrument that was sent to all Virginia community college information processing program directors. A total of 32 community college campuses offer information processing. Twenty-two responses (69%) were returned.

Another objective of the study was to evaluate information processing instruction programs in Virginia community colleges, using the content portion of Standards for Excellence in Business Education instrument that was published by the U. S. Department of Education.

The results of this study are presented in two sections. The first section presents the demographic information; the second section presents the program evaluation--information processing.

## Demographic Information

### Students

A total of 1901 students were enrolled in secretarial science departments at the 21 Virginia community colleges. Of these students, 1254 (66%) were younger than 25 years of age; 701 (36%) were 25 or older. There were 2314 students enrolled in courses that involve word processing.

### Degrees Offered

Of the 22 Virginia community colleges that responded, 11 (50%) offered a one-year certificate in information processing. The AAS (Associate in Science) degree in information processing is offered in nine (41%) of the community colleges.

### Information Processing Faculty

There were 57 total instructors in information processing at the 22 Virginia community colleges. Two of the instructors were male; 55 were female. There were 15 full time instructors in information processing and 42 part-time instructors (instructors who either work part-time or teach courses other than word processing).

### Education of Faculty

Of the 57 instructors in information processing, six had doctor's degrees, 42 had master's degrees, six had bachelor's degrees, one had a CAGS (Certificate of Advanced Graduate Studies), and two did not respond.

Regarding specific word processing training, three stated they had taken a formal course; seven had taken short workshops or seminars; six had received vendor training; nine marked "yes" or "varied." The majority answered "self-taught" or left the question blank.

### Experience of Faculty

The average years of teaching experience of all instructors was 16 years. The average years of word processing teaching experience was four years.

Respondents from 15 community colleges (75%) reported that their instructors in information processing had no on-the-job experience in information processing.

### Computers

The kinds of computers being used in the 22 Virginia community colleges for information processing instruction are summarized in Table 1. Of the 419 computers, over half were MS-DOS, IBM compatible machines.

Table 1

Computers Used in 22 Virginia Community College Information Processing Instruction

Operating System	No. of Computers
MS DOS	
International Business Machines	96
Leading Edge	88
Columbia Osborne	25
NBI	12
Compaq	4
Total MS-DOS	225
TRS-DOS	
TRS-80	74
APPLE DOS 3.3	
Apple	13
OTHER	
	1
DEDICATED WORD PROCESSORS	
Syntrex	55
Wang	35
NBI	13
Lanier	3
Total Dedicated Word Processors	106
TOTAL COMPUTERS USED	419



### Software

The types of computer system software used in the 22 Virginia community college information processing instruction programs are summarized in Table 2. WordStar is the computer software used most, with 11 (50%) using it.

### Secretarial Science Courses Offered

For a complete listing of all secretarial science courses that were offered in 1985-86 at 22 Virginia community colleges, See Table 3. The courses are ranked in order of sections being offered.

Word processing was the most offered course with 59 sections being offered. Only two community colleges did not offer word processing.

### Program Evaluation: Information Processing

For each of the 113 items of the "Content" portion of the information processing section of Standards for Excellence survey instrument, respondents marked "Exceeds Standard," "Meets Standard," or "Below Standard." A value of three points was assigned to the rating "Exceeds Standard;" two points were assigned to the rating "Meets Standard;" and one point was assigned to "Below Standard."

Table 2

Computer Software Used in 22 Virginia Community Colleges  
Information Processing Programs

Software	No. of Community Colleges Using
WordStar	11
WordPerfect	6
Display Write	6
MultiMate	3
SuperScripsit	3
NBI	2
Microsoft	1
Easy Writer	1
PFS Writing Assistant	1
Apple	1
VolksWriter	1
Perfect Writer	1

Table 3

Secretarial Science Courses Offered at 22 Virginia Community Colleges in 1985-86

Course Title	Total No. Sections Offered	No. of Sections Offered	No. of Campuses Offering
Word Processing	59	0	2
		1	2
		2	4
		3	7
		4	7
Shorthand	55	1	8
		2	2
		3	7
		4	4
		6	1
Advanced Typewriting	32	0	2
		1	10
		2	4
		3	2
		4	4
Machine Transcription	33	0	2
		1	11
		2	6
		3	2
		4	1
Office Systems	27	0	8
		1	7
		2	1
		3	6
Clerical	19	0	6
		1	13
		2	3
Office Management	13	0	14
		1	6
		3	1
		4	1
Office Technology	10	0	16
		1	3
		2	2
		3	1
Filing	7	0	16
		1	5
		2	1
Other	4	1	4

If a standard (item) had a mean score rating between 2.5 and 3.00, the interpretation was that the standards was exceeded. If an item had a mean score rating between 1.50 and 2.49, the interpretation was that the standard was met. If an item's mean score rating was 0 to 1.49, it was interpreted to be "below standard."

The mean score ratings were ranked; the subtopics in ranked order, from the highest (h), Employability Traits and Attitudes) to the lowest (k), Computer Programming), are reported in Table 4. The 10 standards that had a mean rating above 2.5 (exceeds the standard) are shown in Table 5.

For a listing of all 113 survey instrument items, see Appendix G. The mean score values are also provided.

There was one standard that was rated "below standard," item number 15 in "Computer Literacy" subtopic. It had a mean score rating of 1.42. The standard is as follows:

Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to operate electronic data communication systems.

Table 4

Ranked Mean Responses of Subtopics of Content Portion of  
Standards for Excellence Survey Instrument

Mean Response	Standard Deviation	Subtopic
2.37	.43	H. Employability Traits and Attitudes
2.35	.64	A. Terminology
2.35	.42	G. Employability Knowledge and Skills
2.29	.35	C. Cycles and Functions
2.24	.42	B. Careers
2.17	.41	J. Management/Supervision
2.16	.52	I. Computer Literacy
2.14	.39	F. Trends and Issues
2.08	.45	D. Hardware
2.08	.46	L. Integrated Information Systems
2.07	.48	E. Software
1.85	.62	K. Computer Programming

Table 5

Standards That Had Mean Rating Above 2.5 (exceeds standard)

Rating	Subtopic	Item No.
2.67	Employee Traits and Attitudes	12
2.67	Employee Knowledge and Skills	2
2.57	Employee Traits and Attitudes	3
2.57	Employee Traits and Attitudes	23
2.52	Employee Traits and Attitudes	1
2.52	Employee Traits and Attitudes	15
2.52	Cycles and Functions	4
2.50	Software	1
2.50	Employee Traits and Attitudes	2
2.50	Employee Traits and Attitudes	6

## CHAPTER 5

### SUMMARY, AND CONCLUSIONS AND RECOMMENDATIONS

This chapter reviews the purposes and findings of the study, then draws some conclusions and makes suggestions and a recommendation for improvement of information processing instruction in Virginia community colleges.

#### Summary

The purposes of the study were to (a) obtain baseline data regarding Virginia community college's information processing students, faculty, course offerings, and computers and computer software, (b) evaluate information processing programs in the Virginia community colleges using the Standards for Excellence in Business Education instrument that was published by the U. S. Department of Education.

The respondents were secretarial science program directors in the Virginia community colleges. Twenty-two responses to the survey instrument were received of the 32 mailed (69%).

A total of 1901 students were enrolled in the 22 community college secretarial science departments.

One-year certificates and two-year AAS (Associate in Science) degrees in information were offered. Two-thirds of the information processing students were younger than 25. The overwhelming majority (97%) of instructors were female. Most instructors (42 of the 57) had master's degrees.

More than half of the 419 computers being used in the community colleges were IBM compatible. There were 106 dedicated word processors. WordStar computer software was used by one-half of the community colleges. The four secretarial science courses most offered were word processing, shorthand, advanced typewriting, and machine transcription.

The secretarial science program directors rated their information processing instruction to meet or exceed the standard on 112 of the 113 standards in the survey instrument. Only one standard had a mean rating of "falls below." It involved computer data communication.

The three lowest-rated subtopics were Part K, Computer Programming, which was rated 1.86; Part E, Software, which was rated 2.07; and Part D, Hardware, which was rated 2.08.



## Conclusions and Recommendations

The conclusions and recommendations that have been drawn from the findings are as follows:

### Baseline Demographic Information

Regarding the demographic part of this study, the following suggestions are made:

Of the 57 instructors in information processing, only 16 had taken formal courses, workshops, seminars or vendor training, and most were "self-taught." Therefore, it is suggested that the community college information processing instructors be asked if they would like to have more workshops or seminars made available to them through the business teacher educational institutions. If they do desire additional training, it is recommended that business teacher education institutions offer workshops and seminars to the community college information instructors in computers and software.

Respondents from 15 of the 22 Virginia community (75%) reported that their instructors in information processing

had no job experience in information processing. As suggested by Walden (1986), job experience should be encouraged for business educators. For example, sabbaticals, grants, or graduate credit could be offered to them to receive job experience in an office during summers to gain experience in information processing using a variety of computers and software. This could be provided through the business teacher education institutions.

Because of the high ratio of students taking information processing courses to computers in the Virginia community colleges (approximately 18 to 1), and because computer usage in the work place is expected to increase ten times in the next decade (Silvestra, Lukasiewicz, & Einstein, p. 45), it is suggested that more computers be provided for information processing instruction. This would be consistent with the Virginia Council on Vocational Education's recommendation No. 3 in its Annual Report, 1985, that:

State Board support efforts of the community college system to secure funds for replacement and updating occupational equipment. (p. 9)

### Program Evaluation

Of the 113 standards in the survey instrument, the Virginia community college secretarial science program directors rated their information processing instruction programs to "exceed standard" on 10 of the standards, "meets" standard on 102 of the standards, and "falls below" on one standard.

Regarding the 12 subtopics of the "content" portion of information processing of Standards for Excellence, none was rated to exceed the standard. One subtopic, Part K, "Computer Programming," had the lowest mean rating (1.85), but it still fell within "meets standard."

Because 112 of the 113 standards were rated to "meet" or "exceed" the standard by Virginia community college secretarial science program directors, it can be concluded that the information processing instruction programs generally meet the standards as established by the Standards for Excellence project set by the U. S. Department of Education.

One of the 113 standards' mean value was rated to "fall below" the standard. It is:

Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to operate electronic data communication systems.

Therefore, it is recommended that additional instruction and experiences be offered students to enable them to operate electronic data communication systems. For example, students could receive instruction in:

1. Concepts of data communications.
2. The most common data communication problems.
3. Steps to exchange popular software program files between personal computer through data communications.
4. Data communication services and their purpose.
5. Devices used to communicate.

#### Future Evaluations and Studies

In this study, data were not available concerning the number of students enrolled in the individual courses. For planning purposes, it is difficult to determine whether a course is being offered because the numbers of students justify its being offered, or whether it is being offered because it is in the curriculum and listed in the catalog of courses. It is suggested that if a similar study is undertaken that the survey instrument include number of persons enrolled in each course.

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APPENDIX A  
LIST OF VIRGINIA COMMUNITY COLLEGE SECRETARIAL  
SCIENCE PROGRAM DIRECTORS



## COMMUNITY COLLEGES IN VIRGINIA

Institution	Name	Title	Address	Scatts #
Blue Ridge	Willard H. Keeling	Chairman, Business & Secretarial Prog.	P.O. Box 80 Weyers Cave 24486	487-461
Central VA	Dr. Terry Ridle	Chairman, Business & Allied Health	3506 Wards Rd Lynchburg, 24502	676-5250
Dabney S. Lancaster	Doris Jamison	Program Director Word Processing	Route 60 West Clifton Forge 24422	676-3246
Danville	Dr. Diana Clary	Chairman, Div. of Business & Mgr. of Data Proc. Serv.	1008 S. Main Danville 24541	268-3276
Eastern Shore	Roy Mink	Div. Chairman Applied Arts & Sciences	Route 1, Box 6 Melfa 23410	564-4461
Germanna	Karen Pearce	Instructor Secretarial Sci.	Box 339 Locust Grove 22508	258-3011
J. SERGEANT REYNOLDS	Bob Paul	Program Director Word Processing	Downtown Campus 700 E. Jackson Richmond 23241	786-2009
Parnham Road Campus	Dr. JoAnn E Sherron	Program Director Word Processing	1651 E. Parnham Richmond 23241	421-3301
Western Campus	DOES NOT TEACH WORD PROCESSING			
John Tyler	Patti Loika	Program Head Data Processing	Chester 23831	3364-4031
Lord Fairfax	Gary Tusing	Professor of Business	P. O. 47 Middleton 22645	466-2011
Mountain Empire	Shirley Wells	Assistant Division Chairman	Drawer 700 Big Stone Gap 24219	791-7011
New River	Dr. Bette Hines	Program Director Secretarial Sci.	Drawer 1127 Dublin	791-3301 X-287
NORTHERN VA Alexandria Campus	Penny Williams	Secretarial Sci. Business Division	300 1 N. Beauregard St. Alexandria 22311	429-6313
Annandale Campus	Mary Flynn	Asst. Div. Chr. Office Systems Technology	8333 Little River Turnpike 22003	429-3000
Louden Campus	Ellen Brohard	Program Head Secretarial Science	1000 Harry F. Byrd Hwy., Sterling 22170	462-4578
Manassas Campus	Mary Jay	Program Head	6901 Sudley Rd Manassas 22110	466-4269
Woodbridge Campus	Dr. Alice Taylor	Program Head Secretarial Sci.	15200 Smoketown Woodbridge 22191	466-5233
Patrick Henry	Linda Gale	Associate Prof. Instructor	P. O. Drawer 5311 Martinsville 24115	676-4340
Paul D. Camp	Carolyn Crowder	Word Processing	P. O. Box 737 Franklin 23851	634-3846

## COMMUNITY COLLEGES

2

Piedmont VA	Jean Campbell-Kuhn	Business Technology	Rt. 6, Box 1-A Charlottesville 22901	487-1071
RAPPHANNOCK		Asst. Prof.	P.O. Box 287	
South Campus	Edith Jackson	Secretarial Sci	Glenns 23149	636-4289
North Campus	Leslie Smith	Associate Prof. of Business	P. O. Box 318 Warsaw 22572	634-3903
SOUTHSIDE VIRGINIA		Chairman, Division of Business & Technology	Alberta 23821	634-3110
Christina Campus	Dr. Charles Vaughan			
John H. Daniel Campus	Barbara Beard	Asst. Prof. Secretarial Sci.	Keysville 23947	634-4377
Southwest Virginia	Jane Petsel	Associate Prof. Secretarial Sci.	P. O. Box SUCC Richlands 24641	676-3864 X-301
Thomas Nelson TIDEWATER	Marie D. Tyler	Business Sci. Div.	P. O. Box 9407 Hampton	564-2743
Chesapeake Campus	John Massey	Division Chairman Business	Chesapeake 23320	842-1260
Frederick Campus	Ann Peele	Division Chairman Business	St. Rt 135 Portsmouth 23703	842-3258
Virginia Beach Campus	Debbie Bonham	Business Dept.	1700 College Crescent, V.B. 23456	427-7148
Virginia Highlands	Dr. Daniel A. Dye	Division Chairman Humanities & Social Science	P. O. 828 Abingdon 24210	676-3336
Virginia Western	Martha Brown	Secretarial Sci.	P. O. Box 14045 Roanoke 24038	982-7216
Wytheville	Betty Matheny	Secretarial Sci	1000 E. Main St. Wytheville 24382	676-4121

APPENDIX B  
SURVEY INSTRUMENT

## INFORMATION REQUESTED FROM RESPONDENTS

## Note to Respondents:

Information provided by you will be held confidential and will not be published. Results obtained from information provided by you about your particular individual information processing program will be shared with you.

1. Name of Community College \_\_\_\_\_ Campus \_\_\_\_\_
2. Name of Respondent \_\_\_\_\_ Position \_\_\_\_\_
3. Total enrollment in secretarial science department \_\_\_\_\_
4. Secretarial science courses offered in your program  
(check those that are offered, circle the ones that involve computer)  
Advanced Information/  
(1) Typewriting \_\_\_\_\_ (2) Shorthand \_\_\_\_\_ (3) Word Processing \_\_\_\_\_  
(4) Clerical Machine  
Procedures \_\_\_\_\_ (5) Transcribe \_\_\_\_\_ (6) Office Systems \_\_\_\_\_  
(7) Office Technology \_\_\_\_\_ (8) Office Management \_\_\_\_\_ (9) Other (name) \_\_\_\_\_
5. In the blanks above in previous question, next to the check, state the number of times per year that the course is offered.
6. Total number of students who take courses involving information/word processing:  
\_\_\_\_\_
7. What computers (hardware) and how many are available in your program?  
(1) IBM (2) APPLE (3) McINTOSH (4) TRS-80 (5) OTHER (6) OTHER  
\_\_\_\_\_  
No. No. No. No. No. No.
8. What information/word processing software is available in in your program?  
(1) WORD PERFECT (2) MULTIMATE (3) WORD STAR (4) PFS/Writing ASSISTANT (5) VOLKS-WRITER  
\_\_\_\_\_  
(6) EASY WRITER II (7) PERFECT WRITER (8) MICROSOFT (9) DISPLAY WRITE 3 (10) SAMNA WORD III  
\_\_\_\_\_
9. What percent of the secretarial science students in your program are under 25 years of age? \_\_\_\_\_%; over 25 years of age? \_\_\_\_\_?

INFORMATION REQUESTED FROM RESPONDENTS

2

10. Do you offer a one-year certificate program in information/word processing?

(1) \_\_\_\_\_ (2) \_\_\_\_\_  
 Yes No

11. Do you offer an AAS degree in information/word processing?

(1) \_\_\_\_\_ (2) \_\_\_\_\_  
 Yes No

Please complete the following for each instructor in your information/word processing program:





Instructor	Sex		Teach WP Full time	Teach WP Part time	Years of On-the-Job experience in WP	Years of Teach. Exp. Over all		Educational Attainment		Specific WP Trng
	M	F				Teach WP	Years	Degree Earned	Formal	
A										
B										
C										
D										

THE FOLLOWING STANDARDS ARE FROM STANDARDS FOR EXCELLENCE IN BUSINESS EDUCATION, JULY, 1985, A PROJECT SPONSORED BY THE U.S. DEPARTMENT OF EDUCATION, OFFICE OF VOCATIONAL EDUCATION.

To the right of each standard statement are three symbols representing "Exceeds Standard" (Δ); "Meets Standard" (○); "Below Standard" (▽).

Use the following procedures for marking the standards:

1. Scan the complete listing of content standard statements to become familiar with them.
2. Read each standard statement and mark the appropriate symbol indicating whether the program exceeds, meets or falls below the standard.
3. Record additional information about the program as related to the standard topic under the "Comments" sections at the end of the topic.

Substantially:   
 Exceeds Standard   
 Meets Standard   
 Below Standard 

Standard Topic

CONTENT

The statements within this standard topic relate to content of the information processing instructional program. They address terminology, careers, information processing cycles and functions, hardware, software, trends and issues, employability knowledge and skills, employability traits and attitudes, computer literacy, management/supervision, computer programming, and integrated information systems. Course content reflects program objectives.

A. Terminology

1. Specialized vocabulary essential to information processing content is introduced, defined, and reinforced in context.  
 Comment:

2. Instruction includes planned evaluation to verify student mastery of vocabulary.  
 Comment:

B. Careers

1. The program provides for instruction related to career opportunities in information processing.  
 Comment:

2. The program provides for instruction related to knowledge, skills, and characteristics needed for entry-level positions in information processing.  
 Comment

3. The program provides for instruction related to personal and professional qualifications needed for specific positions in information processing.  
Comment: △ ○ ▽
4. The program provides for instruction related to knowledge, skills, and characteristics needed for advancement in information processing careers.  
Comment: △ ○ ▽
5. The program provides for instruction related to interrelationships of various positions in information processing.  
Comment: △ ○ ▽
6. The program provides for instruction related to the role of information processing in the job market of the future.  
Comment: △ ○ ▽
7. The program provides for instruction related to employment information sources.  
Comment: △ ○ ▽
8. Instruction includes planned evaluation to verify student mastery of content related to careers.  
Comment: △ ○ ▽

## C. Cycles and Functions

1. Instruction related to the information processing cycle includes the functions of preparation and verification of input.  
Comment: △○▽
  
2. Instruction related to the information processing cycle includes the functions of interpreting and reacting to error messages.  
Comment: △○▽
  
3. Instruction related to the information processing cycle includes the functions of manipulation of data in the processor unit.  
Comment: △○▽
  
4. Instruction related to the information processing cycle includes the functions of verification and correction of output.  
Comment: △○▽
  
5. Instruction related to the information processing cycle includes the functions of storage, retrieval, and transmittal of data using technologies such as micrographics, computer-assisted retrieval, fiber optics, facsimile transmission, communicating text editors, and electronic mail.  
Comment: △○▽



6. Instruction includes planned evaluation to verify student mastery of content related to information processing cycles and functions.  
Comment:

△○▽

g. Hardware

1. Instruction related to hardware use includes procedures for proper handling and care.  
Comment:

△○▽

2. Instruction related to hardware use includes knowledge of the capabilities and limitations of input, central processing, output, and peripheral devices.  
Comment:

△○▽

3. Instruction related to hardware use includes strategies for troubleshooting.  
Comment:

△○▽

4. Instruction related to hardware selection includes methods of determining specific requirements.  
Comment:

△○▽

5. Instruction related to hardware selection includes procedures which reflect needs analysis, feasibility surveys, and vendor credentials.  
Comment:

△○▽

6. Instruction includes planned evaluation to verify student mastery of content related to selecting and using hardware.  
Comment:

△○▽

## E. Software

1. Instruction related to software use includes proper handling and care.  
Comment:

△○▽

2. Instruction related to software use includes relevant applications (data base management, spread sheets, and word processing).  
Comment:

△○▽

3. Instruction related to software use includes knowledge of capabilities and limitations of software as related to job functions.  
Comment:

△○▽

4. Instruction related to software use includes procedures for filing and management of software.  
Comment:

△○▽

5. Instruction related to software selection includes the determination of specific application requirements.  
Comment:

△○▽

6. Instruction related to software selection includes consideration of needs analysis; canned, modular, and custom software; complexity and cost; vendor policies; and effectiveness of the instructional materials.  
Comment:

△○▽

7. Instruction related to software selection includes knowledge and implications of copyright laws.  
Comment:

△○▽

8. Instruction includes planned evaluation to verify student mastery of content related to selecting and using software.  
Comment:

△○▽

#### F. Trends and Issues

1. Instruction includes trends and issues relating to technological developments (such as portable data processing equipment, laser video disk storage, voice processing, mobile telephone, electronic cottage/telecommuting, videotex, integrated software, telecommunications, optical character recognition, computer graphics, robotics, networking, and artificial intelligence).  
Comment:

△○▽

2. Instruction includes trends and issues related to sociological impact of information processing on the workplace.  
Comment:

△○▽

3. Instruction includes trends and issues related to the legal implications of the electronic office.  
Comment: △○▽
  
4. Instruction includes trends and issues related to human relations in information processing.  
Comment: △○▽
  
5. Instruction includes trends and issues related to information access and control.  
Comment: △○▽
  
6. Instruction includes issues related to computer ethics.  
Comment: △○▽
  
7. Instruction includes trends and issues related to productivity measurement in information processing.  
Comment: △○▽
  
8. Instruction includes trends and issues related to employee compensation and benefits in information processing.  
Comment: △○▽

9. Instruction includes trends and issues related to employer expectations in information processing.  
Comment:

△○▽

10. Opportunities are provided for students to demonstrate creativity, imagination, and inquisitiveness about current trends and issues in information processing through the completion of individual and/or group projects.  
Comment:

△○▽

11. Instruction includes planned evaluation to verify student mastery of content related to trends and issues in information processing.  
Comment:

△○▽

#### G. Employability Knowledge and Skills

1. Instruction in information processing includes opportunities for students to develop and utilize concentration techniques.  
Comment:

△○▽

2. Instruction in information processing provides opportunities for students to set up a system; input data (keyboard); create documents; edit documents; and store, file, and print text.  
Comment:

△○▽

3. Instruction in information processing provides opportunities for students to plan, organize, and prioritize tasks to facilitate work flow.  
Comment:

△○▽

4. Instruction in information processing provides opportunities for students to recognize the multiplier effect of errors and subsequent excessive costs and wasted time.  
Comment:

△○▽

5. Instruction in information processing provides opportunities for students to meet or surpass appropriate production/error ratio requirements.  
Comment:

△○▽

6. Instruction includes planned evaluation to verify student mastery of content related to employability knowledge and skills.  
Comment:

△○▽

#### H. Employability Traits and Attitudes

1. Instruction in information processing provides opportunities for students to develop traits and attitudes required to cope with routine and repetitive tasks.  
Comment:

△○▽

2. Instruction in information processing provides opportunities for students to develop traits and attitudes required to exercise CARE in all phases of work.  
Comment: △○▽
3. Instruction in information processing provides opportunities for students to develop traits and attitudes required to display attention to details in work being performed.  
Comment: △○▽
4. Instruction in information processing provides opportunities for students to develop traits and attitudes required to work efficiently under pressure.  
Comment: △○▽
5. Instruction in information processing provides opportunities for students to develop traits and attitudes required to work effectively under pressure.  
Comment: △○▽
6. Instruction in information processing provides opportunities for students to develop traits and attitudes required to meet deadlines.  
Comment: △○▽

7. Instruction in information processing provides opportunities for students to develop traits and attitudes required to use discretion in the use of confidential information.  
Comment: △○▽
8. Instruction in information processing provides opportunities for students to develop traits and attitudes required to evaluate personal work habits.  
Comment: △○▽
9. Instruction in information processing provides opportunities for students to develop traits and attitudes required to work productively with a variety of individuals including clients and coworkers.  
Comment: △○▽
10. Instruction in information processing provides opportunities for students to develop traits and attitudes required to interact courteously in all situations.  
Comment: △○▽
11. Instruction in information processing provides opportunities for students to develop traits and attitudes required to adapt productively to rapidly changing demands.  
Comment: △○▽



12. Instruction in information processing provides opportunities for students to develop traits and attitudes required to complete assignments accurately and thoroughly.  
Comment: △○▽
13. Instruction in information processing provides opportunities for students to develop traits and attitudes required to exhibit self-starter traits.  
Comment: △○▽
14. Instruction in information processing provides opportunities for students to develop traits and attitudes required to work alone or as a team member over a sustained period of time to the successful completion of an assignment.  
Comment: △○▽
15. Instruction in information processing provides opportunities for students to develop traits and attitudes required to recognize when to ask for assistance.  
Comment: △○▽
16. Instruction in information processing provides opportunities for students to develop traits and attitudes required to work effectively on special projects when requested.  
Comment: △○▽

17. Instruction in information processing provides opportunities for students to develop traits and attitudes required to accept and use constructive criticism.  
Comment: △ ○ ▽
18. Instruction in information processing provides opportunities for students to develop traits and attitudes required to exhibit enthusiasm.  
Comment: △ ○ ▽
19. Instruction in information processing provides opportunities for students to develop traits and attitudes required to exhibit self-confidence.  
Comment: △ ○ ▽
20. Instruction in information processing provides opportunities for students to develop traits and attitudes required to employ initiative and imagination.  
Comment: △ ○ ▽
21. Instruction in information processing provides opportunities for students to develop traits and attitudes required to demonstrate loyalty.  
Comment: △ ○ ▽
22. Instruction in information processing provides opportunities for students to develop traits and attitudes required to demonstrate punctuality.  
Comment: △ ○ ▽

23. Instruction in information processing provides opportunities for students to develop traits and attitudes required to demonstrate dependability.  
Comment:

△○▽

24. Instruction in information processing provides opportunities for students to develop traits and attitudes required to demonstrate inquisitiveness.  
Comment:

△○▽

25. Instruction includes planned evaluation to verify student mastery of content related to employability traits and skills.  
Comment:

△○▽

#### I. Computer Literacy

1. The application of computer technology as used in business is incorporated into the instructional process.  
Comment:

△○▽

2. Instruction in computer literacy focuses on personal and job uses which enable persons to understand fundamental computer terminology.  
Comment:

△○▽

3. Instruction in computer literacy focuses on personal and job uses which enable persons to explain how information is processed both manually and by a computer system.

△○▽

Comment:

4. Instruction in computer literacy focuses on personal and job uses which enable persons to describe the impact of computer technology on industry, business, government, society, and the individual.

△○▽

Comment:

5. Instruction in computer literacy focuses on personal and job uses which enable persons to identify current trends and issues dealing with computer technology.

△○▽

Comment:

6. Instruction in computer literacy focuses on personal and job uses which enable persons to recognize how computers may be used as management tools.

△○▽

Comment:

7. Instruction in computer literacy focuses on personal and job uses which enable persons to describe major differences and similarities of mainframes, minicomputers, and microcomputers.

△○▽

Comment:

8. Instruction in computer literacy focuses on personal and job uses which enable persons to identify computer capabilities and limitations.  
Comment: △○▽
9. Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to determine when computer use is appropriate.  
Comment: △○▽
10. Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to write simple programs in BASIC or other appropriate languages.  
Comment: △○▽
11. Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to use a computer to solve problems.  
Comment: △○▽
12. Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to prepare data for input into a computer system.  
Comment: △○▽

18. Instruction includes planned evaluation to verify student mastery of content related to computer literacy.  
Comment:

△○▽

J. Management/Supervision

1. Instruction incorporates the basic principles of management related to current and evolving technological advances.  
Comment:

△○▽

2. Instruction incorporates the basic principles of management related to the role and relationship of the information system to each of its subsystems.  
Comment:

△○▽

3. Instruction incorporates the basic principles of management related to ergonomics (productive use of equipment, workflow, and people).  
Comment:

△○▽

4. Instruction incorporates the basic principles of management related to roles and responsibilities of information processing personnel.  
Comment:

△○▽

13. Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to verify the accuracy of input data.  
Comment: △ ○ ▽
14. Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to interpret computer-generated reports.  
Comment: △ ○ ▽
15. Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to operate electronic data communications systems.  
Comment: △ ○ ▽
16. Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to use the computer for business and personal applications such as records management and communication.  
Comment: △ ○ ▽
17. Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to evaluate software applications.  
Comment: △ ○ ▽

18. Instruction includes planned evaluation to verify student mastery of content related to computer literacy.  
Comment:

△○▽

#### J. Management/Supervision

1. Instruction incorporates the basic principles of management related to current and evolving technological advances.  
Comment:

△○▽

2. Instruction incorporates the basic principles of management related to the role and relationship of the information system to each of its subsystems.  
Comment:

△○▽

3. Instruction incorporates the basic principles of management related to ergonomics (productive use of equipment, workflow, and people).  
Comment:

△○▽

4. Instruction incorporates the basic principles of management related to roles and responsibilities of information processing personnel.  
Comment:

△○▽



5. Instruction incorporates the basic principles of management related to personnel selection, training, and evaluation.  
Comment: △○▽
6. Instruction incorporates the basic principles of management related to patterns of people interaction.  
Comment: △○▽
7. Instruction incorporates the basic principles of management related to productivity measurement.  
Comment: △○▽
8. Instruction incorporates the basic principles of management related to costs and benefits of office operations.  
Comment: △○▽
9. Instruction incorporates the basic principles of management related to centralization/decentralization of control.  
Comment: △○▽
10. Instruction incorporates the basic principles of management related to the decision-making process.  
Comment: △○▽

11. Instruction includes planned evaluation to verify student mastery of content related to management/supervision of information processing.  
Comment:

△○▽

#### K. Computer Programming

1. Instruction in computer programming includes the function of programming in an information processing system.  
Comment:

△○▽

2. Instruction in computer programming includes the advantages, disadvantages, and applications of various programming languages.  
Comment:

△○▽

3. Instruction in computer programming includes planning for volume work.  
Comment:

△○▽

4. Instruction in computer programming includes loading, testing, and executing computer programs.  
Comment:

△○▽

5. Instruction includes planned evaluation of student mastery of content related to computer programming.  
Comment:

△○▽

## L. Integrated Information Systems

1. Instruction includes the concept of integrated information systems and subsystems of originating, processing, communicating, storing, and retrieving.

Comment:

△○▽

2. Instruction in integrated information systems includes capabilities and limitations of automation systems.

Comment:

△○▽

3. Instruction in integrated information systems includes interrelationships of data, word, voice, and graphics/image processing.

Comment:

△○▽

4. Instruction in integrated information systems includes the concept of the expanded office environment.

Comment:

△○▽

5. Instruction in integrated information systems includes the process of information work flow.

Comment:

△○▽

6. Instruction in integrated information systems includes advantages and limitations of various configurations such as distributed processing.  
Comment:

△○▽

7. Instruction includes planned evaluation of student mastery of content related to integrated information systems.  
Comment:

△○▽

APPENDIX C  
LETTER TO SECRETARIAL SCIENCE PROGRAM  
DIRECTORS AT VIRGINIA COMMUNITY  
COLLEGES

(To all Virginia community college program directors for information processing)

Enclosures:

Survey Instrument  
Letter of Support from Lois Wells  
Return Envelope

QUESTIONNAIRE REGARDING YOUR INFORMATION PROCESSING INSTRUCTION

Enclosed is the survey instrument that we discussed recently. Will you please complete the instrument and return it to us in the envelope provided. The information will be used as the basis for a master's thesis on information processing programs at the Virginia Community Colleges. Also enclosed is a letter of support from Lois Wells, curriculum coordinator of the Virginia Community College System.

We appreciate your taking the time to complete the survey instrument. Feel free to make a copy for yourself. Information gained from the study will be shared with you.

Shirley L. Hall  
Graduate Teaching Assistant  
Business Education

Jeffrey R. Stewart  
Professor  
Business Education

enclosures

APPENDIX D  
LETTER OF SUPPORT FROM LOIS E WELLS  
ASSISTANT VICE CHANCELOR  
INSTRUCTIONAL PROGRAMS AND  
SERVICES



## VIRGINIA COMMUNITY COLLEGE SYSTEM

ASSISTANT VICE CHANCELLOR  
INSTRUCTIONAL PROGRAMS AND STUDENT SERVICES

MEMORANDUM

TO: VCCS Business Educators

FROM: Lois E. Wells

DATE: March 31, 1986

SUBJECT: Participation in Ms. Hall's Study

Your assistance in the study being conducted by Ms. Shirley Hall as part of the requirements for her Master's degree at Virginia Tech would be very much appreciated. As you know, the study deals with information processing programs at the community colleges.

Several of us participated in the process of establishing the Standards for Excellence in Business Education. It should be interesting to find out how our programs compare with these standards.

Thank you in advance for your cooperation and participation.

mm

cc: Dr. Donald E. Puyear  
Dr. Joseph A. Ford



APPENDIX E

FOLLOW-UP LETTER AND REPLY CARD TO SECRETARIAL SCIENCE

PROGRAM DIRECTORS AT

VIRGINIA COMMUNITY COLLEGES

FOLLOW-UP LETTER TO RESPONDENTS

May 8, 1986

QUESTIONNAIRE RELATING TO INFORMATION PROCESSING  
INSTRUCTION

We mailed you a letter and questionnaire in early April about information processing instruction at your community college. Your response is very important to this study. If you have not already done so, please return the questionnaire as soon as you can. If your copy was not received or has been misplaced, we can send another copy to you. A reply card is enclosed.

Again, thank you for agreeing to complete the questionnaire. Please call us if you have any questions at (703) 961-5175.

Shirley L. Hall  
Graduate Teaching Assistant  
Business Education

Jeffrey R. Stewart  
Professor  
Business Education

enc

ENCLOSURE TO FOLLOW-UP LETTER

REPLY POSTCARD

BUSINESS EDUCATION  
VIRGINIA TECH

QUESTIONNAIRE RELATING TO INFORMATION PROCESSING INSTRUCTION

The following is the status of the questionnaire you  
mailed me:

\_\_\_\_\_ Not Received

\_\_\_\_\_ Enclosed

\_\_\_\_\_ Cannot Do

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Virginia Community College Campus

APPENDIX F  
CODED LIST OF COOPERATING COMMUNITY COLLEGES THAT  
RESPONDED TO SURVEY INSTRUMENT

CODE NUMBERS OF VIRGINIA COMMUNITY COLLEGES  
THAT RESPONDED TO SURVEY INSTRUMENT

01	Central Virginia
02	Dabney S. Lancaster
03	Danville
04	Eastern Shore
05	Germanna
06	J. Sargeant Reynolds, Parnham Road Campus
07	Lord Fairfax
08	Mountain Empire
09	Northern Virginia, Annandale Campus
10	Northern Virginia, Manassas Campus
11	Patrick Henry
12	Paul D. Camp
13	Rappahannock, South Campus
14	John H. Daniel
15	Southwest Virginia
16	Thomas Nelson
17	Tidewater, Frederick Campus
18	Tidewater, Chesapeake Campus
19	Virginia Western
20	Wytheville
21	Virginia Highlands
22	Southside Virginia

APPENDIX G

RANKING OF MEANS OF ALL SURVEY INSTRUMENT ITEMS

APPENDIX G

RANKING OF MEANS OF ALL SURVEY INSTRUMENT ITEMS

<u>Rating</u>	<u>Subtopic</u>	<u>Item No.</u>	<u>Standard</u>
2.67	Employability Traits and Attitudes	12	Instruction in information processing provides opportunities for students to develop traits and attitudes required to complete assignments accurately and thoroughly.
2.67	Employability Knowledge and Skills	2	Instruction in information processing provides opportunities for students to set up a system, input data (keyboard); create documents; edit documents; and store, file and print text.
2.57	Employability Traits and Attitudes	23	Instruction in information processing provides opportunities for students to develop traits and attitudes required to demonstrate dependability.
2.57	Employability Traits and Attitudes	3	Instruction in information processing provides opportunities for students to develop traits and attitudes required to display attention to details in work being performed.
2.52	Employability Traits and Attitudes	1	Instruction in information processing provides opportunities for students to develop traits and attitudes required to cope with routine and repetitive tasks.
2.52	Employability Traits and Attitudes	15	Instruction in information processing provides opportunities for students to develop traits and attitudes required to recognize when to ask for assistance.
2.52	Cycles and Functions	4	Instruction related to the information processing cycle includes the functions of verification and correction of output.
2.50	Software	1	Instruction related to software use includes proper handling and care.

<u>Rating</u>	<u>Subtopic</u>	<u>Item No.</u>	<u>Standard</u>
2.50	Employability Traits and Attitudes	2	Instruction in information processing provides opportunities for students to develop traits and attitudes required to exercise care in all phases of work.
2.50	Employability Traits and Attitudes	6	Instruction in information processing provides opportunities for students to develop traits and attitudes required to meet deadlines.
2.48	Cycles and Functions	16	Instruction includes planned evaluation to verify student mastery of content related to information processing cycles and functions.
2.48	Employability Traits and Attitudes	22	Instruction in information processing provides opportunities for students to develop traits and attitudes required to demonstrate punctuality.
2.45	Hardware	1	Instruction related to hardware use includes procedures for proper handling and care.
2.45	Employability Traits and Attitudes	19	Instruction in information processing provides opportunities for students to develop traits and attitudes required to exhibit self-confidence.
2.45	Employability Traits and Attitudes	20	Instruction in information processing provides opportunities for students to develop traits and attitudes required to employ initiative and imagination.
2.45	Hardware	2	Instruction related to hardware use includes knowledge of the capabilities and limitations of input, central processing, output, and peripheral devices.
2.43	Employability Traits and Attitudes	4	Instruction in information processing provides opportunities for students to develop traits and attitudes required to work efficiently under pressure.



<u>Rating</u>	<u>Subtopic</u>	<u>Item No.</u>	<u>Standard</u>
2.42	Careers	2	The program provides for instruction related to knowledge, skills, and characteristics needed for entry-level positions in information processing.
2.42	Employability Traits and Attitudes	5	Instruction in information processing provides opportunities for students to develop traits and attitudes required to work effectively under pressure.
2.42	Employability Traits and Attitudes	13	Instruction in information processing provides opportunities for students to develop traits and attitudes required to exhibit self-starter traits.
2.42	Trends and Issues	7	Instruction includes trends and issues related to productivity measurement in information processing.
2.38	Employability Knowledge and Skills	3	Instruction in information processing provides opportunities for students to plan, organize, and prioritize tasks to facilitate work flow.
2.38	Trends and Issues	11	Instruction includes planned evaluation to verify student mastery of content related to trends and issues in information processing.
2.38	Employability Traits and Attitudes	25	Instruction includes planned evaluation to verify student mastery of content related to employability traits and skills.
2.38	Terminology	1	Specialized vocabulary essential to information processing content is introduced, defined, and reinforced in context.
2.38	Cycles and Functions	3	Instruction related to the information processing cycle includes the functions of manipulation of data in the processor unit.

<u>Rating</u>	<u>Subtopic</u>	<u>Item No.</u>	<u>Standard</u>
2.36	Computer Literacy	18	Instruction includes planned evaluation to verify student mastery of content related to computer literacy.
2.35	Employee Traits and Attitudes	17	Instruction in information processing provides opportunities for students to develop traits and attitudes required to accept and use constructive criticism.
2.35	Employee Traits and Attitudes	18	Instruction in information processing provides opportunities for students to develop traits and attitudes required to exhibit enthusiasm.
2.35	Computer Literacy	9	Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to determine when computer use is appropriate.
2.35	Cycles and Functions	6	Instruction includes planned evaluation to verify student mastery of content related to information processing cycles and functions.
2.33	Terminology	2	Instruction includes planned evaluation to verify student mastery of vocabulary.
2.33	Careers	1	The program provides for instruction related to career opportunities in information processing.
2.33	Employability Knowledge and Skills	1	Instruction in information processing includes opportunities for students to develop and utilize concentration techniques.
2.33	Employability Knowledge and Skills	6	Instruction includes planned evaluation to verify student mastery of content related to employability knowledge and skills.

<u>Rating</u>	<u>Subtopic</u>	<u>Item No.</u>	<u>Standard</u>
2.33	Computer Literacy	1	The application of computer technology as used in business is incorporated into the instructional process.
2.33	Computer Literacy	2	Instruction in computer literacy focuses on personal and job uses which enable persons to understand fundamental computer terminology.
2.33	Computer Literacy	6	Instruction in computer literacy focuses on personal and job uses which enable persons to recognize how computers may be used as management tools.
2.33	Management/Supervision	4	Instruction incorporates the basic principles of management related to roles and responsibilities of information processing personnel.
2.30	Computer Literacy	7	Instruction in computer literacy focuses on personal and job uses which enable persons to describe major differences and similarities of mainframes, minicomputers, and microcomputers.
2.30	Cycles and Functions	1	Instruction related to the information processing cycle includes the functions of preparation and verification of output.
2.30	Cycles and Functions	2	Instruction related to the information processing cycle includes the functions of interpreting and reacting to error messages.
2.28	Trends and Issues	5	Instruction includes trends and issues related to information access and control.
2.28	Trends and Issues	9	Instruction includes trends and issues related to employer expectations in information processing.
2.28	Employability Knowledge and Skills	4	Instruction in information processing provides opportunities for students to recognize the multiplier effect of efforts and subsequent excessive costs and wasted time.

<u>Rating</u>	<u>Subtopic</u>	<u>Item No.</u>	<u>Standard</u>
2.28	Employability Traits and Attitudes	8	Instruction in information processing provides opportunities for students to develop traits and attitudes required to evaluate personal work habits.
2.25	Software	3	Instruction related to software use includes knowledge of capabilities and limitations of software as related to job functions.
2.24	Employee Traits and Attitudes	11	Instructions in information processing provides opportunities for students to develop traits and attitudes required to adapt productively to rapidly changing demands.
2.23	Employee Traits and Attitudes	7	Instruction in information processing provides opportunities for students to develop traits and attitudes required to use discretion in the use of confidential information.
2.23	Employee Traits and Attitudes	24	Instruction in information processing provides opportunities for students to develop traits and attitudes required to demonstrate inquisitiveness.
2.23	Trends and Issues	4	Instruction includes trends and issues related to human relations in information processing.
2.23	Careers	3	The program provides for instruction related to personal and professional qualifications needed for specific positions in information processing.
2.23	Careers	4	The program provides for instruction related to knowledge, skills and characteristics needed for advancement in information processing careers.

<u>Rating</u>	<u>Subtopic</u>	<u>Item No.</u>	<u>Standard</u>
2.23	Careers	8	Instruction includes planned evaluation to verify student mastery of content related to careers.
2.23	Employability Traits and Attitudes	14	Instruction in information processing provides opportunities for students to develop traits and attitudes required to work alone or as a team member over a sustained period of time to the successful completion of an assignment.
2.23	Management/Supervision	1	Instruction incorporates the basic principles of management related to current and evolving technological advances.
2.23	Management/Supervision	9	Instruction incorporates the basic principles of management related to centralization/decentralization of control.
2.23	Management/Supervision	11	Instruction includes planned evaluation to verify student mastery of content related to management/supervision of information processing.
2.20	Integrated Information Systems	5	Instruction in integrated information systems includes the process of information work flow.
2.20	Computer Literacy	8	Instruction in computer literacy focuses on personal and job uses which enable persons to identify computer capabilities and limitations.
2.20	Trends and Issues	2	Instruction includes trends and issues related to sociological impact of information processing in the workplace.

<u>Rating</u>	<u>Subtopic</u>	<u>Item No.</u>	<u>Standard</u>
2.20	Trends and Issues	1	Instruction includes trends and issues relating to technological developments (such as portable data processing equipment, laser video disk storage, voice processing, mobile telephone electronic cottage/telecommuting, videotex, integrated software, telecommunications, optical character recognition, computer graphics, robotics, networking, and artificial intelligence).
2.19	Management/Supervision	3	Instruction incorporates the basic principles of management related to ergonomics (productive use of equipment, workflow, and people).
2.19	Management/Supervision	5	Instruction incorporates the basic principles of management related to personnel selection, training, and evaluation.
2.19	Management/Supervision	6	Instruction incorporates the basic principles of management related to patterns of people interaction.
2.19	Careers	6	The program provides for instruction related to the role of information processing in the job market of the future.
2.19	Computer Literacy	3	Instruction in computer literacy focuses on personal and job uses which enable persons to explain how information is processed both manually and by a computer system.
2.19	Computer Literacy	4	Instruction in computer literacy focuses on personal and job uses which enable persons to describe the impact of computer technology on industry, business, government, society, and the individual.

<u>Rating</u>	<u>Subtopic</u>	<u>Item No.</u>	<u>Standard</u>
2.19	Computer Literacy	5	Instructions in computer literacy focuses on personal and job uses which enable persons to identify current trends and issues dealing with computer technology.
2.15	Integrated Information Systems	7	Instruction includes planned evaluation of student mastery of content related to integrated information systems.
2.15	Computer Literacy	11	Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to use a computer to solve problems.
2.15	Computer Literacy	13	Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to verify the accuracy of input data.
2.15	Computer Literacy	16	Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to use the computer for business and personal applications such as records management and communication.
2.15	Employability Traits and Attitudes	21	Instruction in information processing provides opportunities for students to develop traits and attitudes required to demonstrate loyalty.
2.14	Integrated Information Systems	2	Instruction in integrated information systems include capabilities and limitations of automation systems.
2.14	Employability Traits and Attitudes	10	Instruction in information processing provides opportunities for students to develop traits and attitudes required to interact courteously in all situations.

<u>Rating</u>	<u>Subtopic</u>	<u>Item No.</u>	<u>Standard</u>
2.14	Careers	7	The program provides for instruction related to employment information sources.
2.14	Trends and Issues	10	Opportunities are provided for students to demonstrate creatively, imagination, and inquisitiveness about current trends and issues in information processing through the completion of individual and/or group projects.
2.14	Careers	5	The program provides for instruction related to interrelationships of various position in information processing.
2.10	Integrated Information Systems	4	Instruction in integrated information systems includes the concept of expanded office environment.
2.09	Management/Supervision	7	Instruction incorporates the basic principles of management related to productivity measurement.
2.09	Management/Supervision	10	Instruction incorporates the basic principles of management related to the decision making process.
2.05	Integrated Information Systems	6	Instructions in integrated information systems includes advantages and limitations of various configurations such as distributed processing.
2.05	Computer Literacy	10	Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to write simple programs in BASIC or other appropriate languages.
2.05	Software	2	Instruction related to software use includes relevant applications (data base management, spread sheets, and word processing).



<u>Rating</u>	<u>Subtopic</u>	<u>Item No.</u>	<u>Standard</u>
2.05	Software	4	Instruction related to software use includes procedures for filing and management of software.
2.05	Software	5	Instruction related to software selection includes the determination of specific application requirements.
2.05	Software	8	Instruction includes planned evaluation to verify student mastery of content related to selecting and using software.
2.04	Integrated Information Systems	1	Instruction includes the concept of integrated information systems and subsystems of originating, processing, communicating, storing, and retrieving.
2.04	Management/Supervision	8	Instruction incorporates the basic principles of management related to costs and benefits of office operations.
2.04	Employability Traits and Attitudes	9	Instruction in information processing provides opportunities for students to develop traits and attitudes required to work productively with a variety of individuals including clients and coworkers.
2.00	Management/Supervision	2	Instruction incorporates the basic principles of management related to the role and relationship of the information system to each of its subsystems.
2.00	Computer Literacy	12	Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to prepare data for input into a computer system.
2.00	Hardware	4	Instruction related to hardware selection includes methods of determining specific requirements.
2.00	Software	7	Instructions related to software selection includes knowledge and implications of copyright laws.

<u>Rating</u>	<u>Subtopic</u>	<u>Item No.</u>	<u>Standard</u>
2.00	Employability Traits and Attitudes	5	Instruction in information processing provides opportunities for students to meet or surpass appropriate production/error ratio requirements.
1.95	Hardware	5	Instruction related to hardware selection includes procedures which reflect needs analysis, feasibility surveys, and vendor credentials.
1.95	Hardware	6	Instruction includes planned evaluation to verify student mastery of content related to selecting and using hardware.
1.95	Trends and Issues	6	Instruction includes issues related to computer ethics.
1.95	Trends and Issues	8	Instruction includes trends and issues related to employee compensation and benefits in information processing.
1.95	Computer Programming	2	Instruction in computer programming includes the advantages, disadvantages, and application of various programming languages.
1.90	Integrated Information Systems	3	Instruction in integrated information systems include inter-relationships of data, word, voice and graphics/image processing.
1.90	Computer Literacy	14	Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to interpret computer generated reports.
1.90	Computer Literacy	17	Instruction in computer literacy provides for appropriate experience with the computer which enable persons to evaluate software applications.
1.88	Computer Programming	1	Instruction in computer programming includes the function of programming in an information processing system.

<u>Rating</u>	<u>Subtopic</u>	<u>Item No.</u>	<u>Standard</u>
1.84	Computer Programming	5	Instruction includes planned evaluation of student mastery of content related to computer programming.
1.84	Computer Programming	3	Instruction in computer programming includes planning for volume work.
1.81	Trends and Issues	3	Instruction includes trends and issues related to the legal implications of the electronic office.
1.81	Cycles and Functions	5	Instruction related to the information processing cycle includes the functions of storage, retrieval, and transmittal of data using technologies such as micrographics, computer-assisted retrieval, fiber optics, facsimile transmission, communicating text editors, and electronic mail.
1.78	Computer Programming	4	Instruction in computer programming includes leading, testing and executing computer programs.
1.70	Hardware	3	Instruction related to hardware use includes strategies for troubleshooting.
1.68	Software	6	Instruction related to software selection includes consideration of needs analysis, canned, modular, and custom software; complexity and costs, vendor policies, and effectiveness of the instructional materials.
1.42	Computer Literacy	15	Instruction in computer literacy provides for appropriate experiences with the computer which enable persons to operate electronic data communication systems.

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