DOCUMENT RESUME

ED 355 362 CE 063 186

TITLE	Iowa Vocational Assessment System. Final Report for FY 90-91.
INSTITUTION	Iowa State Univ. of Science and Technology, Ames.
SPONS AGENCY	Iowa State Dept. of Education, Des Moines. Bureau of Career and Vocational Education.
PUB DATE	18 Jul 91
CONTRACT	FCS-91-04-04
NOTE	64p.
PUB TYPE	Reports - General (140)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Career Education; *Competency Based Education; *Curriculum Evaluation; Postsecondary Education; *Resource Centers; Secondary Education; *State Programs; Statewide Planning; Student Evaluation; Teacher Evaluation; *Technical Assistance; Testing; Test Interpretation; *Vocational Education; Vocational Evaluation
IDENTIFIERS	*Iowa Vocational Assessment System

ABSTRACT

The Iowa Vocational Assessment System (IVAS) conducted extensive research and developed an assessment model appropriate for use by local education agencies to assess competency-based curriculum. Two school districts requested and administered the Iowa Career Education Inventory with IVAS assistance in administration, scoring, and interpretation of results. Numerous activities were directed toward providing National Occupational Competency Testing Institute (NOCTI) examination information, including establishment of policies and procedures for administration and scoring of exams, identification of new technical proctors to administer the exams, and administration of the exam. Iowa instructors continued to score higher than the national average on the NOCTI exams. Assessment completers were pleased with scoring procedures and data interpretation results. (Appendixes, amounting to over one-half of the report, include the Iowa vocational education student assessment model. This model identifies factors within each of three components: input, process, and output. Each factor is detailed with suggested comments, strategies, or techniques to consider when developing a local student assessment model. A second appendix is an IVAS rationale and position paper that explains the need for expanding the IVAS assessment services, traditional assessment system, new proactive IVAS system, role of a state assessment advisory council, and benefits of developing a new assessment model.) (YLB)

Project Title:
Iowa Vocational Assessment System
CIP Number: 70.01030000
Code Number: 05 05 19 28
Contract # FCS 91-04-04

Administering Agency:
IOWA STATE UNIVERSITY
Department of Industrial Educational
and Technology

Project Director:
Donald J. McKay, Ph.D.
Associate Professor

Donald J. McKay
(Signature)

118 Indus. Educ. Bldg. II
Tel. (515)-294-2082

Date Submitted:
July 18, 1991

INSTITUTION: IOWA STATE UNIVERSITY

Final Report For FY90-91

Project Title: "Iowa Vocational Assessment System"

I. Objectives:

1. Develop an assessment model appropriate for use by local education agencies to assess competency based curriculum (CBE) and other mandates stated in S.F. 449:

   1.1 Acquire input for developing this model via attending Department of Education CORE committee meetings.

   1.2 Develop a model rationale emphasizing the importance of CBE evaluation and the types of evaluation to be conducted.

   1.3 Create a model explaining how to evaluate CBE at the local level (LEA).

   1.4 Assure that the model includes such components as management elements, resources, state-of-art, inservice suggestions, pert chart for staff development, baseline elements, process elements, and products elements.

   1.5 Establish a CBE model based on job cluster competencies, appropriate learning activities, organization of resources, evaluation of competency attainment, and a record keeping procedure.

2. To provide technical assistance to educational agencies related to using IVAS assessment services to improve their existing vocational education programs.

   2.1 Continue sending correspondence to LEA vocational administrators explaining the IVAS mission.

   2.2 Continue explaining the Iowa Career Education Inventory, and other assessment instruments to various LEAs.

   2.3 Promote IVAS testing procedures and services as a means to assessing competency attainment by students.

3. Coordinate, administer, score and interpret results of the Iowa Career Education Inventory (ICEI) to appropriate Vocational Education agencies:

   3.1 Contact all school districts using the ICEI and explain the procedure for having their students take the inventory.

   3.2 Provide LEAs with a summary report of appropriate graphs/charts of inventory results to easily clarify student scores.

   3.3 Provide test booklets, answer sheets, and computer scoring services for all LEAs using the ICEI.

4. Coordinate, administer, score, and interpret test results of the National Occupational Competency Testing Institute (NOCTI) examinations to vocational teachers, vocational students, and interested business/industry work organizations:

4.1 Assure that the assessment procedures include using industrial laboratories with modern equipment, materials, and supplies.

4.2 Use technical examination proctors having technical knowledge of the area in which the exam is taken.

4.3 Explain the NOCTI exam procedures, administrative details, and use of exam results to all interested vocational education groups.

4.4 Provide "testing procedures" video film to proctors selected to administer the performance phase of the exams.

4.5 Describe how exams will be scored and results disseminated to appropriate persons to assure that LEAs are meeting the requirements of the Iowa Education Code.

4.6 Secure the necessary exams for interested persons and arrange for the date, site location, and proctor to administer the exams.

5. Develop a comprehensive IVAS public relations and promotional marketing plan to increase IVAS visibility within the state:

5.1 Purchase project related stationery, envelopes, brochures, and other promotional materials.

5.2 Continue a formal mailing system of promotional materials to various LEAs and AEAs.

5.3 Speak at various professional functions and conferences regarding the mission of IVAS.

5.4 Enlist a group of IVAS "ambassadors" to assist in making formal presentations at Iowa vocational conferences.

5.5 Create an audio-visual presentation explaining the IVAS services and purposes which can be used by the ambassadors.

II. **Procedures:**

Obj. 1

Develop an assessment model appropriate for use by local education agencies to assess competency based curriculum (CBE) and other mandates stated in S.F. 449:

1.1 Acquire input for developing this model via attending Department of Education CORE committee meetings.

1.2 Develop a model rationale emphasizing the importance of CBE evaluation and the types of evaluation to be conducted.

1.3 Create a model explaining how to evaluate CBE at the local level (LEA).

1.4 Assure that the model includes such components as management elements, resources, state-of-art, inservice suggestions, pert chart for staff development, baseline elements, process elements, and products elements.

1.5 Establish a CBE model based on job cluster competencies, appropriate learning activities, organization of resources, evaluation of competency attainment, and a record keeping procedure.

This objective was achieved by conducting two (2) advisory committee meetings and using the inputs to assist in developing the model. Extensive research was also conducted and the best ideas were incorporated into the assessment mode. The assessment model was presented to the IVAS advisory Committee on June 18, 1991. the finalized assessment model appears as Appendix A in this report.

An IVAS rationale and position paper was also developed for interested readers an appears as Appendix B in this report.

Obj. 2

To provide technical assistance to educational agencies related to using IVAS assessment services to improve their existing vocational education programs.

2.1 Continue sending correspondence to LEA vocational administrators explaining the IVAS mission.

2.2 Continue explaining the Iowa Career Education Inventory, and other assessment instruments to various LEAs.

2.3 Promote IVAS testing procedures and services as a means to assessing competency attainment by students.

This assessment service was available to all LEA's similar to previous years. Limited effort was expended toward formal promotion of IVAS services. This was because of the future uncertainty of project continuation after fiscal year 1990-91.

Obj. 3

3. Coordinate, administer, score and interpret results of the Iowa Career Education Inventory (ICEI) to appropriate Vocational Education agencies:

   3.1 Contact all school districts using the ICEI and explain the procedure for having their students take the inventory.

   3.2 Provide LEAs with a summary report of appropriate graphs/charts of inventory results to easily clarify student scores.

   3.3 Provide test booklets, answer sheets, and computer scoring services for all LEAs using the ICEI.

Eldora-New Providence School District and Fonda School Districts were the only two LEAs requesting and administering the ICEI.

Eldora-New Providence (Only 3 levels administered)

ICEI level	Number
Grade 3 Awareness	69
Grade 6 Accommodation	53
Grade 9 Exploration	72
TOTAL STUDENTS	194

Fonda (Only 2 levels administered)

ICEI level	Number
Grade 3 Awareness	8
Grade 6 Accommodation	30
TOTAL STUDENTS	38

The service was available and offered throughout the fiscal year.

Obj. 4

4. Coordinate, administer, score, and interpret test results of the National Occupational Competency Testing Institute (NOCTI) examinations to vocational teachers, vocational students, and interested business/industry work organizations:

   4.1 Assure that the assessment procedures include using industrial laboratories with modern equipment, materials, and supplies.

   4.2 Use technical examination proctors having technical knowledge of the area in which the exam is taken.

   4.3 Explain the NOCTI exam procedures, administrative details, and use of exam results to all interested vocational education groups.

   4.4 Provide "testing procedures" video film to proctors selected to administer the performance phase of the exams.

   4.5 Describe how exams will be scored and results disseminated to appropriate persons to assure that LEAs are meeting the requirements of the Iowa Education Code.

   4.6 Secure the necessary exams for interested persons and arrange for the date, site location, and proctor to administer the exams.

Numerous activities were directed toward providing NOCTI examination information to appropriate persons.

Policies and procedures were established to administer and score the exams. New technical proctors were identified to administer the exams at the local level. The new 1990-91 procedure for taking the NOCTI-TOCT was developed with the cooperation of the State Certification Office and disseminated to merged area vocational directors, personnel directors and other persons involved with the administration of NOCTI-TOCT examinations.

During 1990-91, a total of 19 NOCTI-TOCT examinations were administered. This includes both the written and practical components. Specifically, tests were administered in the following areas:

No.	Test
1	air cond., heating, & refrig.
5	automotive mechanics
1	bldg. & home maintenance
2	carpentry
1	electronics technology
2	machine drafting

No.	Test
1	machine trades
1	mechanical technology
1	printing-offset
2	quantity foods
1	tool & die
1	welding

Four (4) SOCAT examinations were administered during 1990-91:

Name of School	Test
Clinton	drafting

Obj. 5

5. Develop a comprehensive IVAS public relations and promotional marketing plan to increase IVAS visibility within the state:

   5.1 Purchase project related stationery, envelopes, brochures, and other promotional materials.

   5.2 Continue a formal mailing system of promotional materials to various LEAs and AEAs.

   5.3 Speak at various professional functions and conferences regarding the mission of IVAS.

   5.4 Enlist a group of IVAS "ambassadors" to assist in making formal presentations at Iowa vocational conferences.

   5.5 Create an audio-visual presentation explaining the IVAS services and purposes which can be used by the ambassadors.

Contacts were made with Department of Education officials to gain understanding of the AEA composition and methods to use in communicating with the AEA curriculum directors.

There was one change of membership in the 1990-91 advisory committee. Due to a job transfer of Joseph Glonek, Mike Harcort was appointed as his replacement.

Limited effort was made regarding promotion of IVAS services during the final 3 months of the fiscal year. This was based on the strong possibility of the IVAS project being discontinued after June 30, 1991.

III. Audience Served:

Total	Group Tested
19	NOCTI-TOCT/teachers
4	NOCTI-SOCAT/students
2	Iowa Career Education Inventory/schools
232	Iowa Career Education Inventory/students

#	TOCT Exam
1	air conditioning, heating, & refrigeration
5	automotive mechanics
1	bldg. & home maintenance
2	carpentry
1	electronics technology
2	machine drafting
1	machine trades
1	mechanical technology
1	printing-offset
2	quantity foods
1	tool & die
1	welding
19	**TOTAL**

IV. Special Project Activities:

Two Advisory Committee meetings were conducted to gain suggestions regarding the mission which IVAS should take related to assessment, and. These sessions also explained the purpose of IVAS assessment philosophy and potential user population.

V. Educational Equity

An attempt was made to include females, minorities, and handicapped persons as advisory committee members. Three women are currently serving on the committee. No minority or handicapped representatives were identified among the individuals being considered.

VI. Evaluation

Continuous process evaluation was sought during the project fiscal year.

Input was sought from the advisory committee and Department of Education personnel serving as ex official members.

Significant evaluation judgments were achi. ved from these individuals during the fiscal year.

VII. Evaluation Findings:

Formal and informal evaluation indicated the following:

a. A positive attitude is being displayed by the advisory committee members.

b. Closer communication between Department of Education and Project Staff is resulting when compared to previous fiscal years.

c. Minimal assessment activity will continue in all vocational areas unless assessment is mandated.

d. Evaluation assistance related to competency attainment is beginning to emerge from LEAs as the mandates of S.F. 449 are implemented.

e. Competency assessment inservice sessions will soon be required to keep vocational educators up-to-date.

VIII. Success Stories Reflecting Project Accomplishment:

As in the past, Iowa instructors continue to score higher than the national average on the NOCTI-TOCT exams. All 19 examinees scored above the national average on both the written and performance phases of the exams.

There seems to be an emerging spirit of cooperation developing among the private sector, education, union, and apprenticeship committee members. Discussion continues to focus on strategies which can promote occupational assessment for the common good of all people.

The assessment completers continue to be pleased with the scoring procedures and data interpretation results returned to them after the exam has been completed.

A specific example of the current and future benefits of NOCTI TOCT and SOCAT competency examinations is seen in the comments of a post-secondary vocational head who found positive correlation between results of the NOCTI-TOCT examinee's scores and criteria used to hire the instructor.

IX. Recommendations for Additional (Future) Action:

The administration of NOCTI-TOCT needs to be scheduled for perhaps two times during the year so that test centers can be made available to serve a larger number when administering the practical phase where labs must be used. The present system of administering examinations on demand is not cost-effective, especially as proctor services are being provided for the written and practical phases of a single examination. For example, the 5 automotive mechanics exams were administered by 4 separate proctors and in four different locations. In addition, one local proctor gave the examinee a perfect score on the performance phase of an exam.

The Department of Education must continue to "press" for mandatory competency testing if the services of IVAS are to be fully utilized.

A system of test centers should be established within the State whereby several exams can be given at one location. This would increase the efficiency of using testing monitors and keep the cost at a minimum and provide for fair, non-biased proctoring services.

The practice of allowing the NOCTI examinee, or local AEA, the option of providing a test proctor may not always be considered a fair and reliable method of reducing costs to the examinees.

Efforts should be made to expand the Principles of Technology curriculum and testing services throughout the State. The Department of Education should force assessment procedures for schools using this curriculum.

The Iowa Career Education Inventory needs to be re-evaluated with a determination made regarding its continued use. The inventory is rather old (1982 edition) and should be up-dated.

APPENDIX A

THE IOWA VOCATIONAL EDUCATION STUDENT ASSESSMENT MODEL

INTRODUCTION

The rapidly changing workforce/workplace and the changing political trends toward accountability in vocational education is mandating several changes in the vocational education delivery system. Recent Iowa vocational legislation (SF449) and the new Federal legislation (Carl Perkins Act) both require an accountability system to document student competency gains. This document is a suggested student assessment model to be used in the secondary and postsecondary schools in Iowa.

The ingredients of a good student competency attainment accountability system require both clear and concise performance measures and standards. These measures and standards must have four basic criteria to assure the optimism in quality. These four criteria include: 1) being certain that the measures and standards are clearly stated and defined to both the student and evaluator; 2) being certain that the number of measures and standards are manageable (not too few and not too many measuring devices); 3) being sure that the data or trait to be measured must be reasonably accurate, timely, and easy to measure; and 4) being sure that measurement and standards data are collected frequently enough to make the results valid and useful.

It is perceived that a quality student assessment model will provide several advantages to schools offering public vocational education programs. Among the advantages recognized should be such elements as:

1. improved interagency collaboration;

2. improved public and private collaboration;
3. improved vocational education and industry/business collaboration;
4. improved secondary/postsecondary articulation;
5. increased integration of academic and vocational education;
6. improved access to vocational programs by all students of all ages;
7. expanded opportunities for at-risk students;
8. expanded opportunities for adults; and
9. improved assessment policies at the local, State and Federal levels.

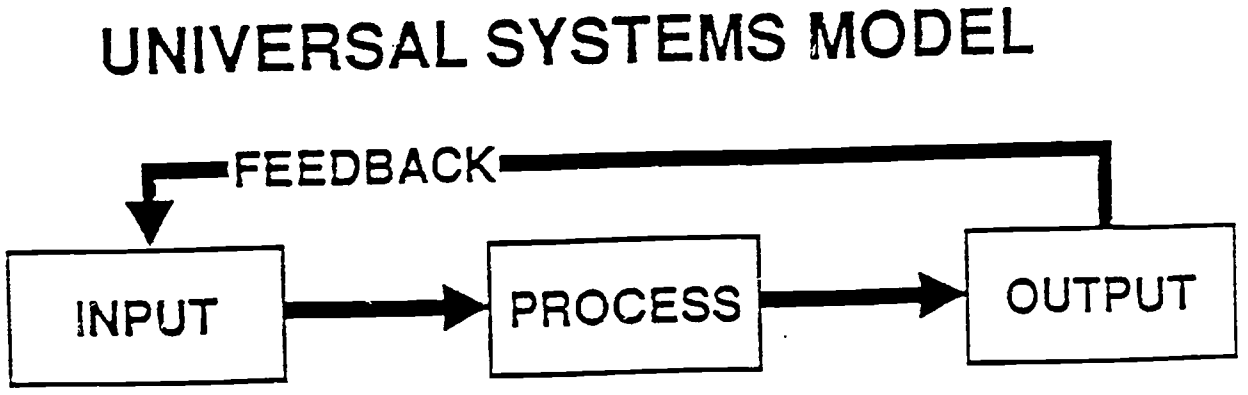
The primary purpose for student assessment mandates within State and Federal legislation is to validate that student progress and competency attainment is occurring. In addition, measuring student progress will also serve other purposes. These purposes will include, but are not limited to such things as: indicating which curriculum, activities, methods of instruction and learning environments facilitate the most student progress; assessing present student performance can assist in predicting future student performance; identifying the knowledge, skills, and attitudes in which the students are deficient or weak; and providing a scheme for evaluating the effectiveness of the vocational program.

The vocational student assessment model implemented in Iowa schools must be sensitive to the fact that it is defensible if it meets certain basic criteria. Evaluators and school personnel must remember that the evaluation model must be clear and easily understood by all important audiences. The findings must be accessible and disseminated to persons who have a right to know about the results. The findings must also be useful with guarantees made that the results will be used to improve the programs. The results must also be relevant so that an existing need has been satisfied and the delivery system will be improved.

The student assessment model must also be very concerned in being humane to

the degree that the purposes are accomplished without creating harm or stress to persons involved or affected by the results. The assessment personnel must be sure that the system implemented is compatible to the degree that the findings are congruent with the intended purposes of accountability established by the participants, stakeholders, and school officials. Lastly, the assessment model must be worthwhile so a pragmatic approach should be used to assure that the benefits derived will justify the costs (time and money) involved with the system. The locally developed, implemented student assessment model must be sensitive to these foregoing remarks if a viable and worthwhile model is to be developed which will meet the quality standards established within contemporary State and Federal vocational legislation.

It is with this rationale that the following suggested model has been developed. This model will follow the Universal Systems Model which has three components. These components are: inputs, processes, and outputs. The Universal Systems Model appears as Figure 1.



The student assessment model will list several elements within each of the three major components These elements are for consideration in developing a local school student assessment procedure. The local school administration must remember that the terminal outcome of this assessment system is to be able to document student competency gain within the vocational education program.

The Iowa Vocational Education Student Assessment Model will include several factors within each of the three model components. Each factor identified will be detailed with suggested comments, strategies or techniques to consider when developing a local student assessment model This model appears as Figure 2.

SUGGESTED STUDENT ASSESSMENT MODEL

INPUT FACTORS

(What are the baseline data?)

1. Rationale.
2. Scope, considerations, & limitations.
3. Human resources.
4. Opportunities to develop human potential.
5. Entering student capabilities.
6. Fixed capital.
7. Resources to support assessment endeavors.

PROCESS FACTORS

(What will you do to the input data?)

1. Developing and managing a competency-based curriculum system.
2. Determining general employability competency/work related behavior gains.
3. Determining basic and academic competency gains.
4. Determining job specific competency gains.
5. Determining leadership competency gains.
6. Determining entrepreneurial gains.
7. Assessing cooperative educational/released time work programs outcomes.
8. Assessing student competency acquisition and level using employment follow-up strategies.

OUTPUT FACTORS

(What are the final products of the input and process components?)

1. Documented evidence showing that vocational students are making systematic & continuous progress in acquiring the competencies prescribed within a specified program of study.
2. Measured impacts on vocational education attributed to recent educational reform movements (Senate File 449 and the new Carl Perkins act).
3. Relevancy of vocational education to develop student ability for gaining employment or making a successful transition to an alternative career option.
4. Program side effects phenomena attributed to student vocational competency assessment endeavors.

TERMINAL GOAL

To provide each Iowa student increased competence in choosing, preparing for, securing, maintaining, and advancing in a recognized occupation or making a successful transition to an alternative career option.

INPUT FACTORS

1. **Rationale**

   a. Several reasons were provided for creating a student assessment model by the Iowa Vocational Assessment System Advisory Committee during the 1990-91 fiscal year. The reasons stated are:

   * To increase accountability of all State funded programs.
   * To document student competency gains in both academic and vocational curricula.
   * To provide outcome data and evidence to make program changes regarding curriculum, instruction methods, materials, equipment, evaluation, number of competencies taught, and level of proficiency.
   * To ensure program accountability and improvement.
   * To meet State and Federal agency standards and criteria recently established.
   * To provide assistance in allowing schools to develop their own competency lists and assessment system.
   * To assist schools to develop their own local assessment and improvement plan required by recent State legislation.
   * To provide evidence that a continuous evaluation plan is being followed.

2. Scope, considerations, & limitations.

   a. The local school must make decisions concerning the assessment environment, roles of the personnel involved, instruments to use, procedures for assessing, procedures for processing the data, procedures for feedback and how the findings will be used beyond satisfying State and Federal laws.

   b. The strategies used to assess student gains must be simple, easily understood, valid, accurate, and inexpensive. They should not require extensive training to implement.

   c. Frequency of assessment must be realistic. Measurements shouldn't be made too frequently or too infrequently. It must be determined locally whether assessment is conducted daily, weekly, or monthly, and the types of evaluative measures to be used at various points in time.

   d. The assessment model should be responsible to educational reforms, technological changes, and needs of the student, community, and State.

e. Assessment instruments must be either purchased or developed locally to determine student gains in the areas of general employability skills, related academic skills, and occupationally specific skills. Pretest and posttest instruments should be considered as a viable strategy to show competency gains.

f. The assessment environment should reflect the real world of work environment, and the data collected should be performance based and focused on work related behaviors and specific job skills.

g. Each school should develop a local plan for assessment (including provisions for improvement when needed) with evidence that it is student focused and is attempting to be articulated with other educational and work oriented agencies. The Department of Education will monitor the progress of the "site-based" management assessment approach during annual evaluation visitations.

h. Educators within each school system must be able to recognize the components which comprise a competency-based student vocational education student assessment and record keeping system.

i. Vocational instructors will be the primary data collectors, but responsibilities for assessment can be delegated to the students and peers within the classroom.

j. An attempt should be made to involve the use of the program advisory committee to develop assessment strategies.

3. Human resources.

a. The local schools must identify the specific educators responsible for developing and managing the student assessment model.

b. The instructors must be competent in managing a competency-based vocational education program.

c. To be successful, the assessment system must have the support of the central school administration.

4. **Opportunities to develop human potential.**

   a. Inservice sessions will be needed to establish a locally developed student assessment plan.

   b. Workshops and inservice sessions will be required to orient appropriate educators regarding roles, responsibilities, and techniques needed to operationalize the assessment system.

   c. A central theme within the development of human potential should be the concept that a systematic student assessment system is an integral component of any competency-based curriculum approach in vocational education.

   d. Local school vocational educators should be encouraged to attend any assessment inservice offerings provided by the Department of Education, Area Education Agencies, and colleges or universities.

   e. The locally developed assessment model must be sensitive to the increasing diversity of students. The model should provide flexibility to assess all students (traditional and non-traditional), including special needs, gifted & talented, minorities, single parent students, adults, etc.

5. **Entering student capabilities.**

   a. Cummulative data and background materials must be analyzed to assess entering students for proper program placement.

   b. Documented competency level of entering students will be required to assure proper articulation of vocational competencies between secondary schools, community colleges, and four-year colleges/universities.

   c. Community colleges with the "open door" policy must continue to conduct entering student assessment to determine the placement level for non-traditional students. Determining developmental coursework for students deficient in academic skills is a component of the assessment model as this establishes a baseline or benchmark functioning level for these students.

   d. A student needs assessment and/or a readiness assessment will also provide baseline data for entering students.

e. Assessment could also include determining such aspects as student interest, aptitude, achievement, skill level, and learning style as areas which would be important to aid in creating a competency profile for each student.

f. An attempt must be made to determine the entering student competency level or status relative to knowledge, skills, and attitude.

6. **Fixed capital.**

a. An examination and identification of the program hardware, software, facilities, laboratory equipment, media and other supportive materials would be beneficial. This examination would create an awareness of the support system available and how this system can be used to more fully benefit student achievement.

7. **Resources to support assessment endeavors.**

a. The financial funding of the assessment endeavors will be a configuration of the school's resources. Sharing resources and expertise among schools is a possible strategy to manage a successful student assessment system.

b. The allocation of time required to perform the assessment tasks must also be considered if a successful assessment system is to become functional.

c. The use of State and Federal grants, industry collaboration efforts, electronic software, hardware, etc. are all resources which can be available to support the assessment system. Creative thinking at the local level is encouraged as to how best to use all resources needed to operate a successful system.

d. A cost-benefit analysis should be performed to assure that the time and money spent doesn't outstrip the benefits derived from the assessment system.

This concludes the Input Factors component of the student assessment model. This section is designed to allow the reader to become more focused on significant structures which must be considered within any school prior to designing the student evaluation system. The process section will now be discussed in greater detail.

PROCESS FACTORS

1. **Developing and managing a competency-based curriculum system.**

   a. The school education program must have an understanding of and accept advantages of using a competency-based curriculum system. Some advantages of this system are:

   * It is streamlined and efficient.
   * It is psychologically sound and goal oriented.
   * It is accountable.
   * It is individualized and self-paced.
   * It allows for articulation of previous learning with other educational agencies.

   b. The assessment procedure to show student gains is simplistically comprised of the following:

   * Decide the areas to assess;
   * Develop or purchase the instruments;
   * Administer the assessment or collect the data; and
   * Record the results.

   c. The content must be organized for a competency-based curriculum. This involves an instructional analysis approach which is usually organized as follows:

   * Identify the occupation or occupational cluster of job titles.
   * Establish duty areas.
   * Identify the tasks/competencies within each occupational duty area.
   * Establilsh performance standards criteria for the tasks/competencies.
   * List the steps required which the student must know and do in order to perform the task/competency.
   * Select and organize the information and learning activities required for students to master the task/competency.
   * List all aspects of safety associated with performing the task/competency and infuse such aspects into the information and learning activities.
   * Identify all tools, materials, equipment, supplies and resources needed to perform the task/competency.
   * Perform evaluation functions to document task/competency acquisition.
   * Conduct record-keeping procedures to document and monitor task/competency acquisition of each student:

- progress charts
- progress records
- grading strategies
- profile sheets

d. The vocational instructors must be able to organize the classrooms and laboratories in a manner to facilitate installation of competency-based curriculum.

e. The vocational instructors must be able to manage the daily routines of the competency-based curriculum.

f. The vocational instructors must be able to guide the students through the competency-based program of study.

g. The standards for assessment instruments could be established by considering input from employers, existing school standards, standards already established by State licensing agencies, and program advisory committees.

h. Major assessment instruments and measurement attempts should be conducted only one time during the course.

i. Evidence should be gathered to document efforts made between basic academic education and vocational education.

j. Schools can develop their own competency and assessment strategies. Such efforts might include the following strategies:

* Conducting pretest-posttest measures to document gains.
* Using commercial assessment systems (SOCAT, etc.)
* Using test items available from various job test item banks located throughout the United States.
* Using the Principles of Technology test as pretest and posttest measures for all PT programs. (This should be mandated for any school receiving State or Federal vocational funds.)
* Using the Iowa Career Education Inventory (ICEI) to document student career development and vocational maturity gains. (This should be mandated for any school receiving State or Federal vocational funds.)
* Using instructor developed criterion-based assessment measures to document gains associated with all competencies established both by the State and the local school.
* Emphasizing documentation of student growth, development, and competency gains in the domains of knowledge, skill, and attitude relating

to the vocational program of study.

* Purchasing assessment instruments already developed by other states (e.g. New York or National test centers such as NOCTI to use as pretest-posttest measures.)
* Developing laboratory observation checksheets to document student progress.
* Emphasizing use of assessment devices which are continuous and can track the student during the timeframe of the vocational program.

k. Initiate systematic follow-up studies regarding such issues as:

* Student reactions about training received.
* Job satisfaction.
* Work adjustment.
* Employer satisfaction with employee.
* Job productivity of the employee.

l. Assessment devices can include written essays, objective tests, oral exams, rating scales, checklists, standardized tests, performance tests, interviewing, student notebook/journal, projects, procedure in accomplishing a task, questionnaires, observation scales, product/project review with a peer and instructor, self evaluation, work samples, semester progress review with instructor, and semantic differential instruments.

2. **Determining general employability competency/work related behavior gains.**

a. Several sources of assessment information can be found within the school environment. Measures can be developed locally or commercial instruments could be incorporated. The school guidance counseling staff can provide assistance if commercially developed instruments are to be used.

b. An example of a commercial instrument dealing with student attitude and value structure would be the Work Values Inventory developed by Don Super.

c. Specific general employability behaviors which can be assessed will include:

* School graduation rates.
* Program completion rates.
* Program attendance.
* Interest in pursuit of further education/training.
* Success in passing related academic courses.

- Record of instructor's anecdotal notes.
- Record of student behavior during class activities.
- Record of completed assignments.
- Student self-assessment of behavior in the program.
- Student interaction with peers, instructor, employer, etc.
- Student level of honesty, cooperation, punctuality, etc.
- Daily class effort.
- Student vocational interest patterns.
- Number of completed tasks or projects.
- Student general school adjustment.
- Increased involvement in extra-curricular & co-curricular activities.
- Change in grade point average.
- Frequency of tardiness.
- Student awards, honors, elected positions in the school (clubs, councils, etc.)
- Safety practices.
- Quality of homework.

3. **Determining basic and academic competency gains.**

a. Several sources of assessment information can be identified within the school environment. A wide variety of standardized assessment instruments are available.

b. Using locally developed assessment devices, the instructor can assess several different academically oriented behaviors such as:

- Improvement in basic reading ability.
- Use of higher order thinking skills.
- Use of problem solving skills.
- Improvement in technical writing skills.
- Improvement in oral communication skills.
- Improvement in technical mathematics skills.
- Improvement in applied and technical science skills.
- Success achieved on tests and quizzes.
- Quality of homework assignments.
- Performance during class activities.
- Displaying proper work skills in the classroom and laboratory.
- Displaying ability during simulation activities.
- Quality of responses during discussions.
- Quality, completeness, and timeliness of student's assignment notebook or journal.

4. **Determining job specific competency gains.**

   a. Several sources of assessment information can be found within the school environment. Measures can be developed by the instructor or purchased from commercial agencies. (Commercially developed assessment instruments are usually very expensive.)

   b. A large number of different commercially developed instruments can be purchased from the NOCTI Center at Ferris State University in Michigan. These SOCAT exams contain both a written and performance section. Similar exams can be purchased from state agencies (Kentucky) and from various test item banks in assessment centers within the United States.

   c. Numerous job specific behaviors can be assessed and include such elements as:

      * Quality of performance on a specific task.
      * Quantity of tasks completed.
      * Ability to follow directions when performing a task.
      * Competion of projects
      * Performance on production processes (both quality and quantity measures).
      * Evaluative comments from peer tutor or a work group.
      * Student log/journal of completed tasks.
      * Use of correct sequential procedure to complete a task.
      * Design quality.
      * Accuracy of laboratory work.
      * Appearance of finished task or project.

5. **Determining leadership competency gains.**

   a. The importance of leadership potential is well-documented by American business and industry. Furthermore, the master list of state-developed competencies identifies several leadership competencies desirable for vocational students to acquire.

   b. Document the extent to which the student can guide or direct the actions of others.

   c. Document whether the student is a member of a vocational student organization. (Membership should be mandated if the school is receiving State or Federal money.)

d. Document the extent of acquired competence in the ability to inspire a shared vision while empowering others to act.

e. Assess the degree to which the student has acquired competence in such areas as:
- Decision making.
- Risk taking.
- Networking.
- Team building.
- Resolving conflicts.
- Motivating others.
- Planning effectively.
- Organizing and delegating.

f. Locally developed assessment instruments can be used in a format such as a checklist or observation scale which reflects the state and local school developed leadership competencies included in the specific vocational program of study.

6. **Determining entrepreneurial gains.**

a. There is an increasing emphasis on the importance of entrepreneurial skills for vocational education students. The master lists of state competencies in the various service areas include several entrepreneurial tasks for curriculum inclusion at the local school level.

b. The local school must provide evidence that students are being taught entrepreneurial competencies in the vocational program.

c. Evidence should be provided to determine the extent to which the student has acquired competence in such areas as:

- Skills required of a business owner.
- Characteristics of entrepreneurs.
- Importance of a business plan.

d. Locally developed assessment instruments such as checklists, or instructor created objective tests can be constructed to check student gains made regarding the state and locally developed entrepreneurship competencies included in the specific vocational program.

7. **Assessing cooperative education/released time work programs outcomes.**

   a. Cooperative education should be a viable method of acquiring occupational competence for students interested in this form of vocational education.

   b. Evidence must be provided to document which saleable job skills are being acquired by students enrolled in a cooperative education program.

   c. Evidence must be provided to determine the extent to which students are:

      * Receiving proper orientation relative to cooperative education procedures and outcomes.
      * Placed at appropriate training stations which meet their occupational objectives.
      * Receiving a quality learning experience from their on-the-job instructor.
      * Evaluated properly relating to their on-the-task performance.
      * Receiving appropriate related classroom instruction from the school cooperative vocational educaiton instructor.

   d. Locally developed assessment devices can be made to check student competency gains and to assess the quality of the cooperative education program.

8. **Assessing student competency acquisition and level using** employment feedback **and follow-up studies.**

   a. Periodic surveys should be conducted to elicit vocational program data from both former students and their employers.

   b. Evidence can be gathered to document the following data related to student competency gains:

      * The quality of instruction and curriculum
      * The competence level of the employee.
      * The productivity level of the employee.
      * Employer satisfaction with the hired graduate.
      * The employer's expectations regarding the competencies needed to be taught in the local vocational program.
      * The need for additional training/education.
      * Preparedness for securing the first job after graduation.
      * Reasons for gaining employment in jobs unrelated to training.
      * Suggestions for improving the program.
      * Identifying occupational difficulties being encountered by former students.

This concludes the process factors component of the student assessment model. Local decisions must be made as to the types and amount of evaluative data needed to make judgments regarding the degree of student competency gains. Numerous suggestions have been given regarding specific components and performances to evaluate. The depth and breadth of assessment to determine student achievement gains has not yet been specified at the State and Federal levels.

The purpose of this expansive section is to allow the reader to examine and become more aware of the numerous criteria and evaluative techniques available to use. Hopefully, this examination will culminate with some realistic selections of evaluation strategies to use which are congruent with input factors available at the local school level. Factors such as time, money, expertise of vocational staff members, fixed capital and human resources will impact on the types of data collected and the choice of assessment instruments to employ in the process.

OUTPUT FACTORS

1. **Documented evidence showing that vocational students are making systematic and continuous progress in acquiring the competencies prescribed within a specified program of study.**

   a. The data collected must indicate that pretest and posttest measures are given to students in the competency-based job specific skill courses of study.

   b. Various data collected (using suggestions in the process factors section) will indicate efforts were made to document student competency gains in the following areas:

      - General employability competencies/work related behaviors (attitude).
      - Basic and academic competencies (knowledge).
      - Job specific competencies (skills).

   c. Data showing increased collaborative efforts between school cooperative vocational education programs and job training site employers.

   d. Evidence from follow-up studies indicating job success and competence of former students as rated by the employer.

2. **Measured impacts on vocational education attributed** to recent educational **reform movements (Senate File 449 and the new Carl** Perkins act).

   a. The data collected will show several inputs resulting which will include such phenomena as:

      - Efforts by local schools to develop their own specific competencies which can be included with the State developed "minimum" list.
      - Efforts made locally to streamline, eliminate duplication of effort, and become more cost effective.
      - Increased efforts by the State organization system to promote program evaluation at all levels of education.
      - Increased efforts to establish articulated curriculum agreements among various schools.
      - Evidence that local schools are integrating academic and vocational curricula.

3. **Relevancy of vocational education to develop student ability for gaining employment or making a successful transition to an alternative career option.**

   a. Follow-up study data collected should reveal a competently educated student has implemented his/her career options with movement toward:

      * Gainful employment.
      * Entry into community college with articulated curricula.
      * Entry into college/university with articulated curricula.
      * Entry into apprenticeship program with advanced placement.
      * Entry into military with advanced placement considerations.

4. **Program side effects phenomena attributed to student vocational competency assessment endeavors.**

   a. Whenever a new educational requirement is implemented in schools, various activities/events will occur but these happenings are not the main purpose of the requirement. These activities/events can, however, be attributed to the new requirement. These happenings are referred to as being program side effects. Side effects phenomena are unplanned, but will occur.

   b. As a result of mandated student assessment to document competency gains, the following side effects gains could be measured and documented:

      * A decrease of access barriers to education and employment should occur.
      * Schools will begin using performance profile charts and vocational certificates of completion when all competencies are mastered.
      * Student assessment data will contribute heavily to ongoing curriculum and program decisions.
      * Instructors will focus more on all competencies required for a job rather than competencies which have a personal interest.
      * An increase in self-paced study will be noted.
      * Follow-up studies will be conducted more frequently.
      * An increase in competency-based constituents will be observed.
      * Student assessment results will make a major impact on selection of teaching methods, materials, equipment, facilities, and job placement.

The data collected from the vocational student assessment endeavors will provide documented evidence about the degree of student competency gains. The degree of

student gains should be a direct reflection of the program curricula and quality of instruction within the local school The data will assist in providing the basis for vocational educators to make wise professional judgments regarding program improvement.

SUMMARY AND RECOMMENDATIONS

SUMMARY

As was mentioned early in the introduction phase, this assessment model was developed by following the Universal Systems Model design. This model (input-process-output) was selected because it provides structure and a visual plan to follow when conducting student assessment. Each of the three model components have specific factors to consider when conducting assessment activities.

When conducting assessment activities, a person must remember that assessment is a much broader concept than merely testing or measuring student performance. Assessment should yield both process and outcome data. The data should come from several sources. The data can be derived from both qualitative (soft data) sources and quantitative (hard data) sources.

Assessment should be viewed as a process of obtaining data relative to student gains in knowledge, skill, and attitude. This data should be used in making value judgments. The assessment process includes obtaining and providing useful information for making wise educational decisions relative to student competency gains.

RECOMMENDATIONS

A continuous effort should be made to improve and implement the student assessment model. Therefore, several recommendations are offered to assist in this endeavor.

The existing Iowa Vocation Assessment System (IVAS) committee should be maintained even though the IVAS project is terminated after June 30, 1991. The IVAS committee is a voluntary group with much expertise to offer. The Department of Education should use this group frequently when dealing with assessment issues.

The student assessment process should attempt to use nationally developed and recognized vocational assessment instruments whenever possible. It is senseless to "reinvent the wheel" in this endeavor. Numerous quality assessment devices are available and are appropriate for use in measuring student competency as outlined in this model.

A conscious effort should be made to involve the private sector (business, industry, labor, apprenticeship programs, etc.) in student assessment endeavors. Expertise is available within these organizations which can help vocational educators greatly with the assessment mission.

Additional studies should be conducted in the future regarding assessment issues. Such issues will include test item banks, national assessment clearinghouse progress in assessment, new developments in computerized assessment systems, and competency-based monitoring systems being developed.

An inservice system must be developed to train AEA/LEA personnel in

assessment techniques mentioned in this model. Several issues in competency assessment, articulation procedures, and systems management will be needed to assure that this system will be implemented properly. Careful consideration must be given to this issue as to the type of inservice to use, who should conduct the inservice, and other related inservice issues.

The Department of Education must establish a new NOCTI area test center coordinator. The Iowa code mandates that all newly employed vocational instructors take a competency exam directly related to the subject area in which they teach. Determinations must be made as to whether the coordinator will be a volunteer, centralized within one agency, and many other related concerns to meet the intent of the law.

Finally, the Department of Education should establish cooperative linkages with appropriate assessment experts at the regent institutions who can provide assistance in the wide array of issues identified within this proposed student assessment model.

Donald J. McKay
6/17/91:ASSMTMDL

APPENDIX B

The Iowa Vocational Assessment System:

A Dynamic Model for a New Era

Dr. Donald J. McKay

Iowa State University

Ames, IA 50011

The Iowa Vocational Assessment System: A Dynamic Model for a New Era

Introduction

Because of a myriad of social and political issues, the Iowa Department of Education recently embarked upon a commitment to modify and develop a new vocational-technical education assessment system. This system, entitled the Iowa Vocational Assessment System (IVAS), is much more comprehensive in nature than the previous state assessment scheme. The new system is dynamic and is still being adapted to the changing needs of Iowa vocational-technical education.

The IVAS system is a project located within the Department of Industrial Education and Technology at Iowa State University and funded by the State Department of Education under the auspices of the Carl Perkins Vocational Education Act. The purpose of this article is to describe the new comprehensive model to be used in future vocational oriented assessment as it relates to Iowa education and industry. This narrative will be divided into five sections which will explain: (a) the need for expanding the IVAS

assessment services, (b) the traditional assessment system, (c) the new proactive IVAS system, (d) the role of a state assessment advisory council, and (e) benefits of developing a new assessment model.

Need for Expanding Vocational Assessment Services

Numerous strategies and legal mandates to assure the offering of quality vocational-technical programs in schools across America continue to be mandated. These strategies and changes continue at an increasing rate of speed. The theme of "accountability" seems to be the basis for many of these changes at the national and state level. Competency-based education in vocational-technical education and general education continues to gain popularity within many states as an answer to accountability within American school systems.

The trend toward accountability has provided a great impetus toward using competency assessment measures to determine student achievement. Competency assessment, although it has been available to vocational-technical education for several years, has lacked organization and focus in many states. Current social and political pressures are forcing states to establish comprehensive

vocational-technical education assessment systems to provide indicators of success relative to programs and curriculum offerings.

Iowa's Response

Because of these emerging pressures and trends toward accountability, the State of Iowa enacted a new vocational act in March, 1989. This act, Senate File 449, provided directives toward finding solutions to numerous secondary level vocational-technical education issues to improve the access to and quality of Iowa vocational-technical programs. Three important mandates included in this legislation regarding secondary vocational education programs were: (a) the instruction shall be competency-based, (b) the program shall be articulated with post-secondary programs of study (merged area community colleges) and, (c) a system of evaluation must be established to assure standards of program quality.

These three components have far reaching implications and provided the rationale for establishing a much more comprehensive vocational evaluation model than the model that was currently serving the Iowa vocational-technical education community.

The Iowa rationale for change was also congruent with two important recommendations in the final report published by the National Assessment of Vocational Education (NAVE). The two recommendations of significance to support an expanded IVAS service mentioned by the NAVE (1989) report included:

> (a) "To improve the transition from secondary to post-secondary vocational education in a way that results in a more coherent and comprehensive training program for students" (p. 116)
>
> and; (b) Use performance incentives to improve vocational education including the use of competency testing because
>
> "all performance incentive systems share two basic features: (a) a control role for measures or indicators of how well or poor the suppliers of vocational education perform, and (b) a 'feedback' mechanism through which information on past performance is used to encourage improved future performance (p. 117)."

The above recommendations are focused directly on the issues of articulation and student competency attainment measuring mandates. In fact, in the opinion of this writer, it is very likely that the new reauthorization of the Carl Perkins Federal Vocational Education Act will issue a national mandate for articulation and student competency assessment after the completion of a vocational-technical program.

These social and political issues have assisted Iowa to take some rather bold innovative initiatives toward dealing with the accountability issues in vocational-technical education. In addition to these issues, are the emerging developments of competency-based assessment devices, occupational test item banks, various curriculum laboratories having evaluation instruments. These developments will support curriculum packages, and computer aided management systems to identify assessment data, retrieve assessment related data, and coordinate the administration related tasks involved with competency assessment.

This rapid development of easy access to quality evaluation services make occupational competency assessment a much easier task to perform than a decade ago. These reasons, in addition to the fact that assessment should improve the quality of vocational program are of prime importance for developing a state assessment system. The system will also provide students with meaningful information related to personal degree of occupational competency attainment which is probably the most important rationale for the increased use of competency assessment.

The Traditional Assessment System

During the past several years, the mission of IVAS has been and will continue to be as follows:

> The mission of the Iowa Vocational Assessment System (IVAS) is to supplement and expand the capacity and quality of services that address directly the career development and vocational assessment provided by public educational agencies and institutions. The Assessment System would provide the coordination and focus of resources to identify, access, and make available services to assess capabilities and performance of students, instructors/administrators, programs, employees, and potential employees in business and industry (Smith, 1987, p. 1).

This mission has involved providing assessment services in three basic vocational areas. The first of these areas included using the National Occupational Competency Testing Institute (NOCTI) exams from Ferris State University in Michigan. These exams are designed to assess vocational-technical instructors, vocational-technical students, and business/industry personal.

The second area was assessing the career development level of K-12 students in Iowa using the Iowa Career Education Inventory (ICEI). The ICEI measures the career development level of students within the four specific phases of awareness, accommodation, exploration, and preparation. Each of these four

phases have assessment items to measure career related learnings in seven specific domains. These career related domains include: (a) self knowledge; (b) interpersonal relationships; (c) self and society; (d) decision-making; (e) economics; (f) occupational knowledge, and (g) work values and attitudes (ICEI Interpretative Guide and Technical Reports, 1983).

The third area of assessment has been evaluating secondary level industry technology education students enrolled in Principles of Technology (PT) programs. The Principles of Technology program was developed by the Center for Occupational Research and Development (CORD) in Waco, Texas. The PT test developed at Iowa State University by Dr. John C. Dugger measures student competence in 14 units of study. Each unit focuses on technical physics concepts such as force, work, rate, resistance, energy and power. Each unit addresses mechanical, fluid, electrical, and thermal applications of each technical concept. Research conducted by Dugger (1989) indicates that Iowa students enrolled in PT programs show greater test score gains than their counterparts enrolled in traditional college bound physics courses.

The New Proactive IVAS System

The rationale mentioned earlier regarding increased social and political pressures for accountability has been of concern to Iowa vocational-technical education leaders. These concerns prompted Department of Education personnel to reconsider the mission of the IVAS project at Iowa State University.

After several critical discussions, it was decided that the IVAS mission should be refocused and become more comprehensive. The expanded assessment mission was also to include a "proactive" posture to marketing the IVAS services. This approach differed from the traditional "reactive" services being provided based on responding whenever a request was initiated from specific schools. It was felt that a proactive approach was necessary if a dynamic assessment system was to be fully developed and ready to respond to requests needed after July, 1992. In essence, two major thrusts for the new IVAS system was (1) to develop a marketing plan to reach various vocational assessment users and (2) significantly expand the capacity to provide a greater array of assessment services.

The marketing approach will continue to be developed during the next fiscal year using a variety of promotional strategies. These strategies will be developed using several promotional and public relations principles. Printed brochures, newsletters, and other publications are being developed for statewide distribution. Promotional speeches at educational conferences and a vendor's display booth at various educational conferences are also being planned.

An expanded vocational assessment model will also be developed during the 1991 fiscal year. The concept of a state competency assessment institute will be more fully developed. This assessment institution could perhaps be structured similar to the NOCTI Area Test Center model at Ferris State University. The NOCTI Area Test Center evolved over a period of several years after resolving several important issues.

Several important assessment issues which must be dealt with to assure smooth IVAS functioning are similar to any assessment system such as NOCTI. Several assessment issues are spelled out in the NOCTI Handbook for test administration. Similar to NOCTI, the IVAS assessment issues will include such concerns as: (1)

philosophical issues, (2) technical issues such as validity and reliability, (3) legal issues of testing special populations, (4) implementation and administration, (5) efficiency, (6) examiner rating reliability, (7) test bias, (8) test standards clearly established, (9) a definition of content "mastery" must be developed, (10) testing conditions and expenditures for test administration, (11) test security, and (12) irregularities of test administration (NOCTI, 1989).

Additional assessment issues to be resolved will include determining: (1) whether the purpose for assessment (accountability or program improvement) has been identified, (2) the assessment is formative or summative, (3) competency based curricula is being used, (4) the testing should be norm or criterion-referenced and, (5) tests/test item banks have been developed (Hinton, 1989). After various assessment issues have been resolved, the IVAS project can more clearly determine the range of services to be provided to the vocational-technical education community.

Considerable attention will be given to these issues as the IVAS model is being created. This approach is critical for

success because one reason the United States doesn't do well in the assessment of educational outcomes is the confusion about educational purpose. This confusion comes because educational objectives and expected outcomes have been poorly defined. There is a need for a common language from kindergarten through post-secondary education (Fincher, 1988). A common language should assist to provide a more clearly defined focus on assessment strategies and range of services to provide.

The range of IVAS services will include providing catalogs of occupational assessment information, specific occupational assessment tests, technical assistance in test administration scoring and data interpretation, assessment workshops and seminars, test data analysis systems, and criterion referenced test items.

In addition, specific competency tests will be developed in the event that test item banks don't include the evaluation elements needed for congruence with required state minimum program competencies. These required minimum program competencies have been identified in each vocational-technical cluster area. This process was accomplished by the Iowa Department of Education using

curriculum advisory committees and following valid research procedures in determining significant program competencies.

It is the intent of the IVAS system to develop a vocational oriented evaluation model which provides various elements which can be incorporated into all levels of K-14 education. This is because Iowa is rapidly initiating outcome-based education (OBE) principles within all curriculum areas of both primary and secondary schools. The close similarities between vocational CBE and general curriculum OBE strategies should allow the IVAS project to provide future technical assistance to all school systems desiring to assess the knowledges, skills, and attitudes needed to function in society.

The four major operational principles of outcome based education: (a) clarity of focus, (b) expanded opportunity and instructional support, (c) high expectations for learning success, and (d) design down and deliver up as advocated by Spady (1988). The OBE scheme also includes mastery of learning, accountability and competency assessment. These principles have been the hallmark of competency based vocational-technical education for several years. It is perceived that the IVAS system in Iowa will

provide a model of strategies which will be usable in all educational curriculum areas.

The IVAS model should assist in creating the environment conducive to developing articulation agreements between secondary and post-secondary institution. This is because valid competency measures will document the degree of previous learning which each student will bring to the post-secondary environment. The new proactive IVAS model has evolved to its current format largely was the efforts of a very active state assessment advisory council.

The Role of the State Assessment Advisory Council

The purpose of any advisory council is to provide advise relating to issues, needs, and effective functioning of a specific program or project. Advisory councils should also evaluate existing programs and report their findings. The very existence of an advisory council provides a communication linkage between educators and their constitutencies. Advisory councils should be perceived as being the first step in developing linkages between schools and the community. These linkages are critical to the development of responsive, high-quality vocational-technical programming (National Center for Research in Vocational Education,

1984). This statement of purpose provided the rationale to create a new and expanded IVAS advisory council willing to assist in developing a more contemporary mission regarding vocational assessment services for Iowa.

The expanded mission of vocational assessment in Iowa provided the impetus to establish a very diverse array of specific assessment services. The breadth of this service necessitated the development of a new restructured assessment advisory council. It was felt that such an advisory council should include assessment expertise reflecting several occupational special interest areas. The members selected to serve on the council included representatives from such areas as private industry, labor unions, university-level teacher educators, area education agencies, apprenticeship programs, community college administration, secondary school vocational instructors, and state government.

The IVAS advisory council has been a critical and driving force in the creation of the new proactive assessment system. The verbal exchange among the diverse membership (i.e., labor union and apprenticeship communicating with university educators) has produced a new "richness" of thinking relative to the future

functions perceived to benefit both school and private work organizations.

Presently the IVAS Advisory Council has provided several "quality" recommendations. Some of the recommendations have included: (a) develop a program to present to various state education conventions and vocational conferences to explain IVAS and the services offered to education and business; (b) create an inservice program which can be presented to area education agency personnel and local area vocational-technical instructors and, (c) explore the possibility for interaction with other state and national assessment/evaluation system (IVAS, 1990).

The IVAS Advisory Council has also stressed the importance of communicating the project mission via using a variety of media techniques such as a quarterly newsletter, brochures, and written messages included in various state educational.

Summary and Benefits of a New Assessment Model

As was stated earlier, the purpose of this article was to describe the new comprehensive assessment model (IVAS) to be used by Iowa vocational education programs and interested industrial

organizations. The new IVAS model is still being developed to meet the changing social needs and political actions relative to work oriented education.

The need for expanding vocational assessment services is a response to determine the quality of vocational education programs and provide accountability of these programs to the public. The growth of competency based education has produced a need to provide standardized measures of student achievement. These measures of student performance will reveal the degree of program quality. This measured performance will serve as a basis for curriculum articulation with post-secondary programs of study in the merged area community colleges. The expanded array of assessment services are being offered in addition to the traditional services which included assessment assistance in three basic areas.

The three traditional IVAS assessment services included using the NOCTI exams to evaluate vocational instructors, students, and business/industry personnel. Second, the career development level of K-12 students in Iowa continues to be measured with the Iowa Career Education Inventory. Third, the secondary level industrial

technology student also continue to be assessed using Principles of Technology test developed by Dr. John Dugger at Iowa State University.

A practical approach is being used to market and promote the IVAS services to Iowa schools and industries. The promotional activities are being conducted in concert with focused efforts to maintain quality control in performance of IVAS functions. Coordination and administration of assessment functions are modeled after the standards of excellence practiced by NOCTI at Ferris State University.

The new practical assessment model has evolved largely from the efforts of a very active state assessment advisory council. The advisory council membership is comprised of individuals from various education agencies, business, industry, labor and state government. The diverse composition of this council adds a dynamic dimension to the continued creation and promotion of the IVAS model.

Four Major Benefits To Be Derived

Therefore, several benefits will be derived from implementing an expanded vocational assessment system for Iowa. Of the several benefits which could be mentioned, four major advantages are felt to be significant for the future well being of Iowa vocational education.

The first benefit is that student competency assessment will stimulate programs and instructional process to remain dynamic and responsive to industry/business and societal needs. The assessment results will move vocational instructors to establish clear goals, expect more from students, and frequently upgrade their curriculum. The classroom instruction will be more sharply focused with an emphasis placed on teaching all students including the at-risk and other special needs populations.

Buzzell (1990) reinforces this idea by advocating a state-of-the-art curricula by using a national computerized network to acquire curriculum and related materials. He contends program competencies can be changed and improved by sharing new curriculum developments on a regular basis using a national

database. The IVAS model will incorporate several of Buzzell's suggestions. This effort should culuminate with an improved focus on program outcomes because of the accountability factor established by using competency assessment measures.

A second benefit will be the increased involvement of Iowa business/industry and other community agencies. The IVAS model includes an industrial assessment component using the NOCTI competency tests from Ferris State University. This increased involvement will allow the private sector to play a larger role in contributing to the skill preparation of the future work force. This benefit is currently a national movement. These new partnerships between the public and private sectors will add greatly in bringing about a climate supporting sustained support for vocational education programs (National Center for Research in Vocational Education, 1983). Communications between IVAS and the Iowa private sector will continue to be developed systematically as recommended by the IVAS advisory council.

A third benefit will be the movement toward articulation and interagency cooperation. Articulation is defined as being "the planned process within the educational system which facilitates

the transition of students between the secondary and post secondary levels of instruction and allows the students to move with continuity and without hindrance through levels of the educational process (Tangman, et.al., 1976, p. iii)."
Articulation agreements are becoming more numerous on the national level. Likewise in Iowa, articulation agreements will continue to expand rapidly as various issues are resolved and curriculum becomes compatible between secondary and post-secondary schools.

A compatible curriculum which is competency-based lends itself well to the development of criterion referenced test items to assess specific student outcomes. These student outcomes (competencies) can be shared with a variety of agencies, both public and private, whenever the student is making a transition to the next educational preparation step (Budke, 1988). Competency assessment should provide the validity to facilitate linkages among several occupational skill development agencies.

Secondary schools have the potential to develop articulation agreements not only with post-secondary schools, but also with such agencies as employer based training organizations, proprietary schools, JTPA initiated programs, and union

apprenticeships. These colloborative efforts will help minimize the redundancy of skill training and cost of equipment. These efforts will also allow the sharing of resources and faculty to create a win-win situation.

The fourth benefit of a systematic vocational assessment system will be the establishment of a centralized and focused state assessment center. This effort is essential if a systematic and comprehensive education system is to be developed which will meet the vocational education needs. The rapid proliferation of competency-based exams, test item data banks and numerous assessment related materials will continue. It behoeves every state to establish a centralized system and invest the resources needed to guarantee the system to function effectively and efficiently.

The concept of comprehensive occupational assessment was vividly emphasized by Pulka (1990) recently in the Wall Street Journal when he wrote that there is "a test for every task". Whether a person is preparing to be a travel agent, floral designer, bartender or broadcaster, a competency examination

can be identified to assess the occupational skills required to perform the work role.

It must be emphasized that vocational education in America is at a "crossroads". The decisions in the near future will decide whether vocational education can exist as a viable program (Kadamus and Doggett, 1986). Changing social, political, and economic issues mandates vocational education to become more responsive and accountable. Professional expertise is available to respond to societal demands and also become more accountable.

Vocational competency assessment is a major commitment to provide evidence of qualityi and accountability. This evidence will prove that vocational competencies are being acquired by students in our laboratories. It is to this mission that the Iowa Vocational Assessment System (IVAS) has made a major commitment. This commitment should assist in the reshaping and improvement of Iowa vocational education during the decade of the 1990's.

References

Budke, W. E. (1988). Trends and issues in vocation education. Columbus: Center on Education and Training for Employment, the Ohio State University.

Buzzell, C. H. (1990, May) State-of-the-art curricula. Vocational Education Journal, 65(4), (pp. 10).

Committee on Education, 73rd Session of Iowa General Assembly (1989, March 23). Senate File 449; Iowa Vocational Education Act.

Dugger, J. C. (1989, March 21). The principles of technology verses high school physics - a comparison of student achievement. Speech given at ITEA Conference, Dallas, TX.

Fincher, C. (1988, February). Assessing educational outcomes: are we doing good? Can we do better? Athens, GA. University of Georgia. Institute of Higher Education. (ERIC Document Reproduction Service, No. ED299 842).

Hinton, B. E. (1989, November-December). Student competency testing. ATEA Journal, 17 (2), (pp. 14-15).

Iowa Career Education Inventory. (1983, March). Interpretative Guide and Technical Report. Des Moines, IA: Department of Public Instruction.

IVAS Advisory Council (1990, January 11). Recommendations for future IVAS project activities. Proceedings of the January IVAS Advisory Council Meeting Conducted in Marshalltown, IA.

Kadamus, J. A. and Doggett, W. R. (1986). New directions for vocational education at the secondary level. Columbus: The National Center for Research in Vocational Education, The Ohio State University.

National Assessment of Vocational Education. (1989, July). Final Report Volume I - Summary of Findings and Recommendations. Washington, D.C.: U.S. Department of Education.

National Center for Research in Vocation Education (1984). Organize and work with a local vocational education advisory council. Module LT-F-1 in the Competency-Based Administrator Education Materials Modular Series. Athens, GA: American Association for Vocational Instructional Materials.

National Center for Research in Vocational Education (1983). Involve the Community in Vocational Education. Module LT-F-3 in the Competency-Based Administrator Education Materials Modules Series. Athens, GA: American Association for Vocational Instructional Materials.

NOCTI. (1989, September). Handbook for area test center organization and administration. Big Rapids, MI: Ferris State University.

Putka, G. (1990, February 9). A test for every task. The Wall Street Journal, R19.

Smith, T. R. (1987, April). IVAS mission statement. Proceedings of Second Annual IVAS Steering Committee. Ames: Iowa State University, Department of Industrial Education and Technology.

Spady, W. G. (1988, October). Organizing for results: the basis of authentic restructuring and reform. Educational Leadership, 46, (pp. 4-8).

Tangman, R. S., et. al (1976, May). Articulation: a study by the national advisory council on vocational education. Washington, D.C.: The National Center for Research in Vocational Education.