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The Success of Students in Keyboarding Class Using Grade Point Average as a Predictor

Theresa James
Old Dominion University

THE SUCCESS OF STUDENTS IN KEYBOARDING CLASS USING GRADE POINT AVERAGE AS A PREDICTOR

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BY
THERESA JAMES
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APPROVED BY:

John M. Ritz, Ed.D.

Research Advisor
and Graduate Program Director

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Date

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CHAPTER I

INTRODUCTION

As research literature continues to describe a trend towards the need for greater education and training, high schools have pursued changing curriculums to integrate academic learning and vocational education. Thus, it has become increasingly important to further our analysis of the trends in vocational education.

Research suggests (Levesque, Lauen, Teitelbaum, Alt, Librera, & MPR Associates, Inc., 2000, p. iv), that if vocational education reflects the labor market trends toward greater education and training requirements, then one would expect that the academic and technical preparation of students participating in vocational education has increased. In addition, more of these participants are seeking and obtaining higher education and training credentials. Nevertheless,

researchers overwhelmingly identify participants in high school vocational education courses as students classified as special education, students at risk as defined by the Carl Perkins Act of 1990, students who live in rural areas, and minorities.

Other studies conclude that schools make assumptions about the abilities, aspirations, and educational needs of their students. Further, these assumptions guide decisions about course offerings and placement decisions. These assumptions also relate, in large part to students' race and family socioeconomic status (Author, 1996, p. 2).

Finally, a number of other studies focus on identifying the need for vocational education, and perceived benefits for students participating in vocational education (Gray, Wang, & Malizia, 1995, p. 18). Far fewer identify who will be most successful in vocational education and what

academic skills are required to attain a high level of success.

Statement of the Problem

The purpose of this study was to determine the relationship between student GPA and success in keyboarding classes.

Research Goals

To answer this problem, the following hypothesis was established:

> H_1: There is a direct correltation between students' GPA and keyboarding success.

Background and Significance

In 1972, 63% of high school students in a National Center of Education Statistics (NCES) sample reported that they intended to continue their education beyond high school. In 1992, the

number had risen to 95% with 84% of those wanting to attend a 4-year college or university. Even those in a general education curriculum reported an interest in college prep programs. Concurrently, the number of students enrolled in a sequence of vocational education courses declined, with the exception of low achieving or disabled students (Gray, Wang, & Malizia, 1995, p. 1), indicating a need for change in the vocational education curriculum.

In response to the statistics came curriculum changes that incorporated programs such as "Schools That Work" and "Tech Prep," as well as concepts that included "Toward the Year 2000" and "The Carl Perkins Act of 1990" among others. These initiatives involved redesigning American high schools to meet the needs of the changing world of work where employers required higher order cognitive skills. Educators and employers agreed that a move toward the integration of academic and

vocational skills would again provide students with the necessary skills to compete academically and at work (Gordon, 2000, p. 10).

As labor market trends continued to indicate a need for greater education and training, school systems have moved toward redesigning curriculum and vocational education struggles to implement initiatives to better prepare students for life beyond high school. New questions regarding the effectiveness of these initiatives remain unanswered. As researchers continue to investigate these trends, there still exists the need to identify the academic skills required for success in vocational education classes. Considerable research has not been conducted in this area, but what there is indicates "the leading determinant of students' grades were basic reading skills, completing work on time, creative thinking, problem solving skills, and self management skills" (Heaviside, 1994, p. 1).

Until vocational education can fully address the mismatch between what and how students are learning, and what they will be required to know to ensure successful careers, our education system will continue to bear the consequences of being out of sync with the changing nature of work (Author, 1996, p. 1).

Limitations

The limitations of the study were as follows:

1. The results of the study were confined to a public high school in southeastern Virginia.
2. The study relied on the individual performance of each class member.
3. Students enrolled in computer classes with keyboarding as a component ranged from freshmen to senior level.
4. Students performed under a 4x4 Block Schedule, studying keyboarding during a semester long block.

Assumptions

In this study several factors were assumed to be true and correct. The assumptions were as follows:

1. Students enrolled in keyboarding classes at the time of the study had not completed a high school keyboarding class prior to this study.
2. Students had varying needs, interests, skills, and abilities relating to the computer.
3. Teachers teaching keyboarding and computer classes are consistent in their teaching methods.

Procedures

Keyboarding students at a southeastern Virginia public high school were used to conduct this study. All classes were taught under a 4 x 4 block schedule day, and they were taught all four blocks of the day, including the keyboarding and computer

classes observed for the purpose of this study. The study was experimental in nature and conducted using 90-minute blocks, beginning at 8:45 a.m. The school day ended at 3:40 p.m. for students. Students' grade point average (GPA) prior to entering the semester in which they enrolled in a keyboarding or computer class was used for the purpose of the study. That information was obtained from the school guidance office. Students' grades in keyboarding classes were obtained from teachers at the end of the term. Each student's cumulative GPA was compared to the final course grade the student earned in the keyboarding course.

Definition of Terms

The following is a list of terms and definitions to assist the reader in comprehending this study.

1. **Block Scheduling** - a daily school schedule organized into four 90-minute blocks of time.

2. **GPA** - grade point average.

3. **Cumulative GPA** - the average grade for all credit bearing courses taken on the secondary level.

4. **Keyboarding** - an elective class that teaches the concept of touch typing using a computer keyboard to reach potential speed and accuracy levels. Formatting basic documents was also included. It was taught as a separate course or as a part of beginning computer classes.

5. **Evaluation** - the process of obtaining information and using it to make judgements which are to be used in decision making.

6. **Grading** - the process of assigning a value to student assessment tools that will be used in the evaluation process to form judgements about student performance.

7. **Term** - in a 4 x 4 block schedule there are two terms, fall and spring, which divide the school year in half. At the end of a term students have completed the equivalent of one year of classroom instruction.

Overview of Chapter

In Chapter I the researcher identified findings in the literature to indicate the need for

continued analysis of trends in the area of vocational education. However, a deficiency exists in the current research in the area of identifying academic skills needed for proficiency in vocational education. Thus, the problem of the study was to determine the relationship between GPA and success in keyboarding classes. Students' permanent records were analyzed along with their performance in keyboarding classes to determine if GPA could be used as a predictor of their success. To aid the reader in understanding and interpreting the study, a list of definitions was provided.

Chapter II, Review of Literature, will support the use of grades as predictors of future success, provide evidence that the chosen practice is appropriate for the problem, and support the need for further investigation into the area of success in vocational education. Chapter III, Methods and Procedures, describes the instruments and techniques used to complete the study. Chapter IV,

Findings, contains the analysis and results of the study. Finally, Chapter V, Summary, Conclusions, and Recommendations, conclude the study.

CHAPTER II

REVIEW OF LITERATURE

Chapter II of this study is the Review of Literature. It will support the use of grades as predictors of future success, provide evidence that the chosen practice is appropriate for the problem, and support the need for further investigation into the area of success in vocational education.

Grades in Education

There has been much discussion about alternatives to traditional assessment and performance evaluation tools in education. With all the attention having been placed on improving educational evaluation methods, the report card grade remains the most popular method of reporting students' academic achievement. "Grades are the one tool that the public thinks they understand and

maintains a certainty that they want" (Strickland & Strickland, 1997, p. 127). They believe that grades are a way of reporting what students have learned in school. As one set of parents surveyed for the Strickland & Strickland (1997) study put it, "whether homework has been done or not, and whether work has been performed with care or indifference have usually been discernable through the quarterly grades."

For teachers, grading is a difficult task. They are faced with determining a single letter grade that represents the student's knowledge and development. Most systems for arriving at final grades utilizes some method of averaging all the grades assigned. This gives a final standard score, which could be reported directly or could be converted; most are converted to a single letter grade.

Once teachers have completed the difficult task of assigning a grade, it is then reported

collectively with grades for all courses the student is taking on a form called a report card. Report card results are of interest to anyone having a direct concern for the performance of the student. School board members, administrators, counselors, curriculum specialists, teachers, parents, and students have an interest in and use for the information reported on the report card. The use that is of most value to this study is that of using grades as a part of the evaluation process to make judgements about a students' performance or capability in a particular subject area.

Grades As An Evaluation Tool

Evaluation and grading are not the same thing. Experts are not exactly sure what activities should properly be included in the process of evaluation; however, grades are one factor in this process (TenBrink, 1974, p. 5).

Report cards and grades have traditionally been used as "valuable predictors of future academic success" according to James Terwilliger;

> Specifically, the purpose of grading systems is to provide a systematic and formal procedure for transmitting value judgements made by teachers to the student and to others most directly concerned with his development and welfare. These value judgements provide the basis for making important decisions that are faced in the normal course of an individual's development in our society (TenBrink, 1974, p. 254).

For decades grades have been used as the basis for promotion to the next grade level or course, to meet college acceptance standards, to determine amounts of federal funding, to determine levels of teacher performance, and to compare students with others in a school system or across the country. Another major purpose of grades is to provide information to state and local decision makers about the adequacy of basic educational programs which require assessing the current status and progress of large numbers of students (Gay, 1980, p. 22).

Clearly the literature supports the idea that evaluation has as its ultimate goal--decision making. Just as individuals outside the classroom make decisions based on grades and GPA, teachers make decisions about student's potential for doing the work assigned based upon grades. For example, a student may be judged academically able if he/she has achieved a grade of B+ for the last two years of high school, or considered capable in history if he or she has achieved a least a C+ in English.

Consider the following information which supports using grades and GPA to determine course offerings.

> A study conducted as a project for the National Center for Research on Vocational Education (NCRVE, 1988) attempted to address the quality of vocational offerings at three comprehensive high schools serving different types of students and student needs. The focus of the 2-year study was to better understand the rationale and processes that underlie schools' course offerings and students' course taking, and draws implications for the reform of vocational education. ***Evaluation of transcripts*** helped to shed light on the process of curriculum tracking when it became apparent that vocational course offerings were not a

> significant factor for either of the three schools. Curriculum decisions centered almost exclusively on the schools' academic course offerings and on mechanisms for placing students with different academic abilities into classes at the right level. The study disclosed the dynamics of student course assignments as follows: all three schools had well-defined formal placement polices that relied on ***judgements*** about students' abilities and their academic needs. At all three schools ***grades*** were a factor, with course ***grades*** after the freshman year being the ***primary*** basis for placement at one school.

The data from this study made it clear that all three schools made assumptions about the abilities, aspirations, and academic needs of students that guided course offerings and placement policies. Analyzing transcripts supported the data gathered during interviews and observations.

Further Investigation

Although reviews of the literature support the use of grades, GPA, and report cards in forming judgements used in the decision making processes regarding students, none of the studies used this

information to identify who will be most successful in vocational education classes. Surely vocational education has not become a "dumping ground" for low ability students, students with special needs, and students with behavior problems (Author, 1996, p. 2).

As stated in Chapter I of this study, statistics would indicate that more students are college bound, and that vocational course enrollment has been affected by this trend. Over the last ten years vocational course enrollment has shown a significant decline--the exception being business education and computer keyboarding courses, which have shown an increase in enrollment in the latter part of the 1990's (Levesque, Lauen, Teitelbaum, Alt, Librera, & MPR Associates, Inc., 2000, p. 90).

But many theorists suggest that computers have become the cure all for academic ills in education, suggesting that computers can remake education, and

that the key to using computers more effectively is through their use as private tutors (Sherman, 1996, p. 2). On the other hand there are federal funding programs that require specific performance measurement and standards which track both academic and occupational competency gains. These measures of learning and competency gain are intended to reflect the achievement of basic and advanced academic skills (Gordon, 2000, p. 1) while emphasizing high standards for all students. Based on the pervasiveness of these conflicting views, this study attempts to identify a means for predicting academic success in computer keyboarding courses.

Summary

In Chapter II, Review of Literature, the researcher has identified support for the use of grades as predictors of future success in

education, provided evidence that using grades is appropriate for the problem, and supported the need for further investigation into the area of determining success in vocational education. Chapter III will further clarify the methods and procedures used to conduct the research.

CHAPTER III

METHODS AND PROCEDURES

The methods and procedures used in this study are described below and include the following sections: population, research variables, instructional design, methods of data collection, statistical analysis, and summary. The research study was experimental in nature. Permission to study the participants and utilize confidential student information was conditionally granted by the school administration on the grounds that the school name, school district, and student names not be used.

Population

The population of this study consisted of 94 participants from seven keyboarding and two Office Technology (OT) classes taught at a southeastern

Virginia high school. Each class varied in size from six to 24 students ranging in age from 15 to 18 years of age. Participants were chosen from two different classes because mastering basic keyboarding skills was considered the goal in both classes. One distinction should be noted however, students enrolled in the Office Technology course were considered high risk. Their selection for participation in the Office Technology program was based on a prior evaluation of circumstances and these students were identified as being either academically or economically disadvantaged, or both. Though not in all cases, they generally had low grade point averages (GPA's), under 2.0, and a high rate of absenteeism. Appendix A contains a numbered listing of all participants, the last recorded GPA prior to enrolling in the keyboarding classes, and their final grade in the keyboarding class. Students with 0.000 GPA's were eliminated as well as students who transferred during the

semester, and therefore had no final grade for the course.

Research Variables

The participants in the study were instructed using the same methods and basic style of teaching. Classes were taught on a 4 x 4 block schedule meeting daily for 90 minutes a day from September to January. All classes were evaluated on speed and accuracy in keyboarding, production of office documents, and on use of software included in the MS Office Suite. The OT students received additional instruction in the operation of a 10-key calculator, resume writing, and the interview process. Students enrolled in Keyboarding classes were taught the use of the numeric keypad but did not make the transition to the 10-key calculator, and they received no instruction in resume writing and the interview process.

The GPAs used in the study were cumulative through June 2000. Ninth grade participants without a GPA were excluded from this study. Few ninth graders had taken courses in middle school that would be considered towards high school graduation credits. Those ninth grade participants who had taken courses in middle school that counted toward high school graduation credits were included. Transfer students whose GPA's were not available at the time of the study were also excluded.

Instrument Design

Tests, quizzes, and miscellaneous daily production assignments were used to evaluate student performance in keyboarding classes and to measure daily productivity. All assignments were based on a 100-pt scale. Each category of assignments was weighted to give the highest value

to tests, then quizzes, and then production. These measures were used to show the participants understanding of the competencies learned.

Methods of Data Collection

The data were collected using the raw scores of the GPA for each participant. The grades in the keyboarding courses were cumulative over 4-4 1/2 week grading periods from September to January and included a final exam. Each marking period and the exam counted 20% of the student's final grade in the course.

Statistical Analysis

This study was conducted by using the computed GPA scores for each participant. Grades were collected throughout the term and compared to each participant's cumulative GPA prior to enrolling in

the keyboarding class using the Pearson's r method of statistical analysis.

Summary

Chapter III outlined the methods and procedures used to carry out this study. These included a description of the population, an explanation of the research variables, instrument design, research procedures, methods of data collection, and statistical analysis. Chapter IV details the findings and results of this study.

CHAPTER IV

FINDINGS

The problem of this study was to determine the relationship between students' overall GPA and success in keyboarding classes. This chapter contains the results from the test instruments applied in the study. The data were used to determine if GPA could be used to successfully predict performance outcomes of students enrolled in keyboarding classes.

Pearson's r

Grades were collected throughout the term and compared to each participant's cumulative GPA prior to enrolling in the keyboarding class using the Pearson's r method of statistical analysis.

The results of comparing grade point averages to the final keyboarding grades appear in Table 1. Students were assigned a student number; herein referred to S, and the student grade level is shown.

A Pearson's r computation of statistical correlation was calculated by comparing the raw GPA scores to the raw subject scores. The Pearson's r was determined to be + .48. Table 2 shows the Pearson's r formula, and Table 3 shows the calculations of the data. Details of the statistical calculation of Pearson's r are shown in the Appendix A.

TABLE 1

Student	Grade Level	GPA	Class Average
S_{01}	10	2.200	96.59
S_{02}	9	1.850	91.19
S_{03}	10	1.882	68.38
S_{04}	10	0.625	62.58
S_{05}	10	1.875	82.26
S_{06}	10	3.025	97.69
S_{07}	11	1.375	79.63
S_{08}	10	1.550	88.65
S_{09}	10	1.375	84.27
S_{10}	10	1.182	83.71
S_{11}	10	0.800	77.43
S_{12}	10	1.250	94.80
S_{13}	10	1.059	90.87
S_{14}	10	2.353	90.52
S_{15}	12	0.955	92.85
S_{16}	10	2.875	91.79
S_{17}	12	2.920	96.99
S_{18}	10	1.700	90.77
S_{19}	10	1.889	92.33
S_{20}	10	1.625	87.61
S_{21}	10	1.667	88.64
S_{22}	10	0.760	53.74
S_{23}	10	1.375	75.45
S_{24}	11	2.593	74.84
S_{25}	10	2.667	85.60
S_{26}	12	2.900	90.30
S_{27}	10	1.550	92.72
S_{28}	9	3.000	97.66
S_{29}	10	0.875	78.58
S_{30}	10	2.111	82.87
S_{31}	11	1.172	91.79
S_{32}	12	1.261	82.09
S_{33}	9	0.083	0.98
S_{34}	11	1.804	91.22

Student	Grade Level	GPA	Class Average
S_{35}	10	2.714	87.49
S_{36}	11	3.000	84.70
S_{37}	12	1.977	81.92
S_{38}	11	1.938	95.04
S_{39}	10	3.775	94.06
S_{40}	10	0.353	77.96
S_{41}	10	1.882	80.49
S_{42}	10	0.500	68.01
S_{43}	9	3.000	98.08
S_{44}	12	2.589	81.85
S_{45}	11	2.888	93.19
S_{46}	9	3.297	91.12
S_{47}	11	0.786	49.70
S_{48}	10	3.323	97.29
S_{49}	10	1.750	78.13
S_{50}	11	1.811	86.31
S_{51}	11	1.278	79.70
S_{52}	10	2.333	90.21
S_{53}	10	1.353	74.15
S_{54}	10	2.375	80.91
S_{55}	11	1.455	86.76
S_{56}	10	3.261	94.43
S_{57}	12	3.011	98.38
S_{58}	11	2.954	94.49
S_{59}	11	2.650	97.64
S_{60}	10	2.125	93.75
S_{61}	10	2.750	78.71
S_{62}	9	0.118	43.18
S_{63}	12	3.174	96.18
S_{64}	12	2.139	95.93
S_{65}	10	3.429	95.28
S_{66}	12	2.473	86.45
S_{67}	10	3.000	90.57
S_{68}	10	2.500	95.82
S_{69}	11	1.226	76.36
S_{70}	10	1.778	90.83
S_{71}	12	1.810	71.30
S_{72}	11	0.792	73.10
S_{73}	9	3.575	19.14
S_{74}	12	3.695	95.08

Student	Grade Level	GPA	Class Average
S_{75}	10	1.700	89.80
S_{76}	10	2.500	87.96
S_{77}	11	2.889	85.08
S_{78}	11	2.933	96.76
S_{79}	10	2.775	87.00
S_{80}	10	0.875	82.46
S_{81}	11	1.412	86.29
S_{82}	11	1.928	92.19
S_{83}	12	2.444	96.58
S_{84}	10	3.222	93.40
S_{85}	11	2.308	83.03
S_{86}	11	3.234	97.58
S_{87}	11	2.619	89.33
S_{88}	10	1.625	90.94
S_{89}	10	2.625	94.69
S_{90}	11	1.750	82.38
S_{91}	11	3.842	98.87
S_{92}	10	2.202	90.47
S_{93}	11	2.000	89.39
S_{94}	10	2.600	91.28

TABLE 2

RESEARCH DATA = PEARSON'S R

Pearson's R formula:

$$r = \frac{N\sum xy - [(\sum x)(\sum y)]}{\sqrt{(N\sum x^2 - (\sum x)^2)((N\sum Y^2 - (\sum Y)^2)}}$$

where . . .

N = numbers of paired scores

xy = sum of the products of the paired scores

x = sum of scores on one variable

y = sum of scores on the other variable

x^2 = sum of the squared scores on the x variable

y^2 = sum of the squared scores on the y variable

TABLE 3

RESEARCH DATA CALCULATION = PEARSON'S R

Data collected from nine Keyboarding and Office Technology classes at a southeastern Virginia high school yielded the following results:

N	**94**
ΣX	196.50
ΣX^2	482.77
ΣY	7,976.56
ΣY^2	698,503.12
ΣXY	17,273.57

$$r = \frac{94(17276.57)-[(196.50)(7976.56)]}{\sqrt{(94(482.77)-38415.75)((94(698503.12)-(63625509.43)}}$$

$$r = \frac{56321.54}{117323.97} \qquad r = +.48$$

Summary

Chapter IV provided the results of the administered Pearson's r Product Moment Coefficient calculation. The data were presented from participants in nine Keyboarding and Office Technology classes and included the student number, grade level, overall GPA, and final class average. This information was used to calculate *r* and determine if there was a significant relationship between two sets of raw data. Chapter V will provide the Summary, Conclusions, and Recommendations of the study.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chapter V presents the results of this study. It is reported in sections titled Summary, Conclusions, and Recommendations.

Summary

The problem of this study was to determine the relationship between overall GPA and success in keyboarding classes. The hypothesis of this study was to determine if a direct relationship existed between student GPA's and keyboarding success.

The data were collected using grade point averages and final class averages for each student in nine classes. Final grades in a course consisted of four-quarter grades and a final exam

grade. Overall GPA was accumulated over the student's entire high school career.

The Pearson's r Product Moment Correlation was calculated for the two sets of raw data and used to determine the level of magnitude and level of significance.

Conclusions

The findings of this study using the Pearson's r Coefficient calculation yielded a positive value of + .48. The degree of freedom was 92. The resulting $p > .05$ was .205 and $p > .01$ was .267 with the r value exceeding at both the .05 and .01 levels. The researcher accepts the hypothesis that a direct relationship exists between GPA and predicting keyboarding success. The correlation value of .48 indicates that a moderate correlation

or substantial relationship exists between the two sets of raw data.

A review of the data indicated that while GPA might be used to accurately predict keyboarding success of some students, it might not prove to be as accurate a predictor with some other students.

Recognizing that other factors could exist that contribute to the overall success or failure of students in keyboarding classes, such as teacher grading practices, attendance, and interest in the subject, the researcher made the following recommendations.

Recommendations

Based upon the findings and the conclusions of this study, the researcher included the following recommendations:

1. Additional research should be conducted on individual students whose GPA did not act as an accurate predictor of keyboarding

success to determine the positive and negative influences on performance.

2. Further investigation is needed into outside factors that might contribute to above average performance in keyboarding classes by students with low GPAs. Identification and replication of effective teaching strategies might prove beneficial.

3. Additional research is needed to determine the consistency of grading practices of keyboarding teachers. An analysis of students' final keyboarding grades by teacher, by class, for the purpose of this study, showed that some teachers had a significantly higher percentage of students receiving grades of "A" than some other teachers.

4. Similar research should be conducted eliminating students who have high rates of absenteeism and students with special needs. Participation in the study by a significant number of students from these populations could result in a lower level of magnitude.

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APPENDIX A

Pearson's r Calculation

PEARSONS R PRODUCT MOMENT CORRELATION CALCULATION

		GPA		Class Average			
Student	**Grade Level**	**X**	**X^2**	**Y**	**Y^2**	**D * E**	**(XY)**
S_1	10	2.20	4.84	96.59	9329.63	212.5	212.5
S_2	10	1.25	1.56	94.8	8987.04	118.5	118.5
S_3	10	2.35	5.54	90.52	8193.87	213.0	213.0
S_5	10	0.76	0.58	53.74	2887.99	40.8	40.8
S_6	9	3.00	9.00	97.66	9537.48	293.0	293.0
S_7	10	0.88	0.77	78.58	6174.82	68.8	68.8
S_8	11	1.94	3.76	95.04	9032.60	184.2	184.2
S_9	9	3.00	9.00	98.08	9619.69	294.2	294.2
S_{10}	11	2.89	8.34	93.19	8684.38	269.1	269.1
S_{11}	10	1.75	3.06	78.13	6104.30	136.7	136.7
S_{12}	11	2.95	8.73	94.49	8928.36	279.1	279.1
S_{13}	11	2.65	7.02	97.64	9533.57	258.7	258.7
S_{15}	10	1.70	2.89	89.8	8064.04	152.7	152.7
S_{16}	12	2.44	5.97	96.58	9327.70	236.0	236.0
S_{17}	10	1.63	2.64	90.94	8270.08	147.8	147.8
S_{18}	10	2.63	6.89	94.69	8966.20	248.6	248.6
S_{19}	12	2.14	4.58	95.93	9202.56	205.2	205.2
S_{20}	10	1.88	3.52	82.26	6766.71	154.2	154.2
S_{21}	10	2.88	8.27	91.79	8425.40	263.9	263.9
S_{22}	10	1.70	2.89	90.77	8239.19	154.3	154.3
S_{23}	10	1.89	3.57	92.33	8524.83	174.4	174.4
S_{24}	9	3.30	10.87	91.12	8302.85	300.4	300.4
S_{25}	10	3.32	11.04	97.29	9465.34	323.3	323.3
S_{26}	10	2.33	5.44	90.21	8137.84	210.5	210.5
S_{27}	12	3.17	10.07	96.18	9250.59	305.3	305.3
S_{28}	10	2.50	6.25	95.82	9181.47	239.6	239.6

PEARSONS R PRODUCT MOMENT CORRELATION CALCULATION

Student	Grade Level	GPA X	X^2	Class Average Y	Y^2	D * E	(XY)
S_{29}	11	1.93	3.72	92.19	8499.00	177.7	177.7
S_{30}	10	2.20	4.85	90.47	8184.82	199.2	199.2
S_{31}	10	1.55	2.40	92.72	8597.00	143.7	143.7
S_{32}	10	2.60	6.76	91.28	8332.04	237.3	237.3
S_{33}	10	1.55	2.40	88.65	7858.82	137.4	137.4
S_{34}	10	1.06	1.12	90.87	8257.36	96.2	96.2
S_{35}	11	3.00	9.00	84.7	7174.09	254.1	254.1
S_{36}	12	3.70	13.65	95.08	9040.21	351.3	351.3
S_{37}	10	2.78	7.70	87	7569.00	241.4	241.4
S_{38}	11	2.31	5.33	83.03	6893.98	191.6	191.6
S_{39}	11	1.75	3.06	82.38	6786.46	144.2	144.2
S_{41}	10	0.80	0.64	77.43	5995.40	61.9	61.9
S_{42}	12	2.92	8.53	96.99	9407.06	283.2	283.2
S_{43}	10	1.63	2.64	87.61	7675.51	142.4	142.4
S_{44}	10	1.67	2.78	88.64	7857.05	147.8	147.8
S_{45}	11	2.59	6.72	74.84	5601.03	194.1	194.1
S_{46}	9	0.08	0.01	0.98	0.96	0.1	0.1
S_{47}	11	0.79	0.62	49.7	2470.09	39.1	39.1
S_{48}	10	3.00	9.00	90.57	8202.92	271.7	271.7
S_{49}	12	1.81	3.28	71.3	5083.69	129.1	129.1
S_{50}	9	3.58	12.78	19.14	366.34	68.4	68.4
S_{51}	11	2.93	8.60	96.76	9362.50	283.8	283.8
S_{52}	10	2.11	4.46	82.87	6867.44	174.9	174.9
S_{55}	10	2.38	5.64	80.91	6546.43	192.2	192.2
S_{56}	11	1.46	2.12	86.76	7527.30	126.2	126.2
S_{57}	10	3.26	10.63	94.43	8917.02	307.9	307.9

PEARSONS R PRODUCT MOMENT CORRELATION CALCULATION

		GPA		Class Average			
Student	**Grade Level**	**X**	**X^2**	**Y**	**Y^2**	**D * E**	**(XY)**
S_{58}	10	2.75	7.56	78.71	6195.26	216.5	216.5
S_{59}	12	2.47	6.12	86.45	7473.60	213.8	213.8
S_{60}	11	0.79	0.63	73.1	5343.61	57.9	57.9
S_{61}	10	3.22	10.38	93.4	8723.56	300.9	300.9
S_{62}	11	1.38	1.89	79.63	6340.94	109.5	109.5
S_{63}	10	1.18	1.40	83.71	7007.36	98.9	98.9
S_{64}	12	0.96	0.91	92.85	8621.12	88.7	88.7
S_{65}	10	1.88	3.54	80.49	6478.64	151.5	151.5
S_{66}	9	0.12	0.01	43.18	1864.51	5.1	5.1
S_{67}	11	1.23	1.50	76.36	5830.85	93.6	93.6
S_{68}	10	1.78	3.16	90.83	8250.09	161.5	161.5
S_{69}	11	2.00	4.00	89.39	7990.57	178.8	178.8
S_{70}	10	3.03	9.15	97.69	9543.34	295.5	295.5
S_{71}	10	3.78	14.25	94.06	8847.28	355.1	355.1
S_{72}	12	3.01	9.07	98.38	9678.62	296.2	296.2
S_{73}	11	2.89	8.35	85.08	7238.61	245.8	245.8
S_{74}	10	0.88	0.77	82.46	6799.65	72.2	72.2
S_{75}	11	3.84	14.76	98.87	9775.28	379.9	379.9
S_{79}	9	1.85	3.42	91.19	8315.62	168.7	168.7
S_{80}	10	0.63	0.39	62.58	3916.26	39.1	39.1
S_{82}	12	2.90	8.41	90.3	8154.09	261.9	261.9
S_{83}	12	1.26	1.59	82.09	6738.77	103.5	103.5
S_{84}	11	1.80	3.25	91.22	8321.09	164.6	164.6
S_{85}	10	2.71	7.37	87.49	7654.50	237.4	237.4
S_{86}	11	1.81	3.28	86.31	7449.42	156.3	156.3
S_{87}	10	1.35	1.83	74.15	5498.22	100.3	100.3
S_{88}	10	2.50	6.25	87.96	7736.96	219.9	219.9

PEARSONS R PRODUCT MOMENT CORRELATION CALCULATION

		GPA		Class Average			
Student	**Grade Level**	**X**	**X^2**	**Y**	**Y^2**	**D * E**	**(XY)**
S_{89}	11	1.41	1.99	86.29	7445.96	121.8	121.8
S_{90}	11	3.23	10.46	97.58	9521.86	315.6	315.6
S_{91}	11	2.62	6.86	89.33	7979.85	234.0	234.0
S_{92}	10	1.88	3.54	68.38	4675.82	128.7	128.7
S_{93}	10	1.38	1.89	84.27	7101.43	115.9	115.9
S_{94}	10	1.38	1.89	75.45	5692.70	103.7	103.7
S_{95}	10	2.67	7.11	85.6	7327.36	228.3	228.3
S_{96}	11	1.17	1.37	91.79	8425.40	107.6	107.6
S_{97}	12	1.98	3.91	81.92	6710.89	162.0	162.0
S_{98}	10	0.35	0.12	77.96	6077.76	27.5	27.5
S_{99}	10	0.50	0.25	68.01	4625.36	34.0	34.0
S_{100}	12	2.59	6.70	81.85	6699.42	211.9	211.9
S_{101}	11	1.28	1.63	79.7	6352.09	101.9	101.9
S_{102}	10	2.13	4.52	93.75	8789.06	199.2	199.2
S_{103}	10	3.43	11.76	95.28	9078.28	326.7	326.7
		196.50	482.77	7,976.56	698,503.12	1,747.36	17,273.57

N	94		
X	196.50	**r =**	56321.54
X^2	482.77		117,323.97
Y	7,976.56		
Y^2	698,503.12		
XY	17,273.57	**r =**	+ 0.48

df = N-2 92