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ABSTRACT

In 1997, Virginia's Thomas Nelson Community College (TNCC) undertook a study to determine how well the general education components of its associate degree programs were imparted to associate degree graduates. Four sources of data were used to determine outcomes: follow-up survey results for 1992-93 and 1993-94 graduates, outcomes for graduate candidates in 1994-95 and 1995-96 on the College Basic Academic Subjects Examination (College BASE), success rates in junior- and senior-level classes of transfers to Christopher Newport University (CNU), and results of spring 1997 graduates from CNU on a written general education assessment. Study results included the following: (1) graduates from both 1992-93 and 1993-94 reported significant gains in skills, with the greatest gains reported for computer skills and the least for art and music appreciation; (2) College BASE scores for both 1994-95 and 1995-96 graduate candidates, however, were more than 17 points below the national sample average for English, mathematics, and science; (3) although for most disciplines there were no significant differences in class success rates for former TNCC and native CNU students, TNCC transfers were more likely to earn passing grades in business, economics, engineering, and finance; and (4) on CNU graduates' general education assessments, former TNCC students received slightly higher ratings overall than native university students. Seventeen data tables are included. (BCY)

THOMAS NELSON
COMMUNITY COLLEGE

Assessment of General Education Competencies at Thomas Nelson Community College 1994 – 1997

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Assessment of General Education Competencies at Thomas Nelson Community College

Introduction

Thomas Nelson Community College (TNCC) has established nine general education components that guide the institution in the development of its associate's degree programs.

Communication Skills:
The skills to read, write, listen, and speak effectively so as to communicate clearly on a personal, occupational, or professional level.

Learning Skills:
The ability to locate and use information resources, including printed and computerized databases, in an effective method of inquiry that supports and promotes lifelong learning.

Critical Thinking Skills:
The development of a reflective and analytic disposition well-suited to recognize and evaluate arguments of one's own and others as to their relative strength or weakness, thus creating the foundation for effective decision making and problem solving.

Interpersonal Skills and Understanding Human Relations:
The ability to know and understand one's self and others—especially those of other gender, race, and background—so as not only to live but also to develop a personal set of values, ethics, and responsibilities.

Computational and Computer Skills:
The ability to understand, use, and interpret numerical data so as to function successfully in life and to have a sufficient knowledge of basic computer elements, functions, and applications so that one may utilize this modern tool and its ever-changing applications to meet better the challenges of an increasingly technical world.

Global, Historical, and Cultural Traditions:
The awareness of not only the Western world's history and culture but also that of the East and Africa.

The Appreciation of Fine Arts and Music:
The development of a basic understanding of artistic principles, genres, periods, and artists to enable the individual to appreciate and enjoy art in its varied forms as a source of public and private enrichment.

Understanding Science, Technology, and the Environment:
The knowledge of fundamental principles of science and technology, knowledge of the scientific method of inquiry, skills for applying scientific knowledge to practical situations, and attitudes that reflect an understanding of and respect for the environment.

Understanding Mental and Physical Health:
The fundamental knowledge of the basic principles governing mental and physical health to promote as fully as is possible lifelong well-being.

To assess how well the college is imparting these skills through its associate degree programs we have used several strategies over the past three years. First, the graduate survey asks respondents to rate their skill level in each of the nine components at the time of their entry to TNCC and at graduation. Second, graduate candidates in 1994–95 and 1995–96 completed the College Basic Academic Subjects Examination (College BASE), a "criterion referenced achievement examination that evaluates knowledge and skills in English, mathematics, science, and social studies. In addition, *College BASE* tests proficiency in three cross–disciplinary competencies: interpretive, strategic, and adaptive reasoning" (1996). At the time of testing students also provided self ratings of competencies.

Third, we examined success rates in 300– and 400–level courses at Christopher Newport University (CNU) for students who completed prerequisites at TNCC and those who completed prerequisites at CNU. This comparison assumes that junior and senior level courses build on the general education competencies learned in freshman and sophomore courses (e.g., they are likely to require, papers, oral presentations, group projects in addition to specific content knowledge). Fourth, in Spring 1997 a sample of students graduating from CNU completed a written general education assessment. Performance of former TNCC students was compared to that of native CNU students.

Each of these assessment methods has strengths and weaknesses. The graduate survey is a self-report measure. It provides students' perceptions of their skill levels and a measure of gains or value added but it is not an objective standard of achievement, College BASE provides an objective standard and a benchmark against which we can evaluate results but it does not cover all of the college's general education components and may not emphasize the same skills within the components. Nevertheless, with the inclusion of locally developed items in 1995–96, the test seems to cover the types of knowledge and skills envisioned in the college's general education goals.

Performance in 300– and 400–level courses is only a rough approximation of testing general education skills but it does give an unambiguous indication of whether students prepared at TNCC have the skills to succeed in upper level coursework. The fourth measure we are using, comparing TNCC transfer students' performance on an exit exam with the performance of native students, demonstrates whether their competencies at graduation are comparable. It does not address the question of where a particular competency was learned but it does show whether TNCC transfers have successfully mastered skills that their transfer institution deems important.

Thus, although any one of these general education assessment methods may not address adequately the entire spectrum of skills, taken together they should give us a reasonable picture of the status of general education at TNCC.

Graduate Survey Results

Each year graduates are asked to rate their level of skill on the college's general education competencies. They give ratings on a five–point scale ranging from poor to excellent for their skill on each competency at entry to the college and upon graduation. Tables 1–4 show mean ratings for 1992–93 and 1993–94 associate degree graduates. Graduates from both classes reported significant gains in each area. Greatest gains in each year were reported in computational and computer skills, least in appreciation of fine arts and music. Given the college's emphasis on computer literacy, this finding is not unexpected In summary, graduates rate their skills in general education competencies considerably higher upon graduation than at entry.

Table 1
Thomas Nelson Community College
Graduate Survey Results 1992-1993
Graduates' Ratings of General Education Competencies by Degree Type

General Education Competencies	A.A. / A.S. Degree		
	Entry	Graduation	Difference
Communication Skills	3.3	4.1	0.8
Learning Skills	3.2	4.2	1.0
Critical Thinking Skills	3.2	4.1	0.9
Understanding Human Relations	3.2	3.9	0.7
Computational and Computer Skills	2.5	3.7	1.2
Global, Historical, and Cultural Traditions	2.9	3.7	0.8
The Appreciation of Fine Arts and Music	2.6	3.2	0.6
Understanding Science and Technology	2.9	3.8	0.9
Understanding Mental and Physical Health	3.0	3.7	0.7

Table 2
Thomas Nelson Community College
Graduate Survey Results 1992-1993
Graduates' Ratings of General Education Competencies by Degree Type

General Education Competencies	A.A.S. Degree		
	Entry	Graduation	Difference
Communication Skills	3.3	4.0	0.7
Learning Skills	3.4	4.1	0.7
Critical Thinking Skills	3.3	4.1	0.8
Understanding Human Relations	3.3	4.0	0.7
Computational and Computer Skills	2.5	3.6	1.1
Global, Historical, and Cultural Traditions	2.9	3.3	0.4
The Appreciation of Fine Arts and Music	2.8	3.1	0.3
Understanding Science and Technology	2.9	3.7	0.8
Understanding Mental and Physical Health	3.1	3.8	0.7

Table 3
Thomas Nelson Community College
Graduate Survey Results 1993-1994
Graduates' Ratings of General Education Competencies by Degree Type

General Education Competencies	A.A. / A.S. Degree		
	Entry	Graduation	Difference
Communication Skills	3.3	4.0	0.7
Learning Skills	3.5	4.1	0.6
Critical Thinking Skills	3.3	4.1	0.8
Understanding Human Relations	3.4	4.0	0.6
Computational and Computer Skills	2.6	3.6	1.0
Global, Historical, and Cultural Traditions	2.8	3.6	0.8
The Appreciation of Fine Arts and Music	2.9	3.4	0.5
Understanding Science and Technology	3.0	4.0	1.0
Understanding Mental and Physical Health	3.2	3.7	0.5

Table 4
Thomas Nelson Community College
Graduate Survey Results 1993-1994
Graduates' Ratings of General Education Competencies by Degree Type

General Education Competencies	A.A.S. Degree		
	Entry	Graduation	Difference
Communication Skills	3.3	4.2	0.9
Learning Skills	3.5	4.3	0.8
Critical Thinking Skills	3.3	4.2	0.9
Understanding Human Relations	3.4	4.2	0.8
Computational and Computer Skills	2.7	3.8	1.1
Global, Historical, and Cultural Traditions	2.9	3.5	0.6
The Appreciation of Fine Arts and Music	3.0	3.3	0.3
Understanding Science and Technology	3.1	3.7	0.6
Understanding Mental and Physical Health	3.1	3.9	0.8

College BASE

For the graduating classes of 1994–95 and 1995-96, graduate candidates from A.A., A.S., and A.A.S. programs were asked to complete the Institutional Matrix Form of the College BASE. With this form each individual student completes only a portion of the entire test. Using this shortened form allows testing to be completed in approximately an hour rather than the three to four hours required for the individual test but it provides only an institutional assessment of competencies. It does not yield assessments of individual students' competencies. The combined test results of the participants, though, provide a measure of the "average" student's preparation. This allows the college to measure the performance of its students compared to the performance of students from other community colleges.

Results of the College BASE are reported in scores that range from 40 to 560 points with a score of 300 always being the mean for the entire group of examinees. To determine the college's relative strengths and weaknesses, the publishers suggest comparing the Composite, Subject, and Cluster Scores. In any such comparison, they specify that a difference of approximately 17 points represents a meaningful difference.

In 1994–95, 160 (33.8% of the total A.A., A.S., and A.A.S. candidates) graduate candidates participated in the testing, in 1995–96, 232 (34.8%) participated. These samples are large enough to give a reasonable assessment of the college's performance. The analyses that follow give results for both years and a combined result that is a weighted mean of the two years. This allows us to measure changes from one class to the next and to compare the college's performance to the standard of other colleges.

Table 5
Thomas Nelson Community College
College BASE Results:
Median Scores for TNCC Associate Degree Candidates

Skill Cluster	College BASE Median Scores for TNCC Associate Degree Candidates		
	1994–95 (N=160)	1995–96 (N=232)	Combined (N=392)
English	264 **	261 **	262 **
Mathematics	283 *	263 *	271 *
Science	282 *	277	279 *
Social Studies	299	290	294
Composite Score	284	276	279 *

* Score is 17 points or more lower than the sample mean.
** Score is 34 points or more lower than the sample mean.

Table 5 displays results of TNCC students on the four skill clusters and the composite score. On three of the four skill clusters—English, mathematics, and science—TNCC students' performance was more than 17 points below the sample average in both years. The composite score for 1995–96 and for the combined years also was more than 17 points below the sample average. Social studies is the only cluster in which students from TNCC scored within 17 points of the sample mean (299 in 1994–95 and 290 in 1995–96).

For each of the major clusters College BASE also provides an indication of how well students performed on various competencies that contribute to the overall score. This provides a clearer indication of students' relative strengths and weaknesses.

Table 6 shows the percentage of students scoring high, medium, or low on the competencies related to English. In reading and literature, the weakest area was understanding literature with 37 percent of the students scoring low. In writing, 48 percent scored low in writing as a process. For each of the five competencies a majority of students were in the medium range and the percentage of low scores substantially exceeded the percentage of high scores.

Table 6
Thomas Nelson Community College
College BASE Results:
English Competencies
Percentage of Students Scoring High, Medium, or Low on College BASE

Competency	Percentage of High, Medium, or Low English Competency College BASE Scores								
	1994–95			1995–96			Combined		
	High	Medium	Low	High	Medium	Low	High	Medium	Low
Reading and Literature									
Reading Critically	12	70	18	10	71	18	11	71	18
Reading Analytically	12	64	24	8	65	27	10	65	26
Understanding Literature	3	45	52	4	69	27	4	60	37
Writing									
Writing as a Process	3	48	48	0	53	47	1	51	48
Conventions of Written English	3	67	30	2	65	33	2	66	32

The mathematics cluster is further subdivided into the areas of general mathematics, algebra, and geometry. For 1994–95 geometry was the only area in which students scored 17 points below the mean (Table 7). In 1995–96, however, scores in general mathematics and algebra dropped precipitously and all three areas were well below 300. When scores from the two years are combined, the three areas are close (278–280) and 20 points or more below the average.

Table 7
Thomas Nelson Community College
College BASE Results:
Median Scores on Mathematics Subscales 1994–95 and 1995–96

Categories	Median Scores on Mathematics Subscales 1994–95 and 1995–96			
	1994–95 (N=160)	1995–96 (N=232)	Δ	1994–96 Combined (N=392)
General Mathematics	296	269	27	280
Algebra	288	271	17	278
Geometry	283	276	7	279
Composite Math Score	283	263	20	271

In the general mathematics area, students experienced most difficulty in competencies related to properties and notations and using statistics (Table 8). On algebra competencies, at least 80 percent of the scores were in the medium to high range (Table 9).

In geometry students experienced most difficulty with 2- and 3-dimensional figures with 26 percent of the scores falling in the low range (Table 10). The percentage of scores in the high range declined from 15 percent in 1994-95 to 2 percent in 1995-96. On geometric calculations, even though 82 percent of the scores in both years were in the medium range, none achieved the high range.

Table 8
Thomas Nelson Community College
College BASE Results:
Percentage of Students Scoring High, Medium, or Low on General Mathematics Competencies

General Mathematics Competencies	Percentage of High, Medium, or Low Scores on General Mathematics Competencies								
	1994-95			1995-96			1994-96 Combined		
	High	Medium	Low	High	Medium	Low	High	Medium	Low
Practical Applications	12	76	12	8	76	16	10	76	15
Properties and Notations	3	73	24	2	71	27	2	72	26
Using Statistics	6	85	9	4	63	33	5	72	23

Table 9
Thomas Nelson Community College
College BASE Results:
Percentage of Students Scoring High, Medium, or Low on Algebra Competencies

Algebra Competencies	Percentage of High, Medium, or Low Scores on Algebra Competencies								
	1994-95			1995-96			1994-96 Combined		
	High	Medium	Low	High	Medium	Low	High	Medium	Low
Evaluating Expressions	6	79	15	6	76	18	6	77	17
Equations and Inequalities	3	91	6	2	88	10	2	89	9

Table 10
Thomas Nelson Community College
College BASE Results:
Percentage of Students Scoring High, Medium, or Low on Geometry Competencies

Geometry Competencies	Percentage of High, Medium, or Low Scores on Geometry Competencies								
	1994-95			1995-96			1994-96		
	High	Medium	Low	High	Medium	Low	High	Medium	Low
2 & 3 Dimensional Figures	15	64	21	2	69	29	7	67	26
Geometric Calculations	0	82	18	0	82	18	0	82	18

The science cluster comprises laboratory and field work and fundamental concepts. Overall, students experienced more difficulty with laboratory and field work (Table 11). Scores on both subscales were more than 17 points below the mean in 1995–96.

Table 11
Thomas Nelson Community College
College BASE Results:
Median Scores on Science Subscales

Science Categories	Median Scores on Science Subscales		
	1994–95	1995–96	1994–96 Combined
Laboratory and Field Work	278*	276*	277*
Fundamental Concepts	291	281*	285
Science Composite	282*	277*	279*

* Score is 17 or more points below sample mean.

Within science, students performed best on interpreting results where 85 percent of the scores were in the medium to high range (Table 12). In other areas between 21 and 27 percent of the scores were in the low range.

Table 12
Thomas Nelson Community College
College BASE Results:
Percentage of Students Scoring High, Medium, or Low on Science Competency Scales

Science Categories	Percentage of High, Medium, or Low Scores on Science Competency Scales								
	1994–95			1995–96			1994–96 Combined		
	High	Medium	Low	High	Medium	Low	High	Medium	Low
Laboratory and Field Work									
Observation / Experimental Design	3	70	27	4	71	24	4	71	26
Laboratory / Field Techniques	3	73	24	6	65	29	5	68	27
Interpreting Results	12	70	18	12	76	12	12	73	15
Fundamental Concepts									
Life Sciences	6	79	15	8	67	24	7	72	21
Physical Sciences	9	64	27	2	76	22	5	71	24

In both years social science was the cluster with the highest score. Within social science, scores in history slipped substantially between 1994–95 and 1995–96, whereas social studies remained the same (Table 13). In specific competencies, social science procedures was the only area measured by College BASE where the score distribution showed a greater percentage of high scores than low scores (Table 14). Political/economic structures had the highest percentage of high scores. Unfortunately, the percentage of the low scores was equally high.

Table 13
Thomas Nelson Community College
College BASE Results:
Median Scores on Social Science Subscales

Social Science Categories	Median Scores on Social Science Subscales		
	1994–95	1995–96	1994–96 Combined
History	291	277*	283*
Social Studies	288	288	288
Social Studies Composite	299	290	294

* Score is 17 or more points below sample mean.

Table 14
Thomas Nelson Community College
College BASE Results:
Percentage of Students Scoring High, Medium, or Low on Social Studies Competency Areas

Social Science Categories	Percentage of High, Medium, or Low Scores on Social Studies Competency Areas								
	1994–95			1995–96			1994–96 Combined		
	High	Medium	Low	High	Medium	Low	High	Medium	Low
History									
Significance of World Events	3	70	27	4	84	12	4	78	18
Significance of U.S. Events	15	76	9	8	76	16	11	76	13
Social Sciences									
Geography	6	70	24	16	65	18	12	67	21
Political / Economic Structures	24	48	27	24	53	22	24	51	24
Social Science Procedures	33	58	9	8	78	14	18	70	12

Grades in 300- and 400-Level Courses at CNU

Table 15 shows the grade distribution in 300- and 400-level courses at Christopher Newport University for students who completed prerequisites at CNU, at TNCC, or at another college. In most disciplines Chi Square analyses revealed no significant differences among students. In the four disciplines with significant differences—business, economics, engineering, and finance—students who completed prerequisites at TNCC were more likely to earn productive grades than were their counterparts. This would imply that TNCC prepares students well for the challenge of upper division courses at our primary transfer college.

Table 15
Grade Distribution in 300- and 400-Level Courses at CNU
for Students Who Completed Prerequisites at TNCC or Another College
Spring 1990 to Spring 1996

Discipline	College / University					
	Thomas Nelson (TNCC)			CNU and Others		
	N	% A, B, C, P	% D, F, W	N	% A, B, C, P	% D, F, W
Accounting	119	71.4	28.6	454	66.5	33.5
Biology	12	100.0	0	181	81.8	18.2
Business *	468	94.2	5.8	2729	90.4	9.6
Chemistry	37	45.9	54.1	114	59.6	40.4
Computer Science	68	66.2	33.8	992	76.2	23.8
Economics *	207	93.7	6.3	1271	87.9	12.1
Engineering *	24	87.5	12.5	293	75.4	24.6
Finance *	244	87.7	12.3	1221	80.3	19.7
Fine Arts	14	92.9	7.1	95	90.5	9.5
French	8	100.0	0	133	88.7	11.3
German	0	0	0	70	81.4	18.6
Government	0	0	0	3	100.0	0
History	20	80.0	20.0	213	80.3	19.7
Health	1	100.0	0	90	81.1	18.9
Math	1	100.0	0	54	70.4	29.6
Philosophy	0	0	0	5	100.0	0
Physics	13	84.6	15.4	137	81.0	19.0
Psychology	295	86.8	13.2	3336	84.1	15.9
Sociology	85	94.1	5.9	731	88.5	11.5
Spanish	18	83.3	16.7	129	80.6	19.4

*** Chi-square analysis showed difference to be significant ($p < .05$).**

General Education Assessment at CNU

In Spring semester 1997, CNU conducted a general education assessment of graduating seniors. The sample of 93 students included 25 students who had transferred 14 or more credits from TNCC. Participants completed an exit writing sample that was identical to the final exam given to students in English 101. Their samples were included with exams from students in the class and graded blind by English faculty at CNU. Faculty assigned a "final grade" using a four-point scale and rated six other dimensions on the same scale. These dimensions included: summary, critique, personal response, structure, correctness, and style. Table 16 shows mean ratings given to the TNCC transfers and other graduating seniors at CNU. Overall, TNCC students received slightly higher ratings although they were generally not significant.

Table 16
Christopher Newport University / Thomas Nelson Community College
General Education Study
Performance of TNCC Transfer Students Compared to Other CNU Graduates

Category	TNCC Transfer Students (N=25)	Other CNU Students (N=68)
Writing Sample Scores		
Grade	2.45	2.40
Summary	2.74	2.72
Critique	2.42	2.09
Personal Response	2.44	2.19
Structure	2.65	2.53
Correctness	2.66	2.67
Style	2.58	2.40

Note: The TNCC Transfer Student Category comprises students who completed 14 or more credits at TNCC.

Table 17 shows mean ratings for students who completed at least one English course at TNCC compared to those who completed all English courses at CNU. In this comparison CNU students received slightly higher ratings. This implies that the ratings from the first table likely reflected, at least in part, competencies learned in classes other than English at TNCC. In summary, it appears that students who complete significant coursework at TNCC performed comparable to their CNU counterparts.

Table 17
Christopher Newport University / Thomas Nelson Community College
General Education Study
Performance of CNU Graduates Who Took English at TNCC
with Those Who Took English at CNU

Category	Took English At TNCC (N=18)	Took English at CNU (N=75)
Writing Sample Scores		
Grade	2.37	2.46
Summary	2.46	2.79
Critique	2.17	2.18
Personal Response	2.22	2.27
Structure	2.58	2.55
Correctness	2.53	2.70
Style	2.41	2.68

Note: Students in the TNCC group received credit for English 101, English 102 or both for coursework transferred from TNCC.

Summary

Results of the college's general education assessments for the most part were positive. Graduates feel that they have gained skills in all general education competencies specified by the college. Students who transfer to CNU perform comparably to native students in 300- and 400-level courses and on their general education assessment. The major exception is results from the College BASE test. On this instrument graduate candidates from TNCC scored significantly below the sample mean on every general education cluster except social sciences. Since this is the one nationally standardized test used in our assessment, the results are disconcerting.

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