

MEASURING IMPROVEMENTS IN UNDERSTANDING OF BASIC ECONOMIC TERMS, PRINCIPLES, AND CONCEPTS RESULTING FROM TAKING A COLLEGE GENERAL EDUCATION ECONOMICS COURSE

Timothy DuPont, MBA, Lander University, Greenwood, SC 29649

Phone: 864-388-8355; tdupont@lander.edu

Deborah Natvig, PhD, Lander University, Greenwood, SC 29649

Phone: 864-388-8246; dnatvig@lander.edu

ABSTRACT

The purpose of this study was fourfold: (a) to evaluate the economic literacy of college participants in a small state-operated, liberal arts university in South Carolina relative to the 2004 SCCEE study; (b) to explore the impact of an introductory general education course on changing the knowledge and understanding of basic economic principles and concepts of participants; (c) to determine the relationship between improvement in assessment scores and the final grade awarded in the course; and (d) to determine the relationship between post-test scores and the final grade earned in the course. Using a variation of a survey instrument developed by National Council of Economic Education's (NCEE), data were collected from 269 participants taking an entry-level general education economics course.

Overall, students improved their knowledge score after completing the introductory course at the university. A significant increase in the understanding of basic economic terms, principles, and concepts was noted in 12 of the 20 areas assessed. Change between pretest and post-test assessment scores using this tool was not a predictor of the final grade earned by participants. Additionally, this tool may be used, in whole or in part, to assess general education competencies that have been established by this university.

INTRODUCTION

The National Center for Educational Statistics (NCES) has reported trends in student academic achievement in several subject areas since 1969. While topics such as mathematics, reading, science, and writing were part of the national assessment program, economics was not included [5]. The emphasis on assessing student performance and their ability to demonstrate knowledge and skills is increasing across all educational levels, including colleges and universities. Recent changes have taken place in the

assessment process and new subject areas, including economics, were added to the cadre of assessments being completed in 2007. The data reported by NCES on student achievement in economics is based on performance of high school seniors.

Accreditation standards developed by regional accrediting bodies for colleges and universities are used to assist faculty in defining the general competencies that all students should possess at the time of graduation. Identifying strategies to assess these competencies is a challenge currently being addressed at the collegiate level for those colleges and universities that strive to attain or maintain accreditation status. Identifying tools that can be used to determine if high schools and college are meeting the expectations of national educational organizations and accreditation bodies is part of the accountability process for educators.

LITERATURE REVIEW

While economics was not historically one of the topics included in the federal reporting process, the National Council on Economic Education (NCEE) began conducting biennial surveys to determine the status of economic education in grades K-12 in the United States in 1988. Established in 1949, NCEE has worked toward eliminating the gap between what young people need to know about economics and what they are being taught. Their pro-active approach to establish economics as a core component of the high school curriculum is based on a mission to “help students develop the real-life skills they need to succeed: to be able to think and choose responsibly as consumers, savers, investors, citizens, members of the workforce, and effective participants in a global economy” [7].

The ability of individuals to apply basic economic concepts in day-to-day decision-making and long term planning has gained increased national attention of both educators and policy makers for the past two decades. In 2002, the U.S Department of Education – National Assessment Governing Board published the “Economics Framework for the 2006 National Assessment of Education Progress” which included explicit recommendations about what should be included in a national assessment of economic literacy of high school seniors. The NCEE’s definition of economic literacy, “the ability to identify, analyze, and evaluate the consequences of individual decisions and public policy” [9, p. v] provided the foundation for the framework of its assessment.

At the same time that the 2006 National Assessment of Education Progress (NAEP) Economics Assessment was being finalized, the Second National Summit on Economic and Financial Literacy was being held in Washington DC to address the state of economic education in the United States. The increased emphasis on economic literacy led to the development of the first national assessment for economics which was completed in May 2006.

The sample for the 2006 National Assessment of Education Progress (NAEP) Economics Assessment included 11,500 twelfth grade students attending 590 public and private high schools across the United States. Content areas of the assessment included (a) market economy - choices made by buyers and sellers in the marketplace, (b) national economy - conditions in the U.S. Economy, and (c) international economy - interaction of national economies with one another. Results were reported for three levels of accomplishment; basic, proficient, and advanced. Seventy-nine percent of the students performed at the basic level or higher, indicating that they had at least a partial level of mastery of the subject matter. Forty-two percent of the students reached the proficient level which demonstrated a solid level of knowledge of the subject matter, and three percent of the students reached the advanced level which demonstrated superior performance. Results of the study based on national findings and state by state results are not yet available [3].

The most recent NCEE report on progress in our nation's schools in incorporating economic education in the public school system indicates that all states require that economics be included in their educational standards [6]. In 2007, 41 states required that those economic standards be implemented; an increase from 38 states in 2004. Other states have not only developed and implemented standards for economic education, but include an economics course as a requirement for high school graduation. The number of states requiring an economics course has steadily increased from 13 in 1998 to 17 states in 2007. While these reports are encouraging, the number of states that require testing of student knowledge in economics has decreased from 25 states in 2004 to 22 states in 2007. South Carolina is among the states that require the standards for economic education be implemented, that all students take an economics course in high school, and that all students are tested in their knowledge of economics [6].

The South Carolina Council on Economic Education (SCCEE) released a report of the knowledge and understanding of economic principles and concepts of high school juniors and seniors in South Carolina in 2004. Ten high schools from across the state were selected for inclusion in the study that involved 529 students. Average scores from individual high schools were well below desired levels and ranged from 38% correct to 61% correct [1].

In 2006, DuPont and Natvig conducted a pilot study to develop a research methodology to evaluate a general education introductory course in economics. As a result of this pilot study, a slightly modified version of the instruments used by the NCEE and the SCCEE was developed. It was determined that this assessment tool could be used to explore the impact of the college course in improving student performance in economics.

PURPOSE

The purpose of this follow-up study was fourfold: (a) to evaluate the economic literacy of college participants in a small state-operated, liberal arts university in South Carolina relative to the 2004 SCCEE study; (b) to explore the impact of an introductory general education course on changing the knowledge and understanding of basic economic principles and concepts of participants; (c) to determine the relationship between improvement in assessment scores and the final grade awarded in the course; and (d) to determine the relationship between post-test scores and the final grade earned in the course.

METHODOLOGY

Sample

Participants in the study included all college freshmen taking the introductory course in economics during the 2006-07 academic year at a small state-operated, liberal arts university in South Carolina. One of the general education goals at this university is that students acquire an understanding of social structures and processes. This course is one of five from which students may choose to fulfill the political/economy general education requirement [2].

Survey Instrument

The original questionnaire was used by the National Council on Economic Education (NCEE) in a 1999 national telephone survey, to examine the knowledge of basic economic terms, principles, and concepts of adults and high school students in the United States [5]. The questionnaire consisted of 36 multiple-choice questions, each having four possible responses. The first 20 questions gauge the level of understanding of economic concepts and the last 16 questions allow researchers to evaluate the demographics of the participants. A slightly modified online version was used in a national study in 2005. The South Carolina Council on Economic Education (SCCEE) used a paper-pencil format of the 1999 version of the questionnaire in the fall of 2004 to gauge the level of understanding of economic concepts among high school students across the state of South Carolina [1].

Two new questions were added to the demographics portion of the SCCEE questionnaire for use in a pilot study conducted in the summer of 2006 [1]. These questions provided information about the number of economics and finance courses that participants had taken previously. Based on the results of this pilot study, another question was added for the fall 2006 survey to determine if the participants had completed all high school graduation requirements in the state of South Carolina. The results of those who had not were eliminated from comparisons of participant scores with SCCEE findings. For data collection in spring semester 2007, Internal Review Board (IRB) approval was obtained that allowed coded student identifiers to be included on individual answer sheets to facilitate comparisons of pretest/post-test results. An additional question was added that asked participants whether or not they had taken this particular introduction to economics course before. For purposes of this study, the instrument will be referred to as the *Economics Literacy Assessment Tool*. It is important to note that no changes were made to the first 20 questions that measure an understanding of basic economic terms, principles, and concepts.

Procedure

The Economic Literacy Assessment Tool was distributed to students enrolled in all sections of an introductory general education economics course at the beginning and end of the fall 2006 semester and the spring 2007 semester. The pretest was administered unannounced at the start of the first day of classes. The post-test was administered at the beginning of the last day of classes with no advance notice given to students. On all occasions, the questionnaire was distributed by a faculty member other than the course instructor. Participation was voluntary and participants recorded their responses on scantron forms which were returned to the researchers for analysis.

FINDINGS

Preliminary analyses were performed to determine whether the knowledge of basic economic terms, principles, and concepts differed between groups of high school juniors and seniors and students enrolled in an introductory college level economics course. Using the Economics Literacy Assessment Tool, the range of scores for participants enrolled in the general economics course in college, was 25% to 90% correct with an average score of 60% correct. While the range of scores is not available for the high school participants in the 2004 SCCEE study, an average score of 53% correct was reported [4]. The SCCEE study reported only those participants who scored equal to or greater than 50% on the Economics Literacy Assessment Tool. The SCCEE study also only reported 13 of the 20 terms, principles, and concepts assessed. Therefore, only those college participants having scores equal to or greater than 50% correct on the Economic Literacy Assessment Tool were included for this comparison. Additionally, for participants in the college group, only those who indicated that they had completed high school

requirements in the state of South Carolina (which requires completion of an economic course) were included. From 269 participants enrolled in the college course, 210 participants met this criterion. Of this subgroup, 134 (64%) indicated their rank as a freshmen student.

Table 1 provides a demographic comparison of high school participants who completed the Economic Literacy Assessment Tool in 2004 and college participants who completed the Economic Literacy Assessment Tool at the onset of an introductory college course in economics during academic year 2006 - 2007.

TABLE 1: DEMOGRAPHIC COMPARISON: 2004 SCCEE STUDY VS. 2006-07 PRETEST*.

| Demographic | SCCEE-HS 2004 (n = 522) | Pretest College (n=210) |
|---|-------------------------------|-------------------------------|
| Gender | | |
| Female | 52% | 72% |
| Male | 48% | 28% |
| Typical school grades | | |
| A's | 21% | 24% |
| B's | 43% | 59% |
| C's | 32% | 16% |
| D's and F's | 4% | 1% |
| Interest/background in economics | | |
| At least somewhat interested in the subject | 58% | 63% |
| Personal Finance | | |
| Use a credit card | 40% | 48% |
| Have an ATM card | 40% | 90% |
| Have a savings or checking account | 73% | 96% |
| Believe they have adequate knowledge to manage their finances | 78% | 86% |
| Learned most about managing money at home from family. | 62% | 73% |
| Learned the most about money management from experiences managing their own funds | 22% | 20% |

* Scores \geq 50% correct and SC HS graduates only.

Based on the information provided by participants, there were several demographic differences noted between the high school students and the college students. Not surprisingly, differences were reported with respect to use of credit cards, ATM cards, and bank accounts. This may be attributed to the fact that many of the college participants live away from home and are generally more independent than high school participants.

Overall, a greater percentage of college participants reported having higher grades than the high school participants. While a slightly higher percentage of college level pretest participants claimed to be "A" students, greater differences were reported in the "B" and "C" ranges. More of the college participants reported "B" averages and fewer college participants reported "C" and "D" averages than the high school participants. These differences may reflect the inclusion of high school students who completed the survey, but were not destined for college.

The percentage of males and females in the college group differed from the high school group, but the percentages of males and females in the college group approximate the gender mix at the university. Most participants in both groups claimed to learn about money management from home and family. Only 22% of the high school group and 20% of the college group indicated that they learned about money management from managing their own funds. College participants claimed a greater knowledge in managing their finances.

Hypotheses

Hypothesis 1: The first hypothesis, that there is no difference in the knowledge of economic concepts between high school participants in the SCCEE Economic Literacy Assessment and college participants before taking a general education college course in economics, was tested using a two sample pooled proportion z-test. The topics included in the Economic Literacy Assessment Tool are reported in Table 2, along with the comparison of the results from the high school participants and college participants. Since the 2004 SCCEE study of high school participants reported findings of only participants having scores equal to or greater than 50% correct and 13 of the 20 basic terms, principles, and concepts, Table 2 uses similar data from college participants who completed all high school requirement in the state of South Carolina. The data for this comparison was collected prior to content delivery in the college course in economics.

TABLE 2: 2004 SCCEE RESULTS VS. 2006-07 PRETEST.

| Topic | Concept | High School Participants Percentage Correct (n = 364) ^a | College Participants (Pretest) Percentage Correct (n = 210) ^a | p values |
|-------|---|--|---|----------|
| 1 | Effects of additional competition on price and quality. | 54 | 49 | .25 |
| 2 | Definition of an entrepreneur. | 91 | 97 | .01* |
| 3 | Increasing interest rates encourages saving. | 59 | 50 | .04* |
| 5 | Components of Gross Domestic Product. | 28 | 20 | .03* |
| 8 | Effects of government rent controls. | 50 | 55 | .25 |
| 12 | Scarcity. | 59 | 63 | .35 |
| 13 | Markets help buyers and sellers find each other. | 50 | 46 | .36 |
| 10 | Beneficiaries of transactions. | 80 | 80 | 1 |
| 16 | Beneficiaries of public goods and services. | 43 | 47 | .35 |
| 17 | Definition of a budget deficit. | 33 | 44 | .01* |
| 18 | Money borrowed at a fixed rate helps individuals during times of inflation. | 21 | 26 | .17 |
| 19 | Investment in research and development leads to increased innovations. | 62 | 63 | .81 |
| 20 | Money does not hold value well in times of inflation. | 40 | 40 | 1 |

^a n represents the total number of participants scoring 50% or greater correct on the Economic Literacy Assessment Tool and college participants = SC HS education only. Total students participating in the survey: 2004 SCCEE = 529; 2006-07 pretest = 269.

* p ≤ .05 statistically significant.

There was no significant difference noted in the knowledge level of high school (n = 364) and college participants (n = 210) in 9 of the 13 concept areas assessed. Where significant differences were found, high school participants scored higher in knowledge of increasing interest rates (p = .04) and components of the gross domestic product (p = .03). College participants scored higher with respect to the concepts of entrepreneurship (p = .01) and budget deficits (p = .01).

Hypothesis 2: The second hypothesis, that there is no difference in the knowledge of economic concepts of college participants after taking a general education course in economics as evidenced by pretest/post-test scores on the Economic Literacy Assessment Tool, was tested using a two-sample pooled proportion z-test. To examine the impact of an introductory general education course on changing the knowledge and understanding of basic economic terms, principles and concepts, data from all participants completing the Economic Literacy Assessment Tool during the 2006-2007 academic year were included. Of the 377 students enrolled in the general education economics course, 269 completed the pretest and 241 completed the post-test. The pretest/post-test assessment results for the 2006-2007 academic year are reported in Table 3.

TABLE 3: PRETEST VS. POST-TEST FINDINGS, FALL 2006 AND SPRING 2007.

| Topic | Concept | Pretest Percentage Correct (n = 269) ^a | Post-test Percentage Correct (n = 241) ^a | p-values |
|-------|---|--|--|----------|
| 1 | Effects of additional competition on price and quality. | 45 | 55 | .02* |
| 2 | Definition of an entrepreneur. | 94 | 95 | .62 |
| 3 | Increasing interest rates encourages saving. | 48 | 60 | .01* |
| 4 | Sources of personal income. | 93 | 95 | .34 |
| 5 | Components of Gross Domestic Product. | 20 | 30 | .01* |
| 6 | Substitute goods. | 91 | 92 | .69 |
| 7 | Benefits of trade. | 84 | 86 | .53 |
| 8 | Effects of government rent controls. | 48 | 66 | .00* |
| 9 | Who determines what goods are produced. | 65 | 66 | .81 |
| 10 | Benefactors of trade. | 82 | 89 | .02* |
| 11 | Effects of demand shift on price. | 71 | 81 | .01* |
| 12 | Scarcity. | 58 | 74 | .00* |
| 13 | Markets help buyers and sellers find each other. | 40 | 55 | .00* |
| 14 | Beneficiaries of transactions. | 75 | 87 | .00* |
| 15 | Cost/Benefit analysis. | 90 | 83 | .02* |
| 16 | Beneficiaries of public goods and services. | 41 | 62 | .00* |
| 17 | Definition of a budget deficit. | 40 | 41 | .82 |
| 18 | Money borrowed at a fixed rate helps individuals during times of inflation. | 22 | 33 | .01* |
| 19 | Investment in research and development leads to increased innovations. | 55 | 61 | .17 |
| 20 | Money does not hold value well in times of inflation. | 34 | 48 | .00* |

^a n represents the total number of participants in the fall 2006 and spring 2007 surveys.

* p<.05 statistically significant.

A significant increase in the understanding of basic economic terms, principles, and concepts was noted in 12 of the 20 areas assessed after participants completed the introductory college course in economics. While a large percentage of participants answered the question about cost benefit analysis correctly on both the pretest and the post-test, the decrease in the percentage of participants answering the question correctly from pretest to post-test was statistically significant. The remaining seven questions showed an increase in knowledge but not to a significant level. Of these, 91% or more of the participants answered three of these questions correctly on the pretest, so the opportunity to improve in that area was limited. Overall, participant mean scores increased both semesters, with participant mean scores increasing from 60 to 66 points during fall semester and 59 to 71 points in the spring semester.

Hypothesis 3: the third hypothesis, that there is no relationship between changes in assessment scores (pretest vs. post-test) and the final course grade received as a result of taking a general education course in economics, was tested using five level single-factor ANOVA with an alpha level of .05. With IRB approval, the researchers were able to match individual college participant pretest/post-test scores and final course grades during the spring 2007. Table 4 provides a comparison of course grades and the average change in pretest and post-test assessment scores for participants completing both the pretest and post-test (n = 76).

TABLE 4: GRADE DISTRIBUTION COMPARED WITH AVERAGE CHANGE BETWEEN PRETEST AND POST-TEST ASSESSMENT SCORES.

| Groups | Count | Sum | Average Score Increase | Variance |
|--------|-------|-----|------------------------|----------|
| A | 10 | 115 | 11.5 | 228.0556 |
| B | 26 | 375 | 14.42308 | 210.6538 |
| C | 29 | 240 | 8.275862 | 112.9926 |
| D | 7 | 30 | 4.285714 | 153.5714 |
| F | 4 | 40 | 10 | 66.66667 |

Participants who earned a final course grade of “B” demonstrated a higher average increase in scores from the pretest to the post-test than participants earning grades of “A” for the course. While only four participants who earned grades of “F” completed both the pretest and the post-test assessments, their average change in knowledge of basic economic terms, principles, and concepts was greater than those students who earned final grades of “C” or “D”.

Table 5 provides a summary of the analysis of variance which examines final course grades and average change between pretest and post-test assessment scores.

TABLE 5: ANOVA SUMMARY OF FINAL COURSE GRADES AND AVERAGE CHANGE BETWEEN PRETEST AND POST-TEST ASSESSMENT SCORES.

| Source of Variation | SS | df | MS | F | P-value | F crit |
|---------------------|----------|----|----------|----------|----------|---------|
| Between Groups | 824.8795 | 4 | 206.2199 | 1.261765 | 0.293139 | 2.50076 |
| Within Groups | 11604.07 | 71 | 163.4376 | | | |
| Total | 12428.95 | 75 | | | | |

Selecting an alpha level of .05, the effect of change in pretest/post-test assessment scores was not statistically significant, $F(4,71) = 1.26, p = .29$. Therefore, the researchers were unable to reject the null hypothesis.

As shown in Table 6, further analysis of the data was conducted to determine the changes in the number of correct responses that participants achieved on the post-test relative to their performance on the pretest and the distribution by final course grade earned.

TABLE 6: INDIVIDUAL CHANGES IN ASSESSMENT SCORES PRETEST VS. POST-TEST AND DISTRIBUTION BY FINAL COURSE GRADE EARNED.

| Change ^a | Number | | Distribution | | | | |
|---------------------|----------|------------|--------------|---|---|---|---|
| | (n = 76) | Percentage | A | B | C | D | F |
| -2 | 4 | 5% | - | 1 | 1 | 2 | - |
| -1 | 7 | 9% | 1 | 1 | 5 | - | - |
| 0 | 12 | 16% | 2 | 4 | 4 | 1 | 1 |
| 1 | 13 | 17% | 3 | 5 | 4 | 1 | - |
| 2 | 10 | 13% | - | 2 | 4 | 2 | 2 |
| 3 | 7 | 9% | 1 | 1 | 5 | - | - |
| 4 | 9 | 12% | 1 | 5 | 2 | - | 1 |
| 5 | 8 | 11% | 1 | 2 | 4 | 1 | - |
| 6 | 2 | 3% | - | 2 | - | - | - |
| 7 | 2 | 3% | - | 2 | - | - | - |
| 8 | 0 | 0% | - | - | - | - | - |
| 9 | 1 | 1% | 1 | - | - | - | - |
| 10 | 1 | 1% | - | 1 | - | - | - |

^a the number of topics correct on post-test compared with pretest assessment.

Seventy percent of participants demonstrated an increase in the knowledge of basic economic terms, principles, and concepts from the pretest to the post-test. Sixteen percent showed no change in knowledge, while 14% of participants showed decreases in knowledge. Fifty-one percent of the participants demonstrating an increase in knowledge were distributed among those receiving final course grades of “B” and “C.”

Hypothesis 4: The fourth hypothesis, that there is no relationship between post-test scores and the final grade earned in the course, was tested using five level single-factor ANOVA with an alpha level of .05. The comparison of final grades earned and actual post-test scores included only the data from those participants who completed both the pretest and post-test assessments in the spring 2007. An examination was conducted to determine the relationship between post-test assessment scores and the final grade earned by participants in the course. A summary of the average post-test assessment scores and the final grade earned by participants in the course is presented in Table 7.

TABLE 7: AVERAGE POST-TEST ASSESSMENT SCORES VS. FINAL GRADE EARNED IN THE COURSE.

| Groups | Count | Sum | Average | Variance |
|--------|-------|------|----------|----------|
| A | 10 | 770 | 77 | 145.5556 |
| B | 26 | 1975 | 75.96154 | 100.0385 |
| C | 29 | 1985 | 68.44828 | 110.899 |
| D | 7 | 405 | 57.85714 | 82.14286 |
| F | 4 | 230 | 57.5 | 475 |

Table 8 provides a summary of the analysis of variance which examines final course grades with the post-test assessment scores.

TABLE 8: ANOVA SUMMARY OF FINAL COURSE GRADES AND POST-TEST ASSESSMENT SCORES.

| Source of Variation | SS | df | MS | F | P-value | F crit |
|---------------------|--------|----|----------|----------|----------|---------|
| Between Groups | 3114.4 | 4 | 778.591 | 6.257643 | 0.000226 | 2.50076 |
| Within Groups | 8834 | 71 | 124.4224 | | | |
| Total | 11948 | 75 | | | | |

Using an alpha level of .05, $F(4,71) = 6.26$, and $p = .00$, the null hypothesis was rejected. Further examination of the data using multiple comparisons indicated that a significant difference exists between the means of groups “A” and “D”, “A” and “F”, “B” and “D”, and “B” and “F”. This indicates that participants scoring higher on the post-test earned final course grades of “A” or “B” and those participants scoring lower earned final grades of “D” and “F.” Table 9 provides the range of scores earned by participants on the post-test assessment during the spring 2007 semester and the final course grades that participants within these ranges earned.

TABLE 9: RANGE OF POST-TEST ASSESSMENT SCORES AND DISTRIBUTION BY FINAL COURSE GRADE EARNED.

| Range ^a | Number | | A | B | C | D | F |
|--------------------|----------|------------|---|---|----|---|---|
| | (n = 76) | Percentage | | | | | |
| 90 - 100 | 7 | 9% | 2 | 4 | 1 | - | - |
| 80 - 89 | 17 | 22% | 2 | 8 | 6 | - | 1 |
| 70 - 79 | 19 | 25% | 4 | 9 | 6 | - | - |
| 60 - 69 | 25 | 33% | 2 | 5 | 12 | 5 | 1 |
| 50 - 59 | 4 | 5% | - | - | 4 | - | - |
| 40 - 49 | 4 | 5% | - | - | - | 2 | 2 |
| 0 - 39 | 0 | 0% | - | - | - | - | - |

^a Score earned on post-test assessment.

Participants earning grades of “A” and “B” had post-test scores within the range of 60 – 100% correct; while, with one exception, those earning grades of “D” or “F” scored less than 70% correct. Participants earning a final course grade of “C” had post-test assessment scores equal to or greater than 50%.

CONCLUSION

Prior to taking a college general education course in economics, there was no significant difference noted between high school and college participants in 9 of the 13 concept areas assessed. Of the significant findings, high school participants scored higher in knowledge of increasing interest rates and components of the gross domestic product, while college participants scored higher with respect to the concepts of entrepreneurship and budget deficits.

A significant increase in the understanding of basic economic terms, principles, and concepts was noted in 12 of the 20 areas assessed after participants completed the college general education course in economics. The remaining eight topic areas showed an increase in knowledge but not to a significant level. Participant mean scores increased in each semester surveyed. In the fall 2006 assessment, participant mean scores increased six points, while in the spring 2007 assessment, participants showed an increase of 12 points.

Results of testing to determine if a link exists between changes in participant post-test and pretest assessment scores and the final course grade earned indicated that the null hypothesis could not be rejected. Changes between pretest and post-test assessment scores using the Economic Literacy Assessment Tool was not be a predictor of the final grade earned by participants in this course. Changes of pretest to post-test performance ranged from a two topic decrease to a 10 topic improvement. Of special interest were the results for participants receiving a final grade of "F" for the course. Of the sample group, three of the four participants receiving this final grade had improved post-test scores of at least two topics compared to pretest assessment scores. No negative score changes for participants receiving this final grade were noted.

Seeking a link between post-test assessment scores and final course grades earned by participants, the null hypothesis was rejected. Significant differences were found between the means of groups A and D, A and F, B and D, and B and F, indicating that participants scoring higher on the post-test earned final course grades of A or B and those participants scoring lower on the post-test earned final grades of D and F. Post-test assessment scores using the Economic Literacy Assessment Tool may be a predictor of the final grade earned in this course. Additionally, the Economic Literacy Assessment Tool may be used, in whole or in part, to assess general education competencies that have been established by this university.

Participants showed greater overall improvement in the spring 2007 semester compared to the fall 2006 findings. It should be noted that one of the instructors teaching this course in the fall 2006 semester was new to the college and was teaching this course for the first time. This professor continued to teach the course in the spring 2007 semester. Unknown to the researchers at the time, during the fall 2006 semester, this professor released 17 students scoring 90% or more in their coursework for the semester before the post-test was administered. These students received exemptions from taking the final examination. For this reason, scores recorded for the fall 2006 semester are assumed to be slightly lower than actual.

SUGGESTIONS FOR FURTHER STUDY

During the fall 2006 semester, there was no system to definitively link participants' post-test assessments with their pretest assessments. It is assumed that some participants withdrew and others failed to participate in either the pretest or the post-test. Additional studies should be conducted using coded

identifiers to ensure that results are as accurate as possible. The findings of this study should also be discussed with professors of this course to adjust course content to improve identified deficiencies in participant knowledge. Additional surveys should be taken to determine if improvements in deficiencies have been made. Additional studies should also investigate whether the knowledge of basic economic terms, principles, and concepts of each rank of participant (freshmen vs. sophomores, sophomore vs. juniors, etc.) improve at the same rate. The results of these studies may allow professors to adjust their course and presentations based on class makeup. Testing should also be conducted on other general education courses to determine if the results are similar. Surveys should be developed within other disciplines to monitor progress within their programs.

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