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Performance Comparison of Trade Readjustment Act and Traditional Students of Wytheville Community College

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PERFORMANCE COMPARISON OF TRADE READJUSTMENT ACT AND
TRADITIONAL STUDENTS
OF WYTHEVILLE COMMUNITY COLLEGE

A Research Paper

Presented to

The Graduate Faculty of the Department of Occupational and Technical Studies

Old Dominion University

In Partial Fulfillment of the Requirements for the Degree of

MASTER OF SCIENCE

by

Jeffery B. Fields

May 2004

APPROVAL PAGE

This research paper was prepared by Jeffery B. Fields, under the direction of Dr. John M. Ritz, in OTED 636, Problems in Occupational and Technical Studies and was submitted to the Graduate Program Director in partial fulfillment of the requirements for the Degree of Master of Science in Occupational and Technical Studies.

APPROVAL BY: John M. Ritz
DATE: 5-11-04

Dr. John M. Ritz, Advisor and Graduate Program Director

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DEDICATION

This study is dedicated to the 2002 Trade Readjustment Act graduates from Wytheville Community College for their inspiration in completing their journey of their associate degrees, even with many extra factors and difficulties to overcome. But most importantly, this is dedicated to my wife, Tracy, who has given wonderful support and encouragement. Thank you.

ACKNOWLEDGEMENT

I would like to acknowledge the support and inspiration of the faculty of the Department of Occupational and Technical Studies at Old Dominion University. They fulfill the roles of exceptional educators. They have been an inspiration and have proved excellent examples of proper distance education, training, and guidance education.

Jeffery B. Fields

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CHAPTER I

INTRODUCTION

There is a constant debate between community college professors at Wytheville Community College (WCC) of which two types of students are better-prepared learners. Is it the traditional students of community colleges or is it the older nontraditional students who have worked for several years in less sophisticated jobs?

The stereotype of traditional students is usually younger in age, more familiar with classroom settings and grading, and has fewer present responsibilities of debt and family. These students are in the usual transition from high school to college education before continuing on to their careers (V. Bird, R. Wolf, & K. Costello, personal interview, March 20, 2002).

Trade Readjustment Act (TRA) students are non-traditional students and are usually older in age compared to traditional students. These students have been laid off from their job due to their company closing or moving operations to another country. The majority of the jobs were manual labor factory-based positions. The moving of their operation was possible due to federal trade agreements. Due to the impact on these US citizens, the federal government agreed to sponsor two years of retraining for another career. These students are usually behind on their education and have additional responsibilities including such commitments as incurred debt and family (Department of Labor Employment and Training Administration, 2002).

Statement of the Problem

The problem of this study was to determine how Trade Readjustment Act (TRA) students' academic performance of grade point average compared to traditional students in academic programs at Wytheville Community College.

Research Goals

To solve this problem, the following hypothesis was established:

H₁: Trade Readjustment Act students earned higher grade point averages than traditional students at Wytheville Community College

Background and Significance

Southwest Virginia and the northern part of North Carolina have experienced many factory closings due to companies being more competitive at an overseas location. These companies were able to relocate due to federal trade agreements (Department of Labor Employment and Training Administration TRA, 2002). Due to these trade agreements, the factory workers were eligible to receive federal retraining grants. Wytheville Community College was a prime location for this retraining (B. Horton, personal interview, March 5, 2004).

The majority of the companies that left the area were textile, garment, and furniture industries. A company example is Donnkenney, Inc., which is a textile company that sent many of its jobs out of the United States to locations in foreign countries where taxes and labor forces were at considerably lesser rates. Other

companies were Crosscreek and New River Apparel that were also textile companies. Another was Alco Controls which was an electrical heating elements company. The types of workers laid off were general limited skill factory workers of these types of companies (B. Horton, personal interview, March 5, 2004).

Wytheville Community College's mission statement showed that it provided the educational retraining that was needed for dislocated workers: The following was Wytheville Community College's mission statement: "Wytheville Community College functions within the total community to assure that all individuals in the college's service region are given a continuing opportunity to develop and extend their skills and knowledge through quality programs and services that are financially and geographically accessible" (Wytheville Community College 2001-2003).

Many instructors did not know what to expect with trade readjustment act (TRA) students. TRA students had many different backgrounds and some were not prepared for college courses. TRA students also had many more responsibilities than the traditional student, such as a family to support and debt due to normal life expenditures (V. Bird, R. Wolf, & K. Costello, personal interview, March 20, 2002).

This research will attempt to give college professors the ability to better understand this student population. Knowing the tendencies of TRA students will enable college professors to better prepare for educating transitioning students and include academic skills that the transitional students may be lacking. This topic is fairly new and there has been very little established research efforts in analyzing transition students. Other colleges and faculty that may work with TRA students on their campuses and in their courses may be facing similar problems (V. Bird, R. Wolf, & K. Costello, personal

interview, March 20, 2002). The results of this study may assist other community colleges and faculty who are working in the education of transitional students.

Limitations

Limitations were always an issue with research. A primary limit to this research was that it took place at Wytheville Community College. The statistics gathered in this study focused on full-time students. The limitation of classifying the traditional students was a challenge. The students that were not classified as TRA students were limited to the remaining students in the study group.

Assumptions

A traditional style student was considered any other full-time student who was not receiving TRA benefits. Traditional students were better prepared for college work since they most recently completed high school. TRA students have been away from academic settings and will need to refine their study skills and basic education abilities (B. Horton, personal interview, March 5, 2004). However, they bring life experiences that could show them how the new skills they were developing could be applied to work environments.

Procedures

Data were collected through various methods. The first was through statistical records from student GPA (Grade Point Average) of Spring 2002 graduation records. These academic GPA scores were evaluated and compared between the TRA and

traditional students. The scores were be compared using grade point averages for both groups and applying the t-test to determine if there existed a significant difference between the two academic groups.

Definition of Terms

The following terms are defined to assist the readers' performance of both groups. TRA is an acronym for Trade Readjustment Act. These students had worked in a factory located in the United States and the company had moved to an out of country location. This meant the workers lost their jobs based on federal trade agreements with those in other countries. The federal government agreed to pay for two years of retraining for the unemployed workers affected by these trade agreements (Department of Labor Employment and Training Administration, 2002). These students were usually older and did not have any education past secondary school. They also had many more responsibilities than traditional students.

Traditional style students were typically the majority of students who had graduated high school and were in the transition of taking college classes before starting their careers. These students were considered any other full-time students who were not receiving TRA benefits. Traditional students had very little work experience in the real world and would not receive any until after a college degree was earned.

Summary and Overview

The debate of whether TRA or traditional students perform better academically was ongoing between college faculty at Wytheville Community College (V. Bird, R.

Wolf, & K. Costello, personal interview, March 20, 2002). It was also a very large question for learning institutions facing training of TRA students. This study would involve the full-time students at Wytheville Community College. Data would be collected based on their grades and compared using a t-test of significance.

Chapters III, IV, and V will present the research found in the literature and provide directions of how the data will be collected and analyzed. It will answer the hypothesis and provide recommendations for working with transitioning students with a continued need for retraining.

CHAPTER II

REVIEW OF LITERATURE

TRA and traditional students both benefit equally from education: “The participants engaged in some form of instruction or educational activity to acquire the knowledge, information, and skills necessary to succeed in the workforce, learn basic skills, earn credentials, or otherwise enrich their lives” (Kim, 1999). Even though traditional and TRA students have unlike backgrounds, they still have one thing in common. They are both college students with one goal of graduating with their own earned degree: “These different backgrounds can have profound effects on how a student performs academically” (V. Bird, R. Wolf, & K. Costello, personal interview, March 20, 2002).

The amount of literature regarding TRA students academic performance based on their backgrounds was limited. This was a select population of usually older adults that suddenly took community college courses full-time, instead of part-time, which is considered the typical adult learner. This chapter will review the literature regarding the academic differences of TRA and traditional students in the following areas: the academic performance levels of TRA students, the academic performance levels of traditional students, and finally the reasons for the differences of the TRA and traditional style students (Kim, 1999).

TRA (Trade Readjustment Act)

The acronym TRA stands for trade readjustment act or sometimes referred to as trade readjustment allowance. These allowances of income support a dislocated worker who has withdrawn their limit of unemployment compensation and their jobs that were affected by foreign policies. The time needed for retraining is usually two years and unemployment is exhausted before then. The TRA also allows for payment of retraining expenses occurring in this time (Department of Labor Employment and Training Administration TRA, 2002).

The Federal Trade Act provides benefits under the Trade Assistance Program. This program is for individuals who has been laid off or working at reduced hours due to foreign imports. NAFTA (North American Free Trade Agreement) also provides benefits to those individuals who have been laid off due to international trade, trade with or shifts in production, to NAFTA countries (Mexico and/or Canada). The company's suppliers/finishers can be affected by trade with NAFTA countries through various increased imports to Canada or Mexico and also if they were affected by their employer shifting their production to these countries. These benefits include paying for allowance of living after their unemployment ended. Other benefits are paid training for a new career and relocation to find another job (Department of Labor Employment and Training Administration, 2002).

In the year 2000, the federal government paid out \$5,552,371 in TRA benefits. The benefits have only risen since then. Without these acts to assist workers, there would

be a large group of citizens out of work with no chance of preparing for other careers due to a lack of training (Department of Labor and Training, 2002).

TRA payments are intended mainly for workers who are enrolled in approved, full-time training. Basic TRA usually lasts 26 weeks. Additional TRA can be paid for 26 additional weeks, in a continuous 26 week period. These additional TRA weekly cash payments are also available to assist a worker completing an approved TRA training program (Department of Labor Employment and Training Administration TRA, 2002).

TRA Students

Though the TRA students have not been in an educational setting for a significant amount of time, the members of this group come to college with life experiences that they have accumulated during their time of working in their previous careers. They understand how important it is to gather the largest amount of information possible to step into a future career. This is something that a traditional student may not understand until they experience the realizations of life's trials (Technology Assessment Office, 2002).

The IST (Information Systems Technology) faculty at Wytheville Community College was interviewed by the researcher on their opinions of TRA students' versus traditional style students. They unanimously agreed that the TRA students often start with less abilities and education, but they have additional motives and ambitions to succeed than traditional students. They also explained that these students have a much better record of attendance and promptly submit course assignments and projects better than traditional students. They also mentioned that the average grades of traditional

students were around the mid “B” range. Their average grades for TRA students were in the mid “B” to “A” range. This suggests that TRA students perform positively above the level of traditional students (V. Bird, R. Wolf, & K. Costello, personal interview, March 20, 2002).

The researcher interviewed a TRA student at Wytheville Community College to find out their education and work background, difficulties in finding a new career, difficulties in receiving additional education and the benefits of TRA funding. She was toward the end of her associate degree in networking systems technology at Wytheville Community College. She had worked in a local sewing factory directly after high school and continued for 17 years. She had also received training as a long haul tractor trailer driver and drove for about six months. The lifestyle of a tractor trailer driver career was not appealing and she went back to her previous job in the local sewing factory. Her factory left to a foreign country location because of advantages taken of the North American Free Trade Agreement.

She was offered the opportunity to take advantage of the trade readjustment allocations to receive retraining for a new career. Her difficulties of beginning college courses were intimidation of the traditional students who were younger, more familiar with educational courses and quicker to learn material. She explained that she had to relearn how to study and read to obtain information. She said that her vocabulary was very limited. She had to read course texts while using a dictionary. She had been out of an education setting for more than 17 years. She explained that she knew that she had a limited amount of time to earn her associate degree in order for TRA to pay for her living

expenses and college expenses. Her grade point average is above grade point average of her total peer classmates (L. Alderman, personal interview, March 22, 2002).

The TRA group of unemployed worker students is also similar and is included in the group labeled as dislocated workers. These two groups both have lost mostly unskilled jobs due to industry closings and relocations. Both of the group's educational background is only a high school education. Some in these groups do not even have a high school diploma. Dislocated workers make up approximately 10-20% of the unemployed in the United States. Workers that are minority, unemployed, unskilled, less educated and older workers suffer severe reemployment problems. An analysis of a 1984 Bureau of Labor Statistics survey found that nearly half of the reemployed dislocated workers had changed occupations. Most of these unemployed workers eventually get service related occupations which require few skills and usually less pay scale (Levitan & Gallo, 1988).

Traditional Students

The researcher interviewed a typical traditional student. This student was a male. He was nearly to the end of his associate degree in networking systems technology at Wytheville Community College. He moved from high school into college and he plans to continue to work toward his bachelor's degree.

He is younger in age than the typical members of the TRA sample group. He does not have the pleasure of having his living and college expenses paid for by an external source. He had no previous career before college. He did have some experience of computers from high school.

He described that he was also intimidated by the older TRA type students. He explained that he thought the older students had more experiences, faster learning abilities and other skills that they had learned in life to help themselves in situations. He said that he found it difficult to continue straight from high school to college without personally seeing the functions of workers and businesses (M. Akers, personal interview, March 22, 2002).

The interviews with the IST faculty at Wytheville Community College show that traditional students have a higher absence rate from classes. The IST faculty explained that since traditional students do not have the life experience of the real world like TRA students, the traditional students usually do not try to gain content and knowledge from the classes. They explained that traditional students seemed to have the tendency to do assignments and study for a course grade and not for knowledge of the content. This was explained as having definite effects on their grades compared to TRA students (V. Bird, R. Wolf, & K. Costello, personal interview, March 20, 2002).

Summary

As part of this chapter, the academic performances of TRA and traditional students were examined. The question of what is a TRA student was answered including origin and benefits. Interviews of the IST faculty of Wytheville Community College were explained. They described their experiences and opinions of TRA and traditional students. An overview of a typical TRA student was also described. An interview of a TRA student was also taken and explained. A traditional student was described. An interview of a traditional student was also taken and explained. This chapter reviewed all

aspects of TRA students and typical students. Chapter III will discuss the methods and procedures of data collection.

CHAPTER III

METHODS AND PROCEDURES

In an experimental research study, the instrument used, field procedures followed, and statistical analysis employed can give very different outcomes of data and conclusions. To make the study reproducible with similar outcomes and conclusions, the methods and procedures must be followed that were used in this study. This is the reason that the understanding of the methods and procedures of this study will be reviewed in this chapter.

Population

There were two types of students defined for this study. These two were TRA (Trade Readjustment Act) students and traditional college students. The qualities that define both groups are unique to each. Both groups have different backgrounds of age, experiences, and everyday responsibilities. The similarities of the two groups are their full-time status at Wytheville Community College and similar courses are taken with both groups together. The same course performance is required of both groups. Both groups used in this study were based on students at Wytheville Community College in Wytheville, Virginia, that graduated in the Spring of 2002.

The two groups of students were found at most nationwide colleges and universities. Though the TRA students are not labeled the same at all locations, similar students with the same characteristics of older age, less recent education, greater responsibilities of home life, and duties are present. They are often referred to as non-

traditional college students. The traditional style of students is found more predominately. This is because the traditional student is the average full-time student that is in the transition from high school and using the college as an essential stepping stone toward their career. They have very little past experience of living on their own, having debt, and a family to support.

There were more traditional style students that graduated from WCC than TRA students in the Spring of 2002. There were 108 TRA students and 265 traditional students who graduated in 2002.

The two groups of students used in this study should be viewed as very separate types of students that overcome very different situations in a college environment of courses. It is very important to understand the difference in the ability to reproduce similar results in further studies and to understand the data and results given for this research study.

Research Variables

Defining scientific differences between the two groups of TRA and traditional college students will vary greatly due to the variables that are used to compare the two. Many variables were considered for this task, however, due to feasibility of research, two independent variables were defined and one distinct dependent variable was established.

Variables that concern this research study are the independent variables of TRA and traditional college students graduating Wytheville Community College in the fiscal year 2001/2002 and one dependent variable of grade point averages of the two groups of

students. Using all of the graduating students' grade point averages was within the researcher's capabilities due to the manageable number of graduates.

Instrument Use

The instrument used for this experimental research was selected to satisfy the research goals of this research. The instrument used was the calculated GPA (Grade Point Average) after the selected group of students graduated. The GPA is the average grade earned by a student, figured by dividing the grade points earned by the number of credits attempted.

Classroom Procedures

Following the specific procedures of collecting the information for experimental research is essential for evaluating the study and developing a conclusion. The procedures to follow for the independent samples t-test are listed. The t-test compares the differences of the mean between the TRA and traditional style students. The test groups of students are graduates of Spring 2002 of Wytheville Community College.

The students of the two groups' grade point averages were collected from the college admissions and records office. This was requested with the explicit permission of the Dr. Ann Alexander, President of Wytheville Community College. The students' identity is sheltered by only distinguishing each student with a number and identifying of which group they are a member. Their names or any other identifying mark will not be published or given to any individual.

Statistical Analysis

The study used to create the analysis is an independent samples t-test. This test determines if there is a significant difference between two samples means. This test is independent because it tests two different sample groups where any of the group members do not have a chance to be a member of both groups. As described in the population section of this chapter and in the definition of terms section, both groups have distinct separations due to their definitions, qualities, and backgrounds.

The degree of freedom was calculated for this test. It was calculated by summing the number of students in the TRA group with the students in the traditional group. Finally the last step of the degree of freedom was by finding the product of total in the previous step. The degree of freedom number and the number devised by the t-test formula was then used in the critical values of t-test table. The results were then analyzed and compared to critical values of t-test; they were compared and conclusions drawn.

To satisfy the goals of this study, the t-test will evaluate if there is a significant difference in the grade point averages of the two student groups of TRA and traditional style students. If the number that is found from the t-test formula and compared with the degree of freedom to the critical values of t-test table is above the .05 level of significance, then it is decided that there is significant difference between the groups of students. The significant difference tells if TRA students perform, by grade point averages, significantly higher or lower than traditional style students (Urdan, 2004).

Summary

Chapter III provided a detailed description of the methods and procedures used to collect, process, and analyze the data of this experimental research study. The procedures were given in detail to make research reproduction precise and possible. Chapter IV will discuss the findings based on the data that were gathered and analyzed.

CHAPTER IV

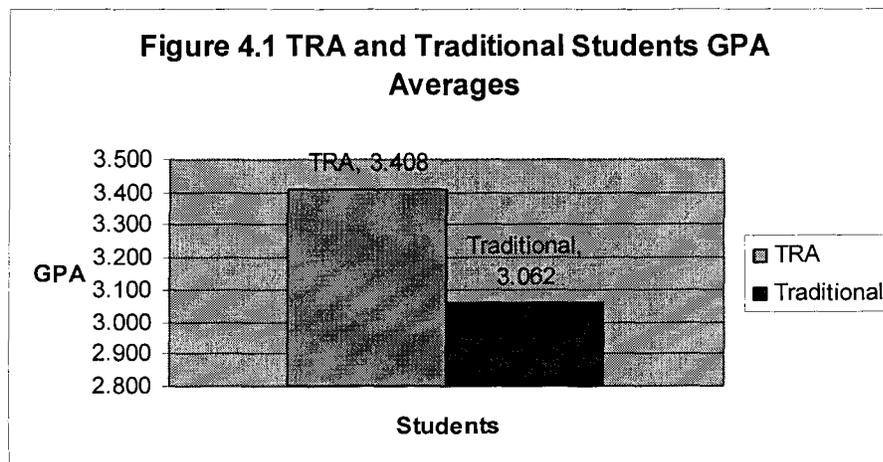
FINDINGS

The problem of this study was to determine how Trade Readjustment Act (TRA) students' academic performance of grade point average compared to traditional students in academic programs at Wytheville Community College of the Spring 2002 graduates. The findings of this study provided resolution to this problem statement.

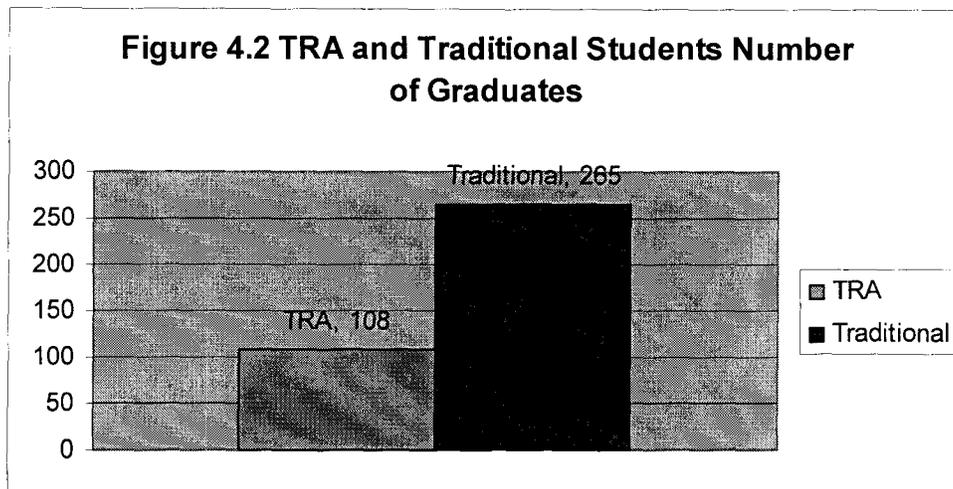
This chapter will reveal the findings of Grade Point Averages (GPA) of the WCC graduates of Spring 2002. It will display the population numbers of each group and their GPA averages. It ultimately displayed the outcome of the t-test and its analysis with statistical significance.

Findings

The GPA mean averages of the TRA and traditional students that graduated from WCC in Spring 2002 were analyzed. TRA students scored an average of 0.33501 points more than traditional students. This is a 10.9 percent increase over traditional students. See Figure 4.1.



The amounts of the TRA and traditional students that graduated from WCC in Spring 2002 are reported in Figure 4.2. There were 157 more traditional students that graduated than TRA students. This was 40.8 percent more traditional students than TRA students. The number of students that received TRA benefits varied from year to year. It depends on the number of students that lose their jobs to the NAFTA agreement in Wytheville Community College's service region.



The t-test calculation between the TRA and traditional students that graduated from WCC in Spring 2002 were displayed in Table 4.1. The results of the t-test in the SPSS software indicated that the sample of TRA students had higher average GPAs than did the sample of traditional students. This table was compiled and calculated from SPSS software.

Table 4.1 Group Statistics

	Student	N	Mean	Std. Deviation	Std. Error Mean
GPA	TRA	108	3.40796	.443748	.042700
	Traditional	265	3.07295	.481796	.029597

The SPSS software also calculated the t-value and levels of significance. The SPSS software calculated the t-value at 6.229. Since this value was positive, it implies that the TRA students GPA mean is above the traditional students for graduating 2002 Wytheville Community College students.

The SPSS software also calculated that there was a statistically significant difference between the TRA and traditional students which was shown in Table 4.2. The stated hypothesis of this study was one-tailed in nature. The degree of freedom was 371. The SPSS software calculated the resulting t-value of 6.229. When matched and evaluated in the t-distribution, see Appendix A, it revealed that the t-value should be accepted at the .01 level of significance.

Table 4.2 T Test Results

t-test				
	t	df	Mean Difference	Std. Error Difference
GPA	6.229	371	.335016	.053786

Summary

The findings of this study were of the GPA averages of TRA and traditional students. The statistics and analysis was performed with assistance of SPSS statistical software. The statistics unveiled that the probability of getting the exact same results were very small. It also disclosed that there was significant difference between the TRA

and traditional students that graduated from Wytheville Community College in Spring 2002. All findings of this study were duplicatable and verifiable.

Chapter V will give a summary and discuss the conclusions and recommendations based on the findings that were displayed from Chapter IV. The summary will then summarize the contents of the previous four chapters. The conclusions will be based upon the data the researcher collected to answer the research goals. The information that was collected and reported in Chapter IV will be used to give the recommendations. The recommendations will be practical suggestions for implementing the findings. It will also suggest additional research studies that should be undertaken in light of findings from this research.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter will summarize the contents of this study. It will offer conclusions drawn from this study and its findings. The conclusions will make recommendations based upon the data collected to answer the research goals. It also makes recommendations for future studies.

Summary

The problem of this study was to explain an observation from many faculty at Wytheville Community College. There have been many discussions about how noticeably better the students that receive TRA benefits perform compared to traditional students. The problem statement for this study was to determine how Trade Readjustment Act (TRA) students' academic performance of grade point average compared to traditional students in academic programs at Wytheville Community College (WCC) for the Spring 2002 graduates.

The goal of this study reflected directions of solving the problem and answered the faculty's questions. The goal established was in the form of a hypothesis. The hypothesis stated, Trade Readjustment Act students earned higher grade point averages than traditional students at Wytheville Community College.

The significance of this study was to contribute to the learning of the TRA students and how they performed in programs at community colleges. Knowing the tendencies of TRA students will enable college professors to better prepare for educating

transitioning students and include academic skills that the transitional students may be lacking.

This study cannot be performed without limitations. The study took place in only one of Virginia's 23 Community Colleges. This gave a limited sample of students to evaluate. Many other factors may have affected the students' GPA mean. Some examples were locally and regionally significant.

The populations of this study were TRA students and traditional students that graduated from Wytheville Community College in the year 2002. The TRA students' jobs had been liquidated and moved to other countries for lower costs due to the NAFTA (North American Free Trade Agreement). The NAFTA agreement bound the U.S. federal government to provide two years of education to retrain the newly unemployed workers for alternate employment. TRA students had not been in an educational setting for a significant amount of time and the members of this group came to college with life experience that they had accumulated during their time of working in their previous careers (Department of Labor and Training Administration, 2002).

Traditional students were defined as the average full-time students that were in the transition from high school and using college as an essential stepping stone toward their career. They had very little past experience of living on their own, having debt, and a family to support. For purposes of this study, the traditional students were other graduating students of 2002 from WCC that were not classified as a TRA student.

The instrument used for this study was to determine if there was a significant difference between the GPA means of the two test groups. The instrument used was the

t-test. To aid in the calculation of the t-test, the researcher used SPSS statistical software to calculate and evaluate the results.

The data collection of GPAs of the 2002 graduates of Wytheville Community College was approved by Dr. Ann E. Alexander, President of Wytheville Community College. The GPAs were then reported by the Admissions Office of WCC. The identity of TRA students was then given by Dr. Bobby Horton, who is in charge of TRA affairs at WCC.

The statistical procedures were evaluated with the use of the two groups' GPA means as data. The data were analyzed using SPSS software to calculate the independent samples t-test. It also displayed that the difference of 0.33501 in the two groups GPA mean on a 4.0 scale was statistically significant.

Conclusions

To solve the study problem, the following hypothesis was established: H_1 : Trade Readjustment Act students earned higher grade point averages than traditional students at Wytheville Community College. This hypothesis was developed due to the consensus of many WCC faculty's strong opinions. Their opinions were of TRA students and their noticeably higher course grades over other students.

The findings showed that the t-value was 6.229. There were 108 TRA students and 265 traditional students. The degree of freedom was 371. This information was compared to the t-distribution.

It was concluded that there was a significant difference between TRA and traditional students at Wytheville Community College. The result was to accept the

predicted hypothesis at the .01 level of 2.326, which was the 99% confidence interval. The TRA students made significantly higher GPA averages than traditional students.

Recommendations

Based on the findings and conclusions, the following recommends are made by the researcher. It is recommended to further this study by using additional TRA and traditional students test groups. This will verify further the GPA mean tendencies of TRA students at Wytheville Community College and also alternate Community Colleges.

Further studies will find alternate factors that affect TRA students' abilities of performance within a college environment. These additional studies will find factors that impact TRA students and determine why they perform better in their GPA mean compared to traditional students. Other recommendations of further studies are to divide the groups of TRA students and identify their performances in college classroom settings between themselves. Examples of these divided groups can be males from furniture factories or females from sewing factories. Each can display their strengths and weaknesses between these distinct groups of TRA students.

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Appendix A, The t Distribution

df	level for one-tailed test					
	0.10	0.05	0.025	0.01	0.005	0.0005
1	3.078	6.314	12.706	31.821	63.657	636.619
2	1.886	2.920	4.303	6.965	9.925	31.598
3	1.638	2.353	3.182	4.541	5.841	12.924
4	1.533	2.132	2.776	3.747	4.604	8.610
5	1.476	2.015	2.571	3.365	4.032	6.869
6	1.440	1.943	2.447	3.143	3.707	5.959
7	1.415	1.895	2.365	2.998	3.499	5.408
8	1.397	1.860	2.306	2.896	3.355	5.041
9	1.383	1.833	2.262	2.821	3.250	4.781
10	1.372	1.812	2.228	2.764	3.169	4.587
11	1.363	1.796	2.201	2.718	3.106	4.437
12	1.356	1.782	2.179	2.681	3.055	4.318
13	1.350	1.771	2.160	2.650	3.012	4.221
14	1.345	1.761	2.145	2.624	2.977	4.140
15	1.341	1.753	2.131	2.602	2.947	4.073
16	1.337	1.746	2.120	2.583	2.921	4.015
17	1.333	1.740	2.110	2.567	2.898	3.965
18	1.330	1.734	2.101	2.552	2.878	3.922
19	1.328	1.729	2.093	2.539	2.861	3.883
20	1.325	1.725	2.086	2.528	2.845	3.850
21	1.323	1.721	2.080	2.518	2.831	3.819
22	1.321	1.717	2.074	2.508	2.819	3.792
23	1.319	1.714	2.069	2.500	2.807	3.767
24	1.318	1.711	2.064	2.492	2.797	3.745
25	1.316	1.708	2.060	2.485	2.787	3.725
26	1.315	1.706	2.056	2.479	2.779	3.707
27	1.314	1.703	2.052	2.474	2.771	3.690
28	1.313	1.701	2.048	2.467	2.763	3.674
29	1.311	1.699	2.045	2.462	2.756	3.659
30	1.310	1.697	2.042	2.457	2.750	3.646
40	1.303	1.684	2.021	2.423	2.704	3.551
60	1.296	1.671	2.000	2.390	2.660	3.460
120	1.289	1.658	2.980	2.358	2.617	3.373
∞	1.282	1.645	1.960	2.326	2.576	3.291

SOURCE: From © 2001 Timothy C. Urdan, *Statistics in Plain English*