

Old Dominion University

ODU Digital Commons

OTS Master's Level Projects & Papers

STEM Education & Professional Studies

1983

A Study to Validate the Relevancy of V-Tecs Catalogue of Tasks for Masonry in the Tidewater Area

Edison B. Granger Jr.
Old Dominion University

Follow this and additional works at: https://digitalcommons.odu.edu/ots_masters_projects



Part of the [Education Commons](#)

Recommended Citation

Granger, Edison B. Jr., "A Study to Validate the Relevancy of V-Tecs Catalogue of Tasks for Masonry in the Tidewater Area" (1983). *OTS Master's Level Projects & Papers*. 466.
https://digitalcommons.odu.edu/ots_masters_projects/466

This Master's Project is brought to you for free and open access by the STEM Education & Professional Studies at ODU Digital Commons. It has been accepted for inclusion in OTS Master's Level Projects & Papers by an authorized administrator of ODU Digital Commons. For more information, please contact digitalcommons@odu.edu.

A STUDY TO VALIDATE THE RELEVANCY
OF V-TECS CATALOGUE OF TASKS
FOR MASONRY IN THE
TIDEWATER AREA

A RESEARCH PAPER

Submitted To the Graduate School
of
Old Dominion University
In Partial Fulfillment of the Requirements for
The Degree of Master of Science in Education

by

Edison B. Granger, Jr., B.S.

Norfolk, Virginia
May 1983

This research paper was prepared by Edison B. Granger, Jr. under the direction of Dr. John M. Ritz in VTE 636, Problems in Education. It was submitted to the Graduate Program Director as partial fulfillment of the requirements for the Degree of Master of Science in Education.

APPROVED BY: John M. Ritz
Dr. John M. Ritz
Advisor
Vocational and Technical Education

4-28-83
Date

David I. Joyner
Dr. David I. Joyner
Graduate Program Director
Vocational and Technical Education

4/29/83
Date

TABLE OF CONTENTS

	Page
CHAPTER I - INTRODUCTION	
Introduction	1
Statement of the Problem	2
Research Goals	2
Background and Significance.	3
Limitations.	3
Assumptions.	4
Procedures.	4
Definition of Terms	4
Summary	6
CHAPTER II - REVIEW OF LITERATURE	
Review of Literature.	7
Bricklaying Content/Curriculum.	9
Summary	10
CHAPTER III - METHOD AND PROCEDURES	
Method	12
Population	12

CHAPTER III - METHOD AND PROCEDURES (Con't.)

Survey Instrument	12
Procedures For Collecting Data	13
Summary	14

CHAPTER IV - FINDINGS

Findings	15
Survey Questionnaire	16

CHAPTER V - SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary	25
Conclusions	26
Recommendations	26

REFERENCES	28
----------------------	----

APPENDIX	29
--------------------	----

Chapter 1

INTRODUCTION

In the near and distant future, Virginia businesses and industries would need large numbers of skilled workers (Davis, 1981). The Norfolk Technical Vocational Center (N.T.V.C.), a regional training facility of the Norfolk Public Schools, had the mission of preparing secondary and post-secondary students to fill this need. In addition, the school had the responsibility of adjusting its curriculum so that its students could benefit from horizontal and vertical articulation.

In order to have accurate and fair articulation a set of standards or goals was identified and agreed to by all parties involved. To achieve these results the Virginia State Plan for Vocational Education (1978-79) contained the following objective:

By June 30, 1982, each school division shall have implemented competency-based instruction in approved vocational education programs based on V-TECS and IDECC catalogues if available or other competency based materials as reported in the annual Local Evaluation Programs, and each community college shall have implemented competency-based instruction in at least one program based on V-TECS materials as reported by the Virginia Community College System. (p. 1)

As part of the State of Virginia's Vocational Education System, N.T.V.C. had strived to achieve this objective.

In order to accomplish this goal the trade and industrial (T & I) section of this facility adopted the Vocational-Technical Education Consortium of States (V-TECS) as its guide in identifying the competencies necessary for students to accomplish in order to enter the work force as trained workers.

The masonry program, one of the fifteen T & I Course offerings at N.T.V.C., had to change its existing policies and curriculum to achieve both articulation abilities and provide up-to-dated skills for its graduates. In order to insure both of these aims, this investigator had validated the tasks list found in the masonry V-TECS catalogue (Alabama, 1978) as they applied to the Tidewater area of Virginia.

STATEMENT OF THE PROBLEM

As of this date there was no validated task list for the masonry trade in Tidewater, Virginia. The problem of this study was to determine if the tasks of the masonry V-TECS catalogue were relevant to the skills performed by bricklayers in this work area.

RESEARCH GOALS

It was the intent of this study to seek answers to the following questions as they related to the masonry program at N.T.V.C., Norfolk, Virginia:

1. What specific occupational competencies were performed by the bricklayer in the Tidewater area masonry work force?

2. In what specific masonry skills must students be competent in order to be employable in the Tidewater area?

3. Were the tasks listed in V-TECS catalogue relevant to entry-level skills of the Tidewater masonry work force?

BACKGROUND AND SIGNIFICANCE

The masonry vocational program at N.T.V.C. had made some distinct changes since its outset in 1968. The largest and most recent change was the adoption of competency-based instructions by the Norfolk Public School System.

Through competency-based vocational education, an educational system based upon a validated task list, the student acquired the knowledge and/or skills necessary to enter the local job markets. These attributes enabled the student to secure employment and make advancement in his/her chosen occupation.

In order to provide such a program the instructor must know what actually was being done on the job site. The data gained from this study provided an up-to-date list of the skills actually performed by bricklayers in the Tidewater, Virginia area. With this available information the student could be trained to enter the work force as an asset to the construction industry.

LIMITATIONS

As a result of this study the following limitations

were recognized:

1. Only bricklayers in the Tidewater, Virginia area have been contacted.
2. The study was validated for the Tidewater, Virginia area only.

ASSUMPTIONS

This study was based on the following assumptions:

1. Many of the competencies cited in the V-TECS catalogue were not necessary.
2. Specific competencies were required of employees in the Tidewater region.
3. Workers should identify occupational skill needs.

PROCEDURES

The investigator's survey instrument was distributed to organized and unorganized labor bricklayers of the masonry construction industry in the Tidewater area. It was expected that a minimum of 60 percent of the survey instrument would be returned. An arbitrary scale was used in the instrument to rate the specific questions or statements. The instrument also had an area for comments.

DEFINITION OF TERMS

In order to familiarize the reader with the terms used in this study, the researcher clarified the meaning of the following terms:

Articulation. A planned process within an educational system that coordinated instructional programs which would enable students to move from one instructional level to another, at the same instructional level, without unnecessary duplication or gaps in the instructional program.

Catalogue. A comprehensive collection of performance objectives, performance guides, criterion-referenced measures, and related data, organized by a structure or career ladder within a domain interest.

Competency-Based Education (C.B.E.). Educational programs in which required knowledge, skills and attitudes were based on role-relevant competencies with specific standards.

Horizontal Articulation. Moving from one institution to another at the same instructional level.

Interstate Distributive Education Curriculum Consortium (IDECC). A cooperative research and development venture among states and other agencies.

Norfolk Technical Vocational Center. A vocational center located within the political and geographical boundaries of the City of Norfolk, Virginia, whose purpose was to provide vocational education for tenth, eleventh, and twelfth grade students in the Norfolk Public School System.

Tidewater Area of Virginia. The southeastern coastal section of Virginia. This 50 square mile area included the major cities of Norfolk, Portsmouth, Chesapeake, and Virginia Beach with the bordering cities of Hampton, Newport News, Suffolk and Smithfield.

Vertical Articulation. Moving from the lower instructional level to a higher instructional level.

Vocational Education. Education that provided necessary skills and knowledge for an individual to enter an occupation as a productive worker.

Vocational-Technical Education Consortium of States (V-TECS). A cooperative research and development venture among 18 states and two associate agencies.

SUMMARY

Norfolk Technical Vocational Center's masonry program had been in existence since 1968. The curriculum had offered students the skills and knowledge to enter the masonry trade. However, a validated task list of skills performed by bricklayers in the Tidewater area was needed in order to provide up-to-date skills for students completing the program.

Chapter II

REVIEW OF LITERATURE

"The people of the United States, by means of continuous and purposeful work, have converted the resources of this nation in quantity and variety of goods and services hitherto unknown in the history of mankind" (Roberts, 1971, p. 3). The products being produced by this conversion have enabled the people of this nation to maintain a standard of living far beyond the dreams of their forefathers.

The improvement of the economic system in the United States had been due to many factors. In this economic system were elements of management of efficient businesses, distribution of products and the productivity of the worker. The success of these factors and techniques could be attributed to the training of the worker, and prospective workers, through educational programs. The Smith-Hughes Act of 1917 and subsequent federal legislation had profound effects upon public vocational and technical curriculums (Finch and Cronkilton, 1979, p. 4). These training programs in our nation's educational system had enabled industry to keep pace with society's increasing demands for consumer goods and services. It was the curriculum that had once again emerged as a central concern of citizens and educators.

The climate for curriculum development in the schools has changed. No longer is it an exclusively professional concern or activity. No longer is the public

content to play an outsider's role in what seems to them a paramount hallmark of a good school. The perceived unresponsiveness on the part of school personnel have forced citizens to turn with increasing frequency and urgency to legislatures and other elected officials for help. One result has been the growth of "minimum competency" laws across the nation which has forced upon school districts requirements for developing public plans with assessable objectives, needs assessments, and required parental involvement. (English, 1978, p. 8).

Regardless of the size of the school system the curriculum played an important role in producing quality education.

At a time of public concern over deteriorating standards in education, a systematic assessment of students' competence seemed to make sense. Instead of a total curriculum reform the idea of competency-based education answered the public demands of accountability.

The Vocational Education Act of 1963 and its 1968 and 1976 amendments tied instructions to accountability. Its implications have been that vocational education programs must be responsible for the results produced in the intended learners. Evidence of the outcomes produced in the learners has to be tied to, or a consequence of, instruction. (Cen, 1980, p. 35).

For years, educators have called upon their profession to meet the interest, needs and abilities of their students.

One of vocational education's major goals was to provide instructions that were realistic in terms of job performance skills and to show that they were meaningful to the student. Goals and objectives took on new importance as they were defined in terms of actual competencies that the student developed and demonstrated. To realize these goals, the

instructional content had to relate to the actual work situation.

To bring the educational process in vocational education in concert with these ideas, the Virginia State Plan for Vocational Education (1978-79) mandated that by June 30, 1982 each school division would have implemented competency-based instructions in vocational education. The foundation for any competency-based instruction program was the identification and validation of the worker's role to relevant tasks. To insure the integrity of this foundation the mandate further stated that these tasks, or competencies, shall be manifested from V-TECS or IDECC catalogues. The fallacy of totally relying on these catalogues was that they were not developed for a specific geographic area. To be more specific, the catalogue for masonry was developed in the state of Alabama and bricklayers in Virginia did not necessarily do the same things, and in the same manner, as a bricklayer in Alabama. Therefore, it was imperative that any task list used in curriculum change for the Tidewater, Virginia area be well grounded. In order to accomplish this end it was necessary to compare the masonry task list developed in Alabama to the competencies required of a bricklayer in the Tidewater, Virginia area.

BRICKLAYING CONTENT/CURRICULUM

In the construction industry the trainers of the craftsmen were faced with the challenge of providing thorough and modern training.

In 1975, the Associated General Contractors of America met with representatives of the Oklahoma Curriculum and Instructional Materials Center to discuss the possibility of developing, as a co-operative project, a course of instruction that would be especially designed for training the bricklayer who will make his career in industrial and commercial construction. (Bricklaying Curriculum, 1977, p. 5).

The results of the general contractors' meeting was a conscious effort to mold the practical experience of the construction world with instructional methods of the vocational-technical educators. Their coordinating efforts produced a curriculum that could be used to assist instructors in their instructional programs. This curriculum material could be supplemented by the instructor's own method and materials to adapt to the local conditions.

SUMMARY

Changing, or improving, a curriculum was far from a simple task. The importance of making changes in instructional techniques could be overemphasized if the changes were beneficial to the needs of the student. Of all the evidence that had been reviewed--accountability had given a new rise to the instructional techniques in vocational education. In order to retain public support and interest, ways must be found to make existing programs efficient and provide training for the workers of tomorrow. Competency-based vocational education had the means by which the student and instructor could point to goals with evidence of attainment.

With these facts in mind the researcher initiated this study in order to provide the data necessary to make the masonry construction program at Norfolk Technical Vocational Center conform to the needs of the masonry industry in the Tidewater, Virginia area.

Chapter III

METHOD AND PROCEDURES

METHOD

The intention of this study was to identify and validate the job-entry competencies of the bricklayer industry for the Tidewater area of Virginia. This information was gathered from skilled craftsmen of the bricklaying industry of Tidewater. In no way was it intended to identify all of the competencies needed by a bricklayer, but only those necessary for an individual entering the bricklaying trade as a trainee.

POPULATION

The population of this study was comprised of active journeymen of the masonry industry in the Tidewater, Virginia area. Bricklayers from both "organized" and "unorganized" labor participated in this survey. Organized Labor, Norfolk's local Bricklayers, Stone and Marble Mason Tile Setters Union Number 2 of Virginia, represented the commercial masonry industry. Unorganized Labor represented the bricklayers of the residential masonry industry. Permission for the survey was granted and was well received by the employers of these tradesmen.

SURVEY INSTRUMENT

The survey instrument, a questionnaire, used to collect the necessary data was designed in one part. The instrument

dealt specifically with the task list of the Alabama Masonry V-TECS as it existed. The respondents were requested to check one of three columns. The directions were as follows:

Place a check (✓) in Column 1, "REQUIRED" if the trainee must be skilled in performing the task in order to be hired.

Place a check (✓) in Column 2, "HELPFUL BUT NOT REQUIRED", if the trainee does not have to be skilled in order to perform the task, but it would be helpful.

Place a check (✓) in Column 3, "NOT REQUIRED", if the task is not performed by a trainee.

Respondents checking Column 1, indicated that the trainee must perform those tasks proficiently to be a productive employee. Those tasks checked in Column 2 indicated that a trainee did not have to be proficient in those tasks, but he/she could develop this on the job. If Column 3 was checked, the trainee was not expected to perform those tasks. A sample of the survey used in this study appeared in the Appendix.

PROCEDURES FOR COLLECTING DATA

During the month of March, 1983 this investigator distributed the questionnaire to the population of the various construction sites in Tidewater, Virginia. In the distribution of the questionnaire, a prearranged date for a hand collection was set by this investigator. April 1, 1983 was considered the cutoff date for the return of all data used in this study. Telephone contact was made for those not responding.

Accompanying each questionnaire was a cover letter which explained the purpose of the survey. There was also a brief statement thanking each respondent for his participation.

Once the data was collected, the researcher analyzed, organized and compiled the information so that it could be useful in improving the masonry program at Norfolk Technical Vocational Center.

SUMMARY

The researcher's purpose in designing this instrument was for collecting data. The quantitative responses indicated to what extent each task was or was not performed by a trainee in the bricklaying industry. This information could be used in developing the masonry curriculum at Norfolk Technical Vocational Center.

Chapter IV

FINDINGS

The intent of this study was to determine if the tasks listed in the V-TECS catalogue (Alabama, 1978) for masonry were of a higher skill level than local industry perceived as job-entry level. The investigator also sought out various proficiency levels of performance which were required of the trainee. The findings of this study were based on the masonry industry in the Tidewater area only.

A description of the population and the procedure for collecting the data was explained in Chapter III (p. 12) of this paper. On the following pages is the actual questionnaire which was distributed to the target population. The percentage of the responses for each task were shown in the appropriate column at the right.

SURVEY QUESTIONNAIRE

This questionnaire will aid in identifying the basic skills necessary for employment in the masonry industry in the Tidewater area of Virginia. The instructions are as follows:

Place a check (✓) in Column 1, "REQUIRED", if the trainee must be skilled in performing the task in order to be hired.

Place a check (✓) in Column 2, "HELPFUL BUT NOT REQUIRED", if the trainee does not have to be skilled in order to perform the task, but it would be helpful.

Place a check (✓) in Column 3, "NOT REQUIRED", if the task is not performed by a trainee.

A. Performing Supervisory Functions	REQUIRED	HELPFUL BUT NOT REQUIRED	NOT REQUIRED
	%	%	%
01 Assign personnel to duty positions	13	26	61
02 Draft Correspondence _____		35	65
03 Inspect quality of work _____	48	39	13
04 Order equipment and supplies _____	4	44	52
05 Orient new employees _____	17	22	61
06 Prepare bids for contract work _____		17	83
07 Prepare budget _____		9	91
08 Prepare employee payroll _____		9	91
09 Prepare estimate of brickwork _____		48	52
10 Write work schedules _____		30	70

SURVEY QUESTIONNAIRE - Page 2

DUTY/TASK		REQUIRED	HELPFUL BUT NOT REQUIRED	NOT REQUIRED
		%	%	%
B. Preparing Foundations and Footings				
01	Build Footings	31	65	4
02	Build forms for concrete		65	35
03	Construct piers	56	35	9
04	Construct walls containing pilasters	56	40	4
05	Excavate for masonry work	9	43	48
06	Operate transit to lay out buildings	4	56	40
07	Raise a foundation	65	31	4
08	Waterproof foundation	26	52	22
C. Laying, Jointing and Pointing				
01	Bond a wall	83	17	
02	Build a Gothic arch	40	48	12
03	Build a jack arch	43	40	12
04	Build a Roman arch	44	44	12
05	Build a segmental arch	36	52	12
06	Build a soldier arch	57	31	12
07	Build a Tudor arch	36	52	12
08	Build corner brick columns	78	22	
09	Build rectangular brick columns	83	17	

SURVEY QUESTIONNAIRE - Page 3

DUTY/TASK		REQUIRED	HELPFUL BUT NOT REQUIRED	NOT REQUIRED
C. Laying, Jointing and Pointing (cont'd)		%	%	%
10	Build round brick columns	39	52	9
11	Build square brick columns	83	17	
12	Clean brick walls	35	65	
13	Construct brick veneer wall	91	9	
14	Construct cavity walls	91	9	
15	Cut a bat closure	78	22	
16	Cut a queen closure	78	22	
17	Form a corbel	56	40	4
18	Gage masonry wall with mortar scale	83	12	5
19	Gage masonry wall with story pole	83	17	
20	Lay a basket weave pattern	70	30	
21	Lay a common bond pattern	91	9	
22	Lay a diamond pattern	48	43	9
23	Lay a Dutch bond pattern	48	43	9
24	Lay a Flemish bond pattern	70	21	9
25	Lay a header course	92	4	4
26	Lay a herringbone bond pattern	56	35	9
27	Lay a rowlock course	91	9	
28	Lay a sailor course	82	9	9

SURVEY QUESTIONNAIRE - Page 4

DUTY/TASK		REQUIRED %	HELPFUL BUT NOT REQUIRED %	NOT REQUIRED %
C. Laying, Jointing and Pointing (cont'd)				
29	Lay a shiner course	74	17	9
30	Lay a soldier course	87	13	
31	Lay a stack bond pattern	87	13	
32	Lay a stretcher course	91	9	
33	Lay an American bond pattern	87	9	4
34	Lay an English bond pattern	61	30	9
35	Lay brick with clay	22	43	35
36	Tool concave joints	96	4	
37	Tool convex joints	70	26	4
38	Lay corners	87	13	
39	Tool rake joints	91	9	
40	Tool squeeze joints	35	52	13
41	Tool trowel struck joints	83	13	4
42	Tool V joints	87	9	4
43	Mix cement mortar	44	52	4
44	Mix clay mortar	17	66	17
45	Mix mortar by hand	61	39	
46	Mix mortar with power mixer	65	35	
47	Mix slack lime mortar	17	61	22

SURVEY QUESTIONNAIRE - Page 5

DUTY/TASK		REQUIRED %	HELPFUL BUT NOT REQUIRED %	NOT REQUIRED %
C. Laying, Jointing and Pointing (cont'd)				
48	Point a wall _____	87	13	
49	Reinforce brick masonry _____	83	17	
50	Use anchors to tie doors to walls _____	87	13	
51	Use anchors to tie walls together and doors to walls _____	87	13	
D. Constructing Residential Chimneys and Fireplaces				
01	Build double face chimney _____	65	26	9
02	Build single face chimney _____	83	13	4
03	Cut a flue lining _____	61	30	9
04	Install ash dump _____	74	13	13
05	Install clean-out door _____	74	13	13
06	Insert a damper _____	74	13	13
07	Install heatilator _____	56	22	22
08	Lay a hearth _____	74	13	13
09	Lay a mantel _____	74	13	13
10	Lay a throat _____	74	13	13
11	Lay back of fireplace _____	74	13	13
12	Lay bottom of fireplace _____	74	13	13
13	Lay side of fireplace _____	74	13	13

SURVEY QUESTIONNAIRE - Page 6

DUTY/TASK	REQUIRED %	HELPFUL BUT NOT REQUIRED %	NOT REQUIRED %
D. Constructing Residential Chimneys and Fireplaces (cont'd)			
14 Set flues	79	17	4
15 Install log lighters	9	61	30
E. Constructing Buildings			
01 Build partitions	91	9	
02 construct jambs	91	9	
03 Construct sills	87	13	
04 Damp proof a wall	35	61	4
05 Install wall ties	87	13	
06 Lay a flight of steps	70	26	4
07 Make reinforced lintels	35	52	13
08 Place beams	78	22	
09 Set door frames	26	52	22
10 Set lintels	92	4	4
11 Set window	17	57	26
F. Constructing Concrete Masonry			
01 Finish concrete	9	39	52
02 Lay concrete blocks	87	13	

SURVEY QUESTIONNAIRE - Page 7

DUTY/TASK		REQUIRED	HELPFUL BUT NOT REQUIRED	NOT REQUIRED
F. Constructing Concrete Masonry (cont'd)		%	%	%
03	Lay running bond pattern in concrete masonry _____	83	13	4
04	Lay vertical bond pattern in concrete masonry _____	87	9	4
05	Mix concrete by hand _____	17	56	27
06	Mix concrete with power _____	31	44	25
07	Pour concrete _____	25	50	25
08	Protect concrete during curing _____	22	35	43
09	Strengthen concrete work _____	22	26	52
10	Lay steel rods _____	26	39	35
11	Lay reinforced wiring _____	22	30	48
G. Performing Miscellaneous Masonry Work				
01	Construct manholes _____	22	48	30
02	Construct planters _____	65	31	4
03	Construct septic tanks _____	0	39	52
04	Construct water fountains _____	14	43	43
05	Construct stucco walls _____	9	39	52
06	Fireproof beams _____	30	22	48
07	Fireproof walls _____	30	26	44
08	Install flashing _____	52	30	18

SURVEY QUESTIONNAIRE - Page 8

DUTY/TASK		REQUIRED	HELPFUL BUT NOT REQUIRED	NOT REQUIRED
		%	%	%
G.	Performing Miscellaneous Masonry Work (cont'd)			
09	Lay glass blocks _____	30	48	22
10	Lay masonry driveways _____	35	43	22
11	Lay masonry floors _____	43	53	4
12	Lay masonry walks _____	65	31	4
13	Lay ornamental lattice pattern wall _____	31	65	4
14	Lay SCR brick _____	31	60	9
15	Lay structural clay tile _____	31	38	31
16	Repair masonry work _____	87	13	
17	Set stone _____	39	48	13
18	Waterproof walls _____	26	57	17

Comments: _____

A total of thirty five (35) questionnaires were distributed and this investigator received twenty three (23) responses. This represented a return rate of 65.7% for this survey.

After reviewing the questionnaires and completing the tabulation, an analysis of the task responses was made to determine their level of importance. It was also important to determine the abilities of the secondary students in performing these tasks. With this in mind this investigator established an arbitrary scale. This scale was discussed with the N.T.V.C. masonry craft committee. The committee approved the scale of 50 percent or above for this investigation.

From the analysis of the returned questionnaire the Tidewater area masonry work force indicated that 58.8% of the tasks listed were important in developing a curriculum. A second group indicated that 19.5% of the tasks could be used as supplementary material and the third group indicated that 12.9% were not considered important to job-entry level. The tabulation of these total percentages indicated that there was an area which had not been considered. This area could have been considered as "speciality" work in the masonry industry: such as, ornamental masonry work in landscaping. The conclusion and recommendations of this investigator's survey will be presented in the next chapter (V).

Chapter V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

SUMMARY

In teaching a vocational subject, teachers should choose realistic goals to develop those basic skills and proficiencies which would allow students to obtain successful employment in their chosen trade. It was the purpose of this research study to determine what job skills a student trainee in the masonry program at Norfolk Technical Vocational Center, Norfolk, Va. must acquire in order to be employable in the Tidewater masonry industry.

To initiate this study the one hundred twenty four (124) tasks listed in the V-TECS catalogue was used as an indicator for job-entry level employment in the masonry trade. The investigator sought out the important levels of these tasks by having local craftsmen of the bricklaying industry respond through a survey questionnaire. The respondents could rate these tasks in importance levels as required, helpful, or not required in a training program for the masonry students of the secondary level. With this collected data a curriculum could be designed to emphasize the time a one year program, three hours per day, should place on the teaching of those tasks that are important to the job-entry level student seeking employment in the bricklaying industry of Tidewater, Virginia.

CONCLUSION

It was evident that certain tasks had to be omitted for an educational program that could be learned on the job, at a later time. Of the 124 tasks listed, this research study pointed out the fact that approximately half of the tasks were "required" for job-entry level. The data analysis indicated the skills that were performed by the local bricklayers and the trainee should be proficient in those skills for successful employment.

Overall, this study revealed to this investigator the following information:

1. That the Tidewater area bricklaying industry suggested 58.8% of the 124 V-TECS tasks are "required" for job-entry.
2. That 19.5% of the 124 tasks are "helpful but not required" for job-entry.
3. That 12.9% of the 124 tasks are "not required" for job-entry.
4. That 8.8% show an area that was not considered by this investigator. The area is considered "specialty" work. "Specialty" work develops as an outgrowth from changes in architectural trends.

RECOMMENDATIONS

This researcher realizes the strengths and weaknesses of the V-TECS catalogue from the survey data. The information gathered was important in making the following recommendations to the existing curriculum of the masonry program at Norfolk Technical Vocational Center, Norfolk, Virginia:

1. Place more emphasis on mastery of basic skills.
2. Prepare the students with job-entry skills from the selected "required" tasks of the V-TECS catalogue.
3. Use the supplementary tasks to enhance the development of a well-balanced program.
4. Develop tasks that are attuned with current building trends.

REFERENCES

- Davis, S. John, Instructional Resource: Guide for Competency-Based Education, Vocational and Adult Education, Virginia Department of Education, 1981, p. 1 of Introduction.
- Crunkilton, John R. and Curtis R. Finch, Curriculum Development in Vocational and Technical Education, Boston, Massachusetts, Allyn and Bacon, Inc., 1979.
- English, Fenwick W., Quality Control in Curriculum Development, Arlington, Virginia, American Association of School Administrators, 1978.
- Gen, Urban T., "Step by Step to a CBVE Program", School Shop, Vol. 30, No. 8, April, 1980.
- Roberts, Roy W., Vocational and Practical Arts Education: History Development and Principles, New York, Rinehart and Co., Inc., 1971.
- Turcotte, Raymond J. and others, Bricklaying Curriculum, Oklahoma State Department of Vocational and Technical Education, 1977.

APPENDIX

March, 1983

Dear Fellow Craftsman:

As part of my work on the Master's Degree in Vocational Education at Old Dominion University, I am conducting a research study to identify the basic skills necessary to enter the masonry industry in the Tidewater area.

I am, as a journeyman of the trowel trade, soliciting your help in this study by asking you to respond to the attached questionnaire. In order to keep the individual responses anonymous you are asked not to sign the questionnaire. The results of the questionnaire responses and any comments will be compiled in my research paper which will be available to the public.

Thank you for your cooperation in this research study.

Sincerely,

A handwritten signature in cursive script that reads "Ed Granger".

Ed Granger

SURVEY QUESTIONNAIRE

This questionnaire will aid in identifying the basic skills necessary for employment in the masonry industry in the Tidewater area of Virginia. The instructions are as follows:

Place a check (✓) in Column 1, "REQUIRED", if the trainee must be skilled in performing the task in order to be hired.

Place a check (✓) in Column 2, "HELPFUL BUT NOT REQUIRED", if the trainee does not have to be skilled in order to perform the task, but it would be helpful.

Place a check (✓) in Column 3, "NOT REQUIRED", if the task is not performed by a trainee.

A. Performing Supervisory Functions	REQUIRED	HELPFUL BUT NOT REQUIRED	NOT REQUIRED
01 Assign personnel to duty positions			
02 Draft Correspondence _____			
03 Inspect quality of work _____			
04 Order equipment and supplies _____			
05 Orient new employees _____			
06 Prepare bids for contract work _____			
07 Prepare budget _____			
08 Prepare employee payroll _____			
09 Prepare estimate of brickwork _____			
10 Write work schedules _____			

SURVEY QUESTIONNAIRE - Page 2

DUTY/TASK		REQUIRED	HELPFUL BUT NOT REQUIRED	NOT REQUIRED
B. Preparing Foundations and Footings				
01	Build Footings _____			
02	Build forms for concrete _____			
03	Construct piers _____			
04	Construct walls containing pilasters _____			
05	Excavate for masonry work _____			
06	Operate transit to lay out buildings _____			
07	Raise a foundation _____			
08	Waterproof foundation _____			
C. Laying, Jointing and Pointing				
01	Bond a wall _____			
02	Build a Gothic arch _____			
03	Build a jack arch _____			
04	Build a Roman arch _____			
05	Build a segmental arch _____			
06	Build a soldier arch _____			
07	Build a Tudor arch _____			
08	Build corner brick columns _____			
09	Build rectangular brick columns _____			

DUTY/TASK		REQUIRED	HELPFUL BUT NOT REQUIRED	NOT REQUIRED
C.	Laying, Jointing and Pointing (cont'd)			
10	Build round brick columns _____			
11	Build square brick columns _____			
12	Clean brick walls _____			
13	Construct brick veneer wall _____			
14	Construct cavity walls _____			
15	Cut a bat closure _____			
16	Cut a queen closure _____			
17	Form a corbel _____			
18	Gage masonry wall with mortar scale _____			
19	Gage masonry wall with story pole _____			
20	Lay a basket weave pattern _____			
21	Lay a common bond pattern _____			
22	Lay a diamond pattern _____			
23	Lay a Dutch bond pattern _____			
24	Lay a Flemish bond pattern _____			
25	Lay a header course _____			
26	Lay a herringbone bond pattern _____			
27	Lay a rowlock course _____			
28	Lay a sailor course _____			

DUTY/TASK		REQUIRED	HELPFUL BUT NOT REQUIRED	NOT REQUIRED
C. Laying, Jointing and Pointing (cont'd)				
29	Lay a shiner course _____			
30	Lay a soldier course _____			
31	Lay a stack bond pattern _____			
32	Lay a stretcher course _____			
33	Lay an American bond pattern _____			
34	Lay an English bond pattern _____			
35	Lay brick with clay _____			
36	Tool concave joints _____			
37	Tool convex joints _____			
38	Lay corners _____			
39	Tool rake joints _____			
40	Tool squeeze joints _____			
41	Tool trowel struck joints _____			
42	Tool V joints _____			
43	Mix cement mortar _____			
44	Mix clay mortar _____			
45	Mix mortar by hand _____			
46	Mix mortar with power mixer _____			
47	Mix slack lime mortar _____			

DUTY/TASK		REQUIRED	HELPFUL BUT NOT REQUIRED	NOT REQUIRED
C. Laying, Jointing and Pointing (cont'd)				
48	Point a wall _____			
49	Reinforce brick masonry _____			
50	Use anchors to tie doors to walls _____			
51	Use anchors to tie walls together and doors to walls _____			
D. Constructing Residential Chimneys and Fireplaces				
01	Build double face chimney _____			
02	Build single face chimney _____			
03	Cut a flue lining _____			
04	Install ash dump _____			
05	Install clean-out door _____			
06	Insert a damper _____			
07	Install heatilator _____			
08	Lay a hearth _____			
09	Lay a mantel _____			
10	Lay a throat _____			
11	Lay back of fireplace _____			
12	Lay bottom of fireplace _____			
13	Lay side of fireplace _____			

DUTY/TASK	REQUIRED	HELPFUL BUT NOT REQUIRED	NOT REQUIRED
D. Constructing Residential Chimneys and Fireplaces (cont'd)			
14 Set flues _____			
15 Install log lighters _____			
E. Constructing Buildings			
01 Build partitions _____			
02 construct jambs _____			
03 Construct sills _____			
04 Damp proof a wall _____			
05 Install wall ties _____			
06 Lay a flight of steps _____			
07 Make reinforced lintels _____			
08 Place beams _____			
09 Set door frames _____			
10 Set lintels _____			
11 Set window _____			
F. Constructing Concrete Masonry			
01 Finish concrete _____			
02 Lay concrete blocks _____			

DUTY/TASK		REQUIRED	HELPFUL BUT NOT REQUIRED	NOT REQUIRED
F. Constructing Concrete Masonry (cont'd)				
03	Lay running bond pattern in concrete masonry _____			
04	Lay vertical bond pattern in concrete masonry _____			
05	Mix concrete by hand _____			
06	Mix concrete with power _____			
07	Pour concrete _____			
08	Protect concrete during curing _____			
09	Strengthen concrete work _____			
10	Lay steel rods _____			
11	Lay reinforced wiring _____			
G. Performing Miscellaneous Masonry Work				
01	Construct manholes _____			
02	Construct planters _____			
03	Construct septic tanks _____			
04	Construct water fountains _____			
05	Construct stucco walls _____			
06	Fireproof beams _____			
07	Fireproof walls _____			
08	Install flashing _____			

DUTY/TASK		REQUIRED	HELPFUL BUT NOT REQUIRED	NOT REQUIRED
G.	Performing Miscellaneous Masonry Work (cont'd)			
09	Lay glass blocks _____			
10	Lay masonry driveways _____			
11	Lay masonry floors _____			
12	Lay masonry walks _____			
13	Lay ornamental lattice pattern wall _____			
14	Lay SCR brick _____			
15	Lay structural clay tile _____			
16	Repair masonry work _____			
17	Set stone _____			
18	Waterproof walls _____			

Comments: _____
