

Does team-based variable pay work?

by

Deborah Barrett Boring

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of
DOCTOR OF PHILOSOPHY

Major: Education (Educational Leadership)

Program of Study Committee:
Joanne Marshall, Major Professor
Tom Alsbury
Jackie Blount
James Scharff
Mack Shelley

Iowa State University
Ames, Iowa
2006

Copyright © Deborah Barrett Boring, 2006. All rights reserved.

UMI Number: 3217255

INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

UMI[®]

UMI Microform 3217255

Copyright 2006 by ProQuest Information and Learning Company.

All rights reserved. This microform edition is protected against unauthorized copying under Title 17, United States Code.

ProQuest Information and Learning Company
300 North Zeeb Road
P.O. Box 1346
Ann Arbor, MI 48106-1346

Graduate College
Iowa State University

This is to certify that the doctoral dissertation of

Deborah Barrett Boring

has met the dissertation requirements of Iowa State University

Signature was redacted for privacy.

Committee Member

Signature was redacted for privacy.

Committee Member

Signature was redacted for privacy.

Committee Member

Signature was redacted for privacy.

Committee Member

Signature was redacted for privacy.

Major Professor

Signature was redacted for privacy.

For the Major Program

This dissertation is dedicated to my family. A special thank you is extended to my husband, Alan, who offered endless support, understanding, and encouragement during my years as a professional student. My thanks are also extended to my children, Chris, Dustin, and Amanda, who were always patient and understanding when their mom was busy. And, finally, thanks to my parents, Homer and Evelyn, who could not be prouder of their daughter.

Contents

LIST OF TABLES	v
ABSTRACT	vi
CHAPTER 1: INTRODUCTION	1
Nature of the Problem	1
Background of the Study	1
Problem Statement	3
Research Questions	3
Significance of the Study	4
Overview of Methodology	9
Delimitations	14
Limitations	16
CHAPTER 2: REVIEW OF THE RELATED LITERATURE	19
SEARCH PROCESS	19
HISTORY OF TEACHER PAY STRUCTURES	20
THREE PHASES OF TEACHER PAY IN THE UNITED STATES	21
Boarding Round System	21
Position-Based System	22
Single-Salary System	23
ALTERNATIVES TO THE SINGLE-SALARY SYSTEM	23
States	26
SCHOOL-BASED PERFORMANCE AWARDS (SBPA)	28
Successful SBPA Programs	28
Kentucky and Charlotte-Mecklenburg SBPA Programs	30
ANALYSIS OF FINDINGS FROM EMPIRICAL STUDIES	31
Individual Teacher Performance Related Pay	31
SBPA	32
North Carolina.	32
Kentucky.	33
South Carolina.	34
Dallas, Texas.	35
Georgia.	36
Goal Rigor and SBPA Plans	36
General Conclusions from the Research on Teacher Performance-Related Pay	37
IOWA	38
Grading the States	38
Accountability.	38
Personnel decisions.	39
Quality control.	39
Alternative licensure.	39
TEACHER QUALITY IN IOWA	40
CHADWICK'S STUDIES	41

Benefits of TBVP	43
Goals.	44
Concerns About TBVP	45
Student Achievement	45
Teacher Motivation	45
Conclusions	46
Recommendations.	47
BINDER'S STUDY	47
The Impact of Teacher Teams on Student Achievement	48
Recommendations	48
SUMMARY	48
CHAPTER 3: METHODOLOGY	50
The General Perspective	50
The Research Context	50
TBVP Selection Process	53
TBVP Application Criteria	54
Assessment system.	54
Goal rigor.	55
Local board approval.	57
Demonstration of readiness to participate in TBVP.	58
Basis for Comparison Groups	58
Sampling Process	59
Participating schools.	59
Grade level configuration.	59
Common assessment instrument.	60
Time of Year tested.	60
School Selection	61
Data Collection and Analysis	63
TBVP Schools	64
Instruments Used to Collect Data	65
Data Analysis Procedures	70
Variables for sub- question 1.	70
Data analysis for sub-question 1.	71
Variables for sub- question 2.	72
Data analysis for sub- question 2.	72
The Researcher's Role	74
Summary	75
CHAPTER 4: RESULTS	76
SUB-QUESTION 1	76
SUB-QUESTION 2	78
CHAPTER 5: SUMMARY OF FINDINGS	83
PROBLEM	83
SUMMARY OF THE RESULTS	84

Goal Rigor and Student Achievement Gains	84
TBVP/Non-TBVP Participation and Gains in Student Achievement	84
DISCUSSION	85
Teacher Pay in SBPA Programs as Motivator of Student Achievement	85
Goals	87
Goal setting.	90
Goal rigor.	91
Intrinsic Versus Extrinsic Motivation	92
Generalizability of the Study	93
Explanation of Unanticipated Findings	94
Professional development emphasis.	95
Limitations	97
Participating schools.	97
Individual student data.	98
Cohort data.	98
Time of year tested.	99
Comparisons.	99
Implications for Future Research	100
The impact of imposed goals.	103
Support for team building.	104
Results without an SBPA program.	105
Remaining questions.	105
REFERENCES	109
APPENDICES	119
APPENDIX A: CHECKLIST FOR TBVP (2001-2002)	119
APPENDIX B: CHECKLIST FOR TBVP (2003-2004)	122
APPENDIX C: SCHOOL DISTRICT PERMISSION	125
APPENDIX D: PERMISSION FOR IOWA TESTING	126
APPENDIX E: INFORMED CONSENT DOCUMENT	128
APPENDIX F: DEFINITION OF TERMS	131
APPENDIX G: PARTICIPANT SCHOOL DESCRIPTIONS	132
APPENDIX H: IRB MATERIALS	146

List of Tables

Table 1: Elementary School Applicants (All).....	6
Table 2: Middle School Applicants (All).....	7
Table 3: High School Applicants (All).....	7
Table 4: 7-12 Applicants (All).....	7
Table 5: K-12 Applicants (All).....	7
Table 6: TBVP/Non-TBVP Comparison Groups.....	12
Table 7: Comparison of the Percentage of Low SES with Enrollments	16
Table 8: TBVP Participants for 2001-2002 and 2003-2004.....	44
Table 9: Baseline Years for Data.....	52
Table 10: Rubric Scores for TBVP Applicants.....	65
Table 11: Description of Participating Schools.....	67
Table 12: ITBS Summary of Reliability Coefficients (Levels 8-14).....	68
Table 13: ITED Summary of Reliability Coefficients (Levels 15-18).....	68
Table 14: Descriptive Statistics for ITBS/ITED Reading NCEs and Goal Rigor.....	77
Table 15: Descriptive Statistics for ITBS/ITED Mathematics NCEs and Goal Rigor...	77
Table 16: Test for Relationship Between Goal Rigor and Reading Gain.....	78
Table 17: Test for Relationship Between Goal Rigor and Mathematics Gain.....	78
Table 18: Descriptive Statistics for Average ITBS/ITED Reading NCEs.....	79
Table 19: Descriptive Statistics for Average ITBS/ITED Mathematics NCEs.....	80
Table 20: Test for equality of Slopes for Reading.....	80
Table 21: Test for equality of Slopes for Mathematics.....	81
Table 22: Levene's Test of Equality of Error Variances – Reading.....	81
Table 23: Levene's Test of Equality of Error Variances – Mathematics.....	81
Table 24: Test for Treatment Effect on Reading Achievement Gain.....	82
Table 25: Test for Treatment Effect on Mathematics	82

Abstract

In May 2001, the Iowa legislature enacted the Teacher Quality Act (Senate File 476) to improve the quality of teaching and instruction in Iowa. The primary objective of this landmark piece of legislation was to improve student achievement (Iowa General Assembly, 2001). A key piece of Senate File 476 was Team-Based Variable Pay (TBVP), Iowa's version of a School-Based Performance Award (SBPA). This pilot project was intended to reward teams of teachers from individual schools for improved student achievement in their respective schools.

A significant amount of research has been conducted regarding alternative teacher pay structures, including those focused on recognizing and rewarding teachers for increased student achievement. Most of those plans described in the literature have been mandatory programs. Conversely, in Iowa, TBVP has been a voluntary program.

Iowa Testing Program data were compared for students from TBVP schools and Non-TBVP schools (schools that applied to participate in TBVP without selection) to determine any differences in gains in reading and mathematics achievement. This study indicates that there were no significant differences between the gains in achievement between TBVP and Non-TBVP schools.

Goal rigor (as determined by the TBVP application) was examined to determine its relationship to increases in reading and mathematics for TBVP and Non-TBVP schools. The results of this study indicate that goal rigor is positively and significantly related to increases in reading in both TBVP and Non-TBVP schools. Goal rigor was also found to be positively

(and almost significantly) related to increases in mathematics for both comparison groups; however, the correlation was not considered to be significant (.057).

This study informs the literature on the effectiveness of TBVP to increase student achievement, particularly in Iowa schools. Another way in which this study will contribute to the literature is with regard to the impact of goal rigor in increased student achievement. It also contributes to the literature related to alternative teacher pay structures, particularly as it relates to School-Based Performance Awards (SBPA).

Chapter 1: Introduction

Nature of the Problem

School reform has been at the forefront of education for years. The quest for a reform movement that will positively impact student achievement has caused educators, legislators, and the general public to focus on areas such as public school choice, tuition tax credits, vouchers, charter schools, preschool for all 3- and 4-year-olds, implementation of state standards, and reduced class size (Drew, 1984; Ferraiolo, Hess, Maranto, & Millman, 2004; Odden, 1994).

At the heart of educational accountability has been reform related to teacher pay (Leithwood & Earl, 2000). Numerous alternative teacher pay structures have been attempted in this country throughout history. These efforts have included such alternative pay structures as merit pay, career ladders, and other monetary incentives. Some have been based upon teacher inputs such as earned college credit and the assumption of additional responsibility; others, however, have been based upon outputs such as improved teacher performance (teacher quality) and increased student achievement. Efforts in this country to implement alternatives to teacher pay based upon these types of outputs have been met with mixed response (Evans, Stewart, Mangin, & Bagley, 2001).

Few would argue about the impact of teacher quality on increased student achievement. What has been a topic of debate is whether paying teachers for increased student achievement actually works. This debate is likely to continue.

Background of the Study

As part of the school reform movement in this country, teacher performance-related pay programs have typically included the provision of cash bonuses to individual teachers in

return for increased student achievement. More recently, however, the emphasis has shifted to reward systems that include teams of teachers, which are called School-Based Performance Awards, abbreviated as SBPA (Reed & Bergemann, 1995). For many, the assumption remains that quality teaching leads to greater student achievement and, thus, should be rewarded. What has not been established, however, is whether rewarding teams of teachers for improved student achievement directly impacts student performance

SBPA programs have emerged as a means to provide financial rewards to teams of teachers or entire school building instructional staff for improved student achievement. Team-Based Variable Pay (TBVP) is an SBPA program that was first introduced to Iowa schools in 2001 as a part of Iowa's educational reform efforts. The impact of this Iowa project on increased student achievement has proven inconclusive (Chadwick, 2002). Chadwick (2002, 2004) recommended further investigation of the impact of such SBPA programs on improved student achievement.

In addition to alternative teacher pay structures, other school reform efforts related to increased student achievement point more specifically to educational practice often associated with some type of change (Boyd, 1992). Assuming school reform is synonymous with change, it is crucial for school staff to be willing to make necessary changes in professional practice if positive school reform results are to be achieved. For Iowa schools, change is what participation in TBVP has been about.

One factor responsible for school change includes collegial relationships (teamwork). These relationships assist school staff in any new learning, which is essential for school improvement. They also help reduce isolation in the face of new learning and provide necessary teacher support (Boyd, 1992).

Problem Statement

Although studies related to alternative teacher pay structures are abundant, the challenge remains in finding teacher pay plans that positively impact student achievement (Drew, 1984; Ferraiolo, Hess, Maranto, & Millman, 2004; Odden, 1994). It is not clear the role, if any, that teacher quality, goal setting, and professional development play in the effort improve student achievement (Odden, Kelley, Heneman, & Milanowski, 2001; Skrla, Garcia, & Nolly, 2004; Strahan, 2003; Whitehurst, 2002).

Specifically, this study was an attempt to determine if Team-Based Variable Pay (TBVP), Iowa's version of SBPA, works. It was an attempt to determine what relationship, if any, exists among student achievement, goal rigor, and TBVP in Iowa.

Research Questions

The main questions this research attempted to answer are *Does Team-Based Variable Pay (TBVP) work?* and *What is the relationship among student achievement, goal rigor, and TBVP in Iowa?* Two sub-questions served to provide answers to the main questions.

Sub-questions included the following:

1. What is the relationship between the level of goal rigor found in the TBVP applications (regardless of whether a school was or was not selected to participate in TBVP) and student gains in achievement?
 - Hypothesis – There will be no significant relationship between goal rigor and student achievement gains.
2. How do gains in student achievement on the Iowa Tests (mathematics and reading comprehension) compare between schools that applied and were selected to

participate in TBVP and schools that applied but were not selected to participate in TBVP?

- Hypothesis – There will be no significant differences in the achievement gains of students in Iowa schools that applied and were selected to participate in TBVP (TBVP comparison group) as compared to the gains of students in schools that applied but were not selected to participate in TBVP (Non-TBVP comparison group).

Sub-question 1 was addressed using a correlational design. Sub-question 2 was addressed using a quasi-experimental design.

Significance of the Study

In 2001, the Iowa Legislature (Senate File 476) adopted a pilot program for Team-Based Variable Pay (TBVP), Iowa's version of SBPA. The purpose of the legislation was to create a statewide program for providing incentives to individual schools for increasing student achievement. The purpose of this voluntary accountability system was to reward staff for their efforts toward improved student achievement. Since its enactment, 50 schools have applied to participate during at least one year, and 23 different schools were selected to participate (see Tables 1-5 for a list of all Iowa schools that applied to participate in TBVP each year it was funded).

Table 1: Elementary School Applicants (All)

Elementary School Applicants	2001-2002		2003-2004		2004-2005	
	Applied	Selected	Applied	Selected	Applied	Selected
EA	X					
EB	X					
EC	X				X	X
ED			X			
EE			X			
EF			X			
EG			X	X	X	X
EH					X	X
EI	X					
EJ	X	X	X	X		
EK	X	X	X	X		
EL					X	X
EM			X			
EN			X			
EO	X	X				
EP	X	X				
EQ	X	X				
ER	X	X				
ES	X					
ET	X					
EU			X			
EV	X	X	X	X		
EW	X	X	X			
EX			X			
EY			X			
EZ			X			
EAA	X	X	X		X	X
EBB	X	X	X			
ECC	X	X	X			
EDD					X	X
Totals	17	11	17	4	6	6

Table 2: Middle School Applicants (All)

Middle School Applicants	2001-2002		2003-2004		2004-2005	
	Applied	Selected	Applied	Selected	Applied	Selected
MA	X					
MB	X					
MC			X	X	X	X
MD	X	X	X	X		
ME			X			
MF	X	X	X	X		
MG	X	X				
MH	X	X				
Totals	6	4	4	3	1	1

Table 3: High School Applicants (All)

High School Applicants	2001-2002		2003-2004		2004-2005	
	Applied	Selected	Applied	Selected	Applied	Selected
HA	X					
HB			X			
HC					X	X
HD	X					
HE			X			
HF			X			
HG	X	X	X	X		
Totals	3	1	4	1	1	1

Table 4: 7-12 Applicants (All)

(7-12) Applicants	2001-2002		2003-2004		2004-2005	
	Applied	Selected	Applied	Selected	Applied	Selected
SA			X			
SB	X					
SC	X					
Totals	2	0	1	0	0	0

Table 5: K-12 Applicants (All)

K-12 Applicants	2001-02		2003-04		2004-05	
	Applied	Selected	Applied	Selected	Applied	Selected
AA	X		X			
AB	X	X	X	X	X	X
Totals	2	1	2	1	1	1

Participating schools were required by the Iowa Department of Education (IDE) (as a part of the TBVP application process) to set goals for student achievement, determine the distribution of awards, and assist in meeting the student achievement goals. Schools selected in the pilot program were required to gather baseline student achievement data using valid and reliable standardized assessments, such as the Iowa Tests of Basic Skills (ITBS), Iowa Tests of Educational Development (ITED), Northwest Education Assessment (NWEA), and Curriculum-Based Measures (CBMs). These assessments were re-administered at the end of the school year to determine growth in student achievement. Each school participating in the program was also required to design a program that included goals for student achievement, current student performance levels, multiple indicators for determining progress, and an arrangement for providing the financial rewards to all certified staff in the building (Chadwick, 2002).

A committee was formed for the purpose of reviewing TBVP applications. The TBVP Selection Committee was comprised of consultants from various areas within the IDE, including the Bureau of Instructional Services and the Teacher Quality Team, led by Diane Chadwick, Administrative Consultant for Teacher Quality. Team members chosen to participate on the selection committee were those with expertise in the area of assessment, statistics, and professional development. The researcher was not a member of the Selection Committee.

Criteria used to determine which schools were selected into Iowa's TBVP Pilot Project included the assignment of points to assessment information, goal development, approval of the local school board, and indication of the school's readiness for participation (Chadwick, 2002). Department of Education personnel utilized checklists to determine

applicants' total points. Schools receiving the highest number of points were chosen for participation.

During the initial year of implementation (2001-2002), 30 schools applied to participate in TBVP. Eighteen schools from 10 districts were approved for participation in the pilot project. Nine of those schools met their goals and were awarded \$100 per student enrolled, for a total of \$237,325.00 (Chadwick, 2002).

The following school year, 2002-2003, TBVP was not funded by the legislature due to budget constraints; however, schools across Iowa were beginning to be impacted by the federal No Child Left Behind (NCLB) Act. As a result of NCLB, schools that had participated in TBVP during the 2001-2002 school year continued and, for the most part, worked toward meeting their goals (D. Chadwick, August 8, 2005). During the 2003-2004 school year, 28 schools applied to participate in TBVP. Twelve schools were repeat applicants and 16 were first time applicants. Eight of these schools were selected (two first time applicants and six repeat applicants). Of the eight schools, five met their goals and received awards of \$100 per student enrolled K-12, a total of \$384,000.00 (Chadwick, 2004).

During the 2004-2005 school year, 10 schools applied to participate in TBVP. All 10 were selected; however, one school decided not to participate. Of the 2004-05 applicants, one had applied during the 2003-04 school year and was not selected, four schools were first time applicants, and four were repeat participants. Of the nine participating schools, two met their TBVP goals and received a total of \$81,400.00. Had all nine schools met their TBVP goals, the monetary awards would have totaled \$295,400.00 (D. Chadwick, April 27, 2005) (see tables 1-5 for all TBVP applicants).

By the end of the 2004-2005 school year, TBVP had awarded more than a half million dollars to participating Iowa schools. During its 2005 session, the Iowa Legislature failed to appropriate funds for the continuation of TBVP during the 2005-2006 school year. This provision was one of the controversial portions of this landmark piece of legislation (Senate File 476). There were concerns from many groups of stakeholders that this type of incentive would promote negative behaviors like teaching to the test or even illegal behaviors like cheating to get gain scores (J. Berger, June 8, 2005).

As the Iowa program is a unique design, proper study of this system of pilots is necessary for continued policy discussions. The Department of Education is compelled to complete a comprehensive program evaluation of the entire Teacher Quality legislation by December of 2007 (J. Berger, June 8, 2005). Studies such as this one will likely help the Department of Education as it attempts to assess the effects, both positive and negative, of the implementation of this type of program.

In 2005, Binder completed a study of the importance of the *teams* in Iowa TBVP project schools. In her study, Binder (2005) examined the existence of *teamness* among schools participating in TBVP through the utilization of interviews and direct observations. Her approach was qualitative in nature, utilizing a case study approach. This research differs from Binder's (2005) work in that the methodology was quantitative in nature, utilizing quantitative analyses to determine the relationship among TBVP, goal rigor, and increased student achievement.

Overview of Methodology

Utilizing a quasi-experimental approach, quantitative measures were used to compare the mathematics and reading achievement data for cohort groups of students from 16 schools

in Iowa: eight schools at the elementary level, four schools at the middle/junior high level, and four schools at the high school level. Seven schools served as the TBVP comparison group and the remaining schools served as the Non-TBVP comparison group (see chapter 3 for more detail). The TBVP comparison groups were defined as those that applied to participate in the Team-Based Variable Pay (TBVP) Pilot Project and were selected. The Non-TBVP comparison groups were defined as those schools that applied to participate in TBVP and were not selected.

This study employed elements of a quasi-experimental design to enable the researcher to examine goal rigor and student achievement data for each group. Achievement data from the Iowa Tests were used to analyze gains in student achievement to determine the impact that participation in TBVP had on schools. Cohort data, as defined by all students that were enrolled in a particular grade level within a school from one year to the next (e.g., students in third grade one year and fourth grade the next year) allowed for analysis of the gains in achievement of virtually the same group of students from one year to the next (see Table 6 for the number of students enrolled at each grade level and the years for which data were obtained). This approach also allowed the researcher to analyze differences in goal rigor, as measured by the TBVP rubric (see Appendix A for rubric).

The TBVP and Non-TBVP comparison groups had one primary commonality: willingness to participate in a project linked to possible monetary awards. The application process indicated schools' willingness to establish student achievement goals, seek School Board approval, and plan for professional development. This willingness to participate in TBVP, as evidenced by the applications, served as the basis for selection of the comparison

Table 6: TBVP/Non-TBVP Comparison Groups

School	Level (E=Elementary, MS=middle School, HS=High School)	Group (TBVP or Non-TBVP)	Year of Application	Years of Study	Time of Year Tested S=Spring, F=Fall, M=Mid-year	Grade Levels for Baseline Data/# of Students Represented in Data	Grade Levels for Post-Test Data/ # of Students Represented in Data
Johnny Carson School	E	TBVP	03-04	1	S	3,4 (02-03) N=128/123	4,5 (03-04) N=137/137
Norman Borlaug School	E	TBVP	01-02	1	F	3,4 (01-02) N=66/72	4,5 (02-03) N=62/67
Bill Cody School	E	TBVP	01-02	1	F	3,4 (01-02) N=69/73	4,5 (02-03) N=66/77
Simon Estes School	E	TBVP	03-04	2	M	3 (02-03) N=86	5 (04-05) N=84
George Gallup School	E	TBVP	01-02	2	M	3,4 (00-01) N=13/13	5,6 (02-03) N=14/18
Ann Landers School	M	TBVP	03-04	2	M	4,5,6 (02-03) N=81/8/95	6,7,8 (04-05) N=89/90/100
Cloris Leachman School	H	TBVP	01-02	1	F	10,11 (01-02) N=316/346	11,12 (02-03) N=328/307
Bill Cody School	E	Non	03-04	1	F	3,4 (03-04) N=65/61	4,5 (04-05) N=70/67
Glenn Miller School	E	Non	01-02	1	S	1,2,3,4,5 (00-01) N=64/87/85/74/85	2,3,4,5,6 (01-02) N=68/86/86/77/85
Harriet Nelson School*	E	Non	01-02	1	F	2,3 (01-02) N=75/89	3,4 (02-03) N=78/96

Table 6: TBVP/Non-TBVP Comparison Groups (continued)

School	Level (E=Elementary, MS=middle School, HS=High School)	Group (TBVP or Non-TBVP)	Year of Application	Years of Study	Time of Year Tested S=Spring, F=Fall, M=Mid-year	Grade Levels for Baseline Data/# of Students Represented in Data	Grade Levels for Post-Test Data/# of Students Represented in Data
Donna Reed School	E	Non	03-04	1	F	2,3,4,5 (03-04) N=24/17/25/20	3,4,5,6 (04-05) N=36/19/42/28
John Wayne School	M	Non	03-04	2	M	6 (02-03) N=45	8 (04-05) N=46
Andy Williams School	M	Non	03-04	2	M	5,6 (02-03) N=10/28	7,8 (04-05) N=27/25
Bess Aldrich School	M	Non	03-04	2	M	6,7,8 (02-03) N=35/44/40	8,9,10 (04-05) N=36/38/38
Susan Glaspell School	H	Non	01-02	1	F	9,10 (01-02) N=36/34	10,11 (02-03) N35/37
Alex Karras School	H	Non	01-02	1	F	10 (01-02) N=45	11 (02-03) N=44
Harry Reasoner School	H	Non	01-02	1	F	10 (01-02) N=68	11 (02-03) N=85

groups, thus allowing some control for selection bias. Where possible, all data were included in the comparisons (from both TBVP schools and Non-TBVP schools). Each school was assigned a pseudonym to protect its identity and the identity of staff and students associated

with the school. The names assigned are the names of famous Iowans. Some are entertainers; others have made some significant contribution to society.

The main difference between the TBVP and Non-TBVP comparison groups was the possibility of actually attaining a monetary award. TBVP schools were selected to participate in TBVP due to meeting the expectations outlined by the TBVP Rubric. Because of the possibility of earning a monetary award, it is likely that staff from TBVP schools changed practices during the participation year(s). Non-TBVP schools were not selected to participate in TBVP. Because staff from those schools had no chance of earning a monetary award, their classroom practices were less likely to have changed during the application year(s).

For the purposes of this study, it was determined that if the TBVP comparison groups' achievement gains were statistically more significant than those of the Non-TBVP comparison groups, it might indicate that TBVP is related to student achievement. If the differences in gains were not statistically significant, TBVP may not be related to student achievement. Additionally, if the rigor of the goals developed by applicant schools was greater in schools participating in TBVP and greater gains in student achievement were noted among the TBVP schools, it may mean that a relationship exists among goal rigor, increased student achievement, and TBVP.

This study included approximately 2,825 students from 16 schools across Iowa. No direct contact was made with students; however, building/grade level student achievement data were obtained directly from the Iowa Testing Program after acquiring the written permission from the respective superintendents of the participating schools (see Appendices C, D, and E).

Delimitations

This study was conducted using student achievement data representing only the achievement of students from Iowa, no other states. Only those data from Iowa schools that applied to participate in TBVP were used. Additionally, included in this study were data representing applicant schools that utilized ITBS/ITED as a means to measure student achievement. Of these schools, only those for which the time of year the Iowa Tests were administered remained constant from the school year 2001-2002 to 2004-2005 were utilized (e.g., schools that tested during the fall of one year and again during the fall of the next year).

Though much research points to demographic characteristics such as poverty as the most powerful predictor of school success for students, Socioeconomic Status (SES) is an unsophisticated variable that may conceal a host of family interactions, including norms, values, and beliefs about school, that have powerful educational consequences and vary widely across families. Often, these types of family interactions have little relation to family income (Leithwood & Jantzi, 2000). For the purposes of this study, SES was not used as a common variable.

The latest research on the impact of school size in conjunction with high levels of poverty indicates that smaller school sizes tend to reduce the harmful effects of poverty on student achievement. Several studies have suggested that students from less affluent communities perform better when they attend smaller schools. Studies of small schools in four states indicated that the impact of poverty on student achievement is much greater in large schools than in small schools (The Rural School and Community Trust, 2002).

The selection criteria for schools participating in this study were varied; however, poverty levels were not included. The majority of schools participating in this study that have

large percentages of Low SES students also have small enrollments. Those schools participating in this study with large enrollments also have low percentages of Low SES students (See Table 7). In a study completed by Ballou, Sanders, and Wright (as cited in Bracey, 2004), a comparison of the results of student achievement gains using a value-added approach, controlling for low SES and not controlling for low SES, yields little difference in terms of increased student achievement. Research suggests that a quality education may be a stronger predictor of student academic success than merely socioeconomic status alone (Shokraii, 1997). Therefore, gain scores were utilized in the comparison of the TBVP and Non-TBVP groups.

Table 7: Comparison of the Percentage of Low SES with Enrollments

TBVP Schools	Non-TBVP Schools	Percentage of Students Identified as Low SES	Building Enrollment/ Grade Configuration during 2004-05
Johnny Carson		29.6	301 (4-5)
Norman Borlaug		70.5	331 (K-5)
Bill Cody		14.0	435 (K-5)
Simon Estes		14.1	458 (K-5)
George Gallup		27.5	92 (K-6)
Ann Landers		36.1	380 (5-8)
Cloris Leachman		5.9	998 (10-12)
	Bill Cody	14.0	435 (K-5)
	Glenn Miller	30.2	430 (K-5)
	Harriet Nelson*	24.4/30.3	147/119 (K-3/4-5)
	Donna Reed	40.4	203 (K-6)
	John Wayne	32.7	104 (7-8)
	Andy Williams	49.2	118 (K-8)
	Bess Aldrich	13.6	235 (7-12)
	Susan Glaspell	14.3	224 (7-12)
	Alex Karras	21.3	287 (7-12)
	Harry Reasoner	32.3	381 (7-12)

*Two different schools in the same district

Limitations

As with any research project, certain biases and assumptions exist; however, these were controlled for to the fullest extent possible. TBVP may have a positive impact on increased student achievement due to the presence of teamwork and goal setting. It is possible that any significant differences that were found between those schools that participated in TBVP and those that applied but were not selected would be less apparent over time if teamwork and goal setting are no longer present after TBVP is no longer funded. This potential bias was controlled for through the careful analysis of quantitative trend data by cohort groups over a one or two year period.

Other limitations of this study included the absence of pure experimental/control groups (random assignment of schools). Matching TBVP schools with other Iowa schools that have never applied to participate in TBVP based solely on enrollment and Low SES may not be an optimal comparison. No two schools in Iowa with similar enrollments and percentage of students identified as Low SES are truly similar in many other ways. In this study, the intent to participate in TBVP was the common denominator.

In addition to other limitations, the absence of pure cohort groups was limiting to this study. Utilizing cohort data (the exact same students across grade levels, from year to year) was virtually impossible due to the lack of access to these data on an individual student basis. Until very recently, Iowa has not had a student management system that assigns identification numbers to each individual student in Iowa, thus the ability to track individual or pure cohort group data has been limited. For the purpose of this study, an assumption was made that cohort data from one school year to the next included some students who were not enrolled in that school during the previous school year and also failed to include student data

for students enrolled in previous years but not in succeeding years. Thus, the use of pure cohort groups was not possible.

TBVP was first implemented during the 2001-2002 school year, but was not funded during the 2002-2003 school year. The pilot project resumed during the 2003-2004 school year, continuing through the 2004-2005 school year. It was not funded the following year. Consequently, between the 2001-2002 and 2005-2006 school years, TBVP was funded only three years. Thus, no longitudinal data are available to inform the impact of TBVP on increased student achievement on a long-term basis.

Another possible limitation of this study included the researcher's position at the DE. As a School Improvement Consultant that works directly with superintendents and building administrators across the state, access to information was more readily available. However, only information considered public was utilized, with the exception of information obtained directly from Iowa Testing Service. This type of information was utilized through the procedures established by the Internal Review Board (IRB). Permission was granted on August 26, 2005 by the IRB to contact superintendents of participating schools to obtain ITBS/ITED data directly from the Iowa Testing Program. These data were accessed only after informed consent had been obtained.

Ethics must be considered a crucial part of any study. In this study, the types of data included (standard scores and percentile ranks) for particular grade levels and particular school years were helpful in maintaining an ethical approach because it would be difficult to manipulate or misrepresent them. Any information that did not support the researcher's assumptions and biases was still included in the findings.

The question raised by this study (Does team-based variable pay work?) has sub questions that help to define it. These sub questions point to increased student achievement, goal rigor, and TBVP participation. Questions with regard to student achievement gains were answered by the Iowa Testing data. Questions with regard to goal rigor were answered through the TBVP application scoring process.

The findings of this study may be generalizable to other states and school districts in terms of the impact that teacher performance-based pay has on increased student achievement. Similar studies could be conducted to determine the gains in student achievement present in other states/school districts participating in SBPA programs. Data related to goal rigor may also be generalizable by determining the rigor of goals included in those SBPA programs and correlating them with those gains.

Chapter 2: Review of the Related Literature

Search Process

To review the literature, the researcher used the following methods. TBVP was identified as the topic of interest after the researcher completed a Capstone Project outlining the various approaches to performance-related pay in this country. The researcher reviewed literature on the history of performance-related pay, individual and school-based performance pay plans in general, and TBVP in Iowa in particular.

Key search terms for these concepts were identified utilizing *Educational Resources Information Center* (ERIC) and *Dissertation Abstracts International*. Peer-reviewed journals, books and dissertations were located using EBSCO. An outline was created based upon that information.

Relevant literature from 1975 to 2005 (primarily peer-reviewed journal articles) was included in this chapter. Allan Odden, Professor of Education and Director of the Consortium for Policy Research in Education (CPRE), and Carolyn Kelley, Assistant Professor of Education at the University of Wisconsin-Madison, have been major contributors to the research on performance-related teacher pay. Therefore, numerous references were made to their research in this study.

An abundance of information is available on performance-related pay and school-based performance award programs, but very little on TBVP in Iowa, except for the research completed by Diane Chadwick at the Iowa Department of Education and Sarah Binder, Superintendent of Schools for Stanton Community School District in Iowa. Chadwick's (2002, 2004) research focused on a review of the issues surrounding TBVP in Iowa, in terms of both detractors and enablers. Binder's (2005) study focused on the impact of teamwork on

TBVP in Iowa. No studies have been completed to determine the success of TBVP in Iowa in terms of increased student achievement (as measured by a common assessment instrument) and goal rigor. Thus, this study broke new ground in considering the relationship among increased student achievement, goal rigor, and TBVP. Research questions for this study can be found on pages 11 and 12, and a list of definitions can be found in Appendix F.

Because Chadwick (2002, 2004) and Binder (2005) were the primary researchers in the area of TBVP in Iowa, their work served as a framework for much of the review of the literature. Their findings were outlined in terms of concerns and strengths of the TBVP Pilot Project, as well as findings related to the impact of teacher teams in three TBVP schools. Using their findings as a framework allowed the researcher to examine any inconsistencies, limitations, and recommendations resulting from their studies.

History of Teacher Pay Structures

Performance-related pay is not a new concept (Nelson, 2001). Centuries ago, teacher pay structures differed greatly from the single-salary model (Wilms & Chapleau, 1999). Great Britain's education ministry, led by Education Minister Robert Lowe, inaugurated the most comprehensive and longest-lasting teacher performance pay model in modern history during the mid-nineteenth century (Nelson, 2001). At that time, teachers' salaries were based upon the performance of their students on measures of reading, mathematics, and writing. That scheme was abandoned in the late 1890s, due in part to teachers' focusing on only the more *capable* students to achieve the greatest gains (Hood, Scott, James, Jones, & Travers, 1999).

In his proposal to the British House of Commons, Lowe indicated this approach to teacher pay would be either efficient or cheap (Nelson, 2001). This approach to teacher

compensation was an attempt to restrict the learning of the common classes by ensuring that students from the common classes learned strictly basic skills (Nelson, 2001; Wilms & Chapleau, 1999). Teacher salaries based upon student results governed public education in Great Britain for about 30 years (Nelson, 2001; Wilms & Chapleau, 1999).

Three Phases of Teacher Pay in the United States

Teacher pay in the United States has been characterized by gradual structural change. Three major changes have occurred in this country with regard to teacher pay (Protsik, 1999). The first phase was the *Boarding Round* system. The second phase, the *Position-Based System*, included a teacher pay schedule based upon teaching position. The third phase of teacher pay in the U. S., the *Single-Salary System*, is the current phase, one in which years of experience and continued study in the form of additional degrees or units provide the basis for teacher pay (Odden, 2000).

Boarding Round System

During the 1800s, more than three fourths of the American population lived in rural areas of the country (Odden & Kelley, 2002; Protsik, 1999). At that time, public schools catered to the needs of the agricultural community, including basic skills. Teachers were not required to possess professional training. Instead, the teaching profession was focused on teachers' moral character and middle-class appearance (Odden & Kelley, 2002; Protsik, 1999).

For female teachers in the 1800s, the teaching profession was considered to be a transition from parents' homes to husbands' homes. Hired directly by the Board of Trustees, teachers of that day were offered low wages; however, they typically boarded at the homes of their students' parents and moved into another home each week (Odden & Kelley, 2002

Protsik, 1999). Once married, female teachers in most areas of the country were forbidden to teach.

The boarding round system of teacher pay had several advantages, including ensuring the teacher had high moral standards. By providing room and board, families were able to monitor the teacher's activities. Because most teachers at that time lacked formal training, the boarding round system served as the only means of teacher accountability to the community (Odden & Kelley, 2002; Protsik, 1999).

Position-Based System

With the gradual shift in the U. S. economy from agrarian to urban during the late 1800s and early 1900s, teacher pay evolved into the position-based system (Odden & Kelley, 2002; Protsik, 1999). Schools increasingly moved away from the rural, one-room schoolhouse to graded schools where students were placed by age and ability (Protsik, 1999).

During this shift, teachers were required to complete higher levels of education and/or pass a county examination (Odden & Kelley, 2002; Protsik, 1999). Elementary teachers were paid less than secondary teachers, female teachers were paid less than male teachers, and minority teachers were paid less than non-minority teachers. During the position-based system, teacher salaries were based upon years of experience, gender, race, and grade level taught (Odden & Kelley, 2002; Protsik, 1999).

The position-based system was blatantly sexist and racist. According to Protsik (1999), this exploitation of female and minority teachers led to the demise of the position-based system of teacher pay. The population of female teachers during that time became increasingly more assertive, demanding "equal pay for equal work" (Protsik, 1999, p. 8). This demand for higher wages led to the single-salary system of teacher pay (Protsik, 1999).

Single-Salary System

The single-salary schedule, first introduced in Des Moines, Iowa and Denver, Colorado in 1921, was a manifestation of the belief that years of teacher service and continued teacher study had a direct, positive impact on improved classroom instruction (Clees & Nabors, 1992; Kelley, 2000; Odden, 2000; Protsik, 1999). By the 1920s, the majority of teachers' salaries were dictated by the single-salary schedule (Guernsey, 1986). By 1950, 97 percent of the schools in this country had adopted this system.

Though this type of teacher pay system has existed in this country for more than 50 years, it appears to be under constant attack (Goorian, 2000; Odden, 2000). Many believe that the single-salary system was appropriate during the first half of the twentieth century; however, because this system does not focus on results or provide motivation for teachers to focus on the need for increased knowledge and skills necessary for today's schools, it is not appropriate for today's schools (Odden & Kelley, 2002). Some suggest that changes in today's schools and society have paved the way for another wave of reforms in education, including alternatives to the single-salary system of teacher pay (Protsik, 1999; Odden & Kelley, 2002).

Alternatives to the Single-Salary System

During the early years of formal education, teachers were considered by many to be experts—masters of their craft (Clees & Nabors, 1992). Creativity and enthusiasm occurred naturally. Where creativity was lacking, they contended, passion stepped in.

At some point in the history of formal education, teachers and administrators became obsessed with establishing financial rewards for teachers (Wilms & Chapleau 1999). In doing so, teaching became mechanical and teachers began focusing on repetition and drill.

Additionally, the school curricula narrowed to include only subjects that could be measured easily (Wilms & Chapleau, 1999).

Throughout the 20th century, educational leaders attempted to devise ways to construct plans through which rewarding teachers would lead to improved education. By 1918, almost half of the schools in this country were using some form of performance-related pay on an individual teacher basis (Stevens, Spaulding, Burleson, & Killgore, 1998). This trend continued, fueled by such reports as *Equality of Education Opportunity* (the Coleman Report) and *A Nation at Risk*.

Throughout the early 1900s, teachers received various types of performance-related compensation (Clees & Nabors, 1992). In 1904, a merit pay plan for elementary and secondary teachers was developed in Kansas City, Missouri (Gurnsey, 1986). This plan included the successful completion of yearly teacher exams and was viewed as successful because it encouraged teachers to further their education, specifically including their knowledge of philosophy, history, and educational theory and practice (Guernsey, 1986).

By the 1960s, several school districts gained interest in differentiated staffing, plans that distinguish between roles and responsibilities of teachers to increase teacher autonomy and provide a means for career advancement (Clees & Nabors, 1992). At that time, the concept of master teacher, the highest teacher level, was introduced. In such a plan, the master teacher was expected to have developed a high level of expertise in at least one subject area. Several variables, such as the need for flexible scheduling, insufficient funding, and resistance from teachers at the elementary level, caused an end to this type of plan in most cases (Clees & Nabors, 1992).

During the 1980s, other alternatives to the single-salary schedule began to emerge. States began experimenting with incentive plans, which provided bonus pay to teachers for the conditions under which they taught rather than how well they taught (Clees & Nabors, 1992). Incentive pay plans provided additional pay for teachers based upon teacher attendance, the assumption of positions in critical subject areas, superior teaching performance, and standardized test performance (Guernsey, 1986).

Several attempts have been made to replace or alter the single-salary pay plan for teachers since its inception, including the career ladder and merit pay plans of the 1980s and the knowledge- and skills-based pay systems of the 1990s (Odden, 2000). Each approach has failed to contribute to a common definition of a superior teacher. Defining the superior teacher has remained a difficult and controversial task (Clees & Nabors, 1992).

In 1983, Tennessee's governor proposed the *Better Schools Program*, under which teaching licenses were classified by four teacher levels: *apprentice*, *professional*, *senior*, and *master teacher*. The inception of four teacher levels called for the modification of teacher certification programs. It also had an impact on increased intrinsic teacher motivation resulting from increased responsibility and prestige, while decreasing resentment from colleagues who were paid less for doing the same work (Ellis, 1984).

In the early 1980s, Charlotte-Mecklenburg (North Carolina) Schools instituted the Charlotte-Mecklenburg Schools Career Development Plan, which focused on improved classroom teaching practices and emphasized differential staffing at the local district level (Clees & Nabors, 1992). In contrast to a career ladder plan, the Charlotte-Mecklenburg Schools Career Development Plan operated under the assumption that all beginning teachers could be successful and thus eligible for financial rewards (Hanes & Mitchell, 1985). The

program was implemented first with approximately 300 new teachers who began a six-year process leading to Career I status. One hundred and fifty experienced teachers, chosen through a lottery process, began a fast track leading to Level I status within one to two years (Hanes & Mitchell, 1985).

In 1984, South Carolina instituted three different Teacher Incentive Plans (TIP) developed under the Education Improvement Act (EIA) of 1984: the Campus/Individual Plan, the Bonus Plan, and the Career Ladder Plan. One purpose of these plans was retaining good teachers and compensating them for quality (Clees & Nabors, 1992). A variety of criteria were used to determine whether a teacher was eligible for incentive pay, including student achievement, attendance, a superior teacher evaluation, and professional service. Surveys indicated that South Carolina teachers viewed these plans as more burdensome than incendiary (Clees & Nabors, 1992).

Attempts to remove the single salary-teacher schedule have been largely unsuccessful (Odden, 2000). During the 1980s, a significant number of experiments were conducted with merit pay and career-ladder systems (Goorian, 2000). These plans included financial incentives based upon performance reviews and the assumption of additional responsibilities. Goorian (2000) contended that the subjectivity of administrator-led reviews created resentment among teachers. Such plans were also disruptive to the collegial nature of teachers (Odden, 2000). Very few, if any, of the merit pay plans that were in existence prior to the 1990s have survived (Odden, 2000).

States

In the 1980s, several states began considering performance-related teacher pay plans based upon the efforts of teams of educators, School-Based Performance Awards (SBPA).

SBPA plans typically are either voluntary or required (Chadwick, 2002). Voluntary SBPA programs often include goal-setting processes that are based upon local criteria. Required SBPA programs often include state- or district-determined goals and criteria. Assessment instruments may include formal assessments, informal assessments, state-developed tests, or any combination of these (Chadwick, 2002).

Changes in the structure of teacher pay have been a means by which legislators and educators have sought to positively impact student achievement. One of the more recent approaches to change in teacher pay structures includes performance-related pay. Few studies, however, are available to affirm the success of performance-related teacher pay programs.

Research related to performance-related teacher pay programs is plentiful; however, conclusions regarding the success of such programs are limited. Many of the performance-related pay schemes in U. S. history have been short-lived. Those that have been long lasting have been carried out in small school districts with homogeneous populations. In these settings, bonuses have typically been too small to be motivational (Murnane & Cohen, 1986). Nevertheless, some evidence points to the possibility of influencing teacher motivation and behavior through the use of performance-related pay (Odden, 2000).

Even when coupled with increased teacher motivation, the success of performance-related schemes may be impeded by various other conditions, including overcrowded classrooms and poor resources (Jacobson, 1992). Under such circumstances, performance-related pay may actually be de-motivating (Jacobson, 1992; Marsden & Richardson, 1994). Heneman (1998) and Lortie (1975) concluded that teachers are motivated to a greater degree by helping students learn and by impacting goal attainment than by monetary awards;

however, monetary incentives can impact teacher recruitment, retention, and attendance (Jacobson, 1995).

Whether monetary awards motivate teachers to work harder is not clear (Jacobson, 1992). Several other factors may be related to the success of performance-related pay plans. One success factor includes the establishment of clearly measurable, realistic goals (Kelley, 1999; Kelley, Milanowski, & Heneman, 2002; Murnane & Cohen, 1986). Additionally, the design and implementation of performance-related pay plans are important to the success of such programs (Heneman, Ledford, & Gresham, 2000; Mitchell, Lewin, & Lawler, 1990).

School-Based Performance Awards (SBPA)

SBPA plans have emerged recently as a means to provide financial rewards to teams of teachers or entire school buildings for improved student achievement. In SBPA plans, local school staff develop student achievement goals, make decisions regarding the distribution of pay, and determine goal attainment (Education Commission of the States, 2001).

In some instances, SBPA programs have replaced the individual-level teacher reward systems of the 1980s (Kelley, Heneman, & Milanowski, 2002), having been implemented in more than 15 states within the past 20 years. Many of these programs have been similar; however, subtle differences may be found among the various programs. Some of the programs have provided awards to teams of teachers; others have provided awards to entire schools for individual awards and/or school use (Chadwick, 2002).

Successful SBPA Programs

Several conditions may be related to the success of SBPA programs, including teacher motivation, practice, and collaboration. According to Protsik (1996), these elements

were missing in some of the early SBPA programs. Clear goals, as part of a successful SBPA program, may have a direct link to teacher motivation and increased focus on improved teaching practice (Kelley, 1999). SBPA has been shown to create strong incentives for teachers to change their behaviors. These changes are most likely to occur when any monetary awards are associated with established goals (Heneman & Milanowski, 1999). Additionally, the group nature of improvement goals associated with an SBPA program encourages collaboration and motivation toward goal attainment (Odden & Kelley, 2002). Teacher collaboration may even strengthen teachers' skills, and perhaps the overall performance of the educational system over time (Kelley, 1999).

Other conditions such as the design and implementation of SBPA programs may also contribute to their success (Burgess, Croxson, Greg, & Propper, 2001; Heneman, Ledford, & Gresham, 2000; Mitchell, Lewin, & Lawler, 1990) SBPA designs need to include professional development targeted toward goal attainment in order to be successful. Additionally, administrative support and feedback on student assessment data are essential to the success of an SBPA program and may be even more important than the monetary awards (Kelley et al., 2000).

Some negative outcomes of participation in SBPA have been noted. Some researchers have determined that teachers may experience a loss of pride, fear of public criticism, and the threat of intervention associated with participation in SBPA programs. These negative outcomes, though, can be minimized through emphasis on the development of realistic goals, maximization of teacher beliefs that positive outcomes will result from the achievement of goals, and minimization of teacher stress (Kelley et al., 2000).

Kelley (1999) determined that SBPA programs are too new to determine their long-term potential to positively impact student achievement. Preliminary studies indicate they may have a positive impact on increased student achievement; however, little research has been conducted regarding the long-term impact. SBPA programs have been shown to increase teacher motivation (Kelley, 1999; Kelley, Heneman, & Milanowski, 2002; Kelley, Odden, Milanowski, & Heneman, 2000; Odden, 2000). Within these programs, a variety of factors may contribute to teacher motivation, including clear goals, valued outcomes, and alignment of resources (Kelley, 1999).

Disadvantages to SBPA plans include the possibility that teachers will place too narrow a focus on the assessment instruments used to measure student performance. Additional concerns regarding how awards are delivered have been voiced. Since all staff in a SBPA program typically share any bonuses earned, concerns have been raised regarding those staff that do not contribute to the school's efforts to reach its student achievement goals. Furthermore, increased staff stress has been associated with pay incentives based upon increased student achievement (Clotfelter & Ladd, 1996).

Kentucky and Charlotte-Mecklenburg SBPA Programs

Numerous studies have been conducted of both the Kentucky SBPA program, created in 1990 as part of a court-ordered revamping of the state's educational system, and the Charlotte-Mecklenburg SBPA program, created in the early 1990s. Both SBPA programs included rewards for schools that were successful in increasing student achievement. Aside from the promise of monetary awards, other positive outcomes were noted by teachers who participated in these programs, including personal satisfaction when students improved,

opportunities to collaborate with other teachers, and increased opportunities to participate in personal growth through professional development (Kelley, 2000).

A closer examination of the Kentucky and Charlotte-Mecklenburg SBPA programs indicates strong potential for teacher change (Heneman & Milanowski, 1999). Potential for sustained student improvement, however, was not as readily evident. Poggio's (2000) study of the Kentucky plan demonstrated overall gains in student achievement when schools were compared to schools in other states during the same period of time. Smith and Mickelson's (2000) examination of the Charlotte-Mecklenburg program, however, indicated similar gains in student achievement in schools participating in the early years of the program compared to schools within the state not participating in the program.

Analysis of Findings From Empirical Studies

Empirical studies related to the success of performance-related pay, either individual or SBPA plans, are barely existent. From available studies, few conclusions can be made regarding the success of performance-related pay to increase student achievement.

Furthermore, several of the findings are inconsistent.

Individual Teacher Performance Related Pay

Most of the performance-related pay programs introduced in the 1980s were based upon individual teachers. Most of these were short-lived, due in part to numerous flaws regarding the way in which they were implemented (Burgess et al., 2001). In many instances individual teacher performance related pay schemes lacked credibility due to inadequate funding and were poorly implemented in that they failed to outline clear objectives (Moore-Johnson, 1984; Odden & Kelley, 2002). Additionally, studies of South Carolina's plan, implemented between 1986 and 1991, indicated that many teachers perceived the evaluation

process as biased in terms of administrator judgment (Clees & Nabors, 1992). Furthermore, individual schemes were criticized for promoting competition between teachers rather than collaboration.

SBPA

Researchers have determined that empirical studies of the impact of SBPA on student achievement are limited. The unavailability of such studies may be related to the fact that SBPA is often merely one facet of a total movement toward improved student achievement. Despite this limitation, some states and school districts have been able to establish gains on measures of achievement as a result of SBPA programs; however, it is unclear the improvement was related to SBPA (Chadwick, 2002). The following pages describe the SBPA programs that have been implemented in a variety of states.

North Carolina.

During the past decade, North Carolina students in grades four and eight have demonstrated considerable growth in mathematics on the National Assessment of Education Progress (NAEP). In 1992, only half of the state's fourth graders were considered to be at or above the *basic* level, as measured by the NAEP. Eight years later, however, more than three-fourths of the state's students at grade four had achieved the basic level or higher in mathematics as measured by the same instrument. Similarly, students achieving at the *proficient* level or above increased from 13 percent to 28 percent at grade 4 and from 9 percent to 30 percent at grade 8 in mathematics over the same time span (Grissmer & Flanagan, 1998; Nation's Report Card, 2000; Triplett, 1997).

It would be difficult to attribute these gains to the state's SBPA program. During the same time span, a variety of reform strategies were employed in the state, including a

redesign of the state's mathematics standards. Additionally, new requirements for high school graduation were implemented, including Algebra I. Furthermore, North Carolina took steps to strengthen its teacher preparation programs (Chadwick, 2002).

Kentucky.

Kentucky, another state with a history of SBPA participation, reported large gains in scores on its assessment system, Kentucky Instructional Results Information System (KIRIS). Kentucky students also demonstrated growth on the NAEP during the last decade, although not as marked as North Carolina's students (Nation's Report Card, 2000). The state's fourth grade students increased from 51 percent to 60 percent at or above the basic level between 1992 and 2000 in mathematics. At grade 8, the percentage of students scoring at the basic level or above increased from 43 to 63 percent in mathematics. In reading, similar results were observed (Nation's Report Card, 2000).

Even though significant gains were noted on the NAEP, they were not as extreme as those noted on the KIRIS (Hambleton, Jaeger, Koretz, Linn, Millman, & Phillips, 1995; Koretz & Barron, 1998). During their study, however, Koretz and Barron (1998) noted that the KIRIS scores were considerably inflated and the results were not as reliable as NAEP in determining academic growth. They further reported that Kentucky's growth on the NAEP might have simply been part of a broad national trend as their increases were similar to the national average at that time (Koretz & Barron, 1998; Poggio, 2000). As in the case of North Carolina, during this time span SBPA was not the only reform effort being implemented in Kentucky. State curriculum standards were also adjusted to align with the state's assessment system (Koretz & Barron, 1998).

Other possibilities were outlined as being responsible for the inflation of Kentucky's KIRIS scores. According to Koretz and Barron (1998), evidence exists which suggest possible inappropriate use of reused test items by Kentucky teachers. Additionally, since 1993 more than 60 schools in the state have been scrutinized after claims of teacher/administrator cheating (Becker, 1998). It is unclear how many cases were confirmed.

South Carolina.

Clotfelter and Ladd's (1996) studies of South Carolina's School Incentive Program revealed that it was introduced to schools as part of a comprehensive package of school reform initiatives, making isolation of the effects of the incentive program on student outcomes in that state very difficult. Similarly, Cooper and Cohn (1997) completed a comprehensive study of student achievement using data from 541 classrooms in South Carolina. They found that two different incentive plans had been implemented in South Carolina (PLAN1 and PLAN2). PLAN1 was an individual bonus model that included attendance, a performance evaluation, and completion of self-improvement goals. PLAN2 was an SBPA design. In addition to student achievement, other variables were considered as part of that plan, including family background and demographic variables of the students, teacher variables, and school resources. Cooper and Cohn (1997) determined that the only consistently significant variables found to be associated with any achievement gains were the two teacher incentive plans and the high percentage of students qualifying for free and/or reduced priced means (Low SES). Consequently, the only conclusion derived from this study was that South Carolina's educational leaders should consider improving socioeconomic conditions and reallocating resources in a more efficient manner in order to maximize student achievement (Cooper & Cohn, 1997).

Because of its voluntary nature, Boozer (as cited in Burgess et al, 2001) described South Carolina's PLAN1 as difficult to evaluate. Only about 16 percent of South Carolina's teachers applied to participate in PLAN1, and 80 percent of those teachers received a monetary award (Burgess et al., 2001; Cooper & Cohn, 1997). It is not feasible to judge the success of this pay scheme based upon those data because of the possibility that only those teachers most likely to earn an award applied, confounding both the award effect and selection effect (Cooper & Cohn, 1997).

Dallas, Texas.

Clotfelter and Ladd's (1996) study compared student achievement data from Dallas on the Texas Assessment of Academic Skills (TAAS) with student achievement data from five other large Texas cities including Austin, El Paso, Fort Worth, San Antonio, and Houston for the school years 1990-91 to 1993-94. Their study focused on reading and mathematics results for students at seventh grade. It was determined that the Dallas program has had some positive effects on student achievement since 1991, although the proportion of gains that can be attributed to the accountability program was difficult to assess (Clotfelter & Ladd, 1996).

In an extension of the Dallas study, Ladd (1999) compared the student achievement data for students in seventh grade from Dallas with five other Texas school districts between 1990 and 1995. She found that at that grade level, gains in achievement on the TAAS for Hispanic and White students were larger in Dallas than in the other districts; however, that was not the case for African American Students.

Georgia.

In its study of SBPA in Georgia, the Georgia Department of Education (2000) determined that during the 1996-97, 1997-98, and 1998-99 school years, the average ITBS reading and mathematics scores of participating schools were significantly higher than scores of other schools in the state at grades three, five, and eight. Average student scores of schools involved in SBPA in 1993-94, 1994-95, and 1995-96 were also higher than other schools in the state, but the number of schools participating, particularly at the high school level, was too small and unrepresentative to make meaningful comparisons (Georgia Department of Education, 2000).

Goal Rigor and SBPA Plans

Several factors have been noted as part of a successful SBPA program, including teacher expectancy, teacher *buy-in*, perceived fairness of the goals, and the inclusion of measurable goals (Borman, Hewes, Overman, & Brown 2002; Kelley, Odden, Milanowski, & Heneman, 2000). Any goals associated with SBPA plans must be clear, rigorous, and commonly defined. Equally important to such goals is the development of unity in purpose and empowerment of staff in the decision-making process, coupled with accountability for meeting those goals (Silver, 2004). Student achievement also must be measured against these goals at frequent intervals (CCSSO, 2005).

Another requirement for the success of an SBPA program is teacher commitment. Teacher commitment can be described as principled involvement, perhaps even a psychological bond or attachment to the school's goals and values. Lack of teacher commitment has been shown to negatively impact student achievement (Firestone & Pinnell, 1993).

One disadvantage of early SBPA programs includes the fact that teacher buy-in and motivation were not fully accomplished (Kelly et al., 2000). More recent SBPA programs have been shown to increase teacher attention to focus on both teaching practice and goals (Kelley, 1999).

General Conclusions from the Research on Teacher Performance-Related Pay

Little evidence exists by which to judge the effectiveness of performance-related pay to increase student achievement (Burgess et al., 2001). It has been difficult to determine the success of performance-related pay schemes because they have been short-lived and have been fraught with implementation difficulties (Burgess et al., 2001; Murnane & Cohen, 1986). When long-lasting teacher performance-related pay schemes have been available, they have typically involved small school districts with relatively homogeneous populations (Murnane & Cohen, 1986). Additionally, Murnane and Cohen (1986) noted, any bonuses associated with such schemes have been too small to impact teacher motivation.

Jacobson (1992, 1995) concluded that though monetary incentives have been shown to positively relate to teacher recruitment, retention, and attendance, the relationship between teacher efforts and student achievement is not as straightforward. Other conditions, he concluded, such as overcrowded classrooms and limited resources may prevent teachers from achieving the desired results. In such cases, performance-related pay may actually serve to de-motivate teachers (Jacobson, 1992; Marsden & Richardson, 1994).

Other research indicates that many teachers possess strong levels of intrinsic motivation. Even so, they conclude, the same teachers are still strongly influenced by extrinsic motivations, generally in the form of monetary recognition (Kreps, 1997).

Consequently, more studies are needed to assess the impact of SBPA programs on sustained increases in student achievement.

Iowa

Grading the States

Prior to the enactment of the Teacher Quality Act, several publications noted a possible lack of attention to teacher quality in Iowa (White, 2002). In 1999, the Fordham Foundation published *The Quest For Better Teachers: Grading the States*. In that publication, a variety of criteria were used to evaluate states' efforts to improve the quality of its teachers. As a part of that study, states were graded in four categories, including teacher/principal accountability, schools' ability to make decisions related to personnel, control over subject area knowledge for teachers, and alternative licensing procedures for professionals educated outside the field of education. Twenty-nine indicators, each linked to a specific school policy, were included in that evaluation procedure (Finn, Kanstoroom, & Petrilli, 1999). Based upon those indicators, Iowa received a final grad of "F."

Accountability.

According to Finn et al. (1999), to be effective, states should adopt policies related to systems at the student, classroom, and building level based upon accountability. These local accountability systems should begin with a comprehensive accountability system at the state level. Schools should utilize marketing strategies to promote the idea of school-level accountability. Additionally, building level administrators should be held accountable for the performance of the students in their schools and should have some means by which to hold teachers in their buildings accountable for their students' learning. Iowa received a grade of "F" in this category because of a variety of factors including no requirement of a student

achievement-based approach to evaluating teachers, no tenure for principals, and lack of a charter school law (Finn et al., 1999).

Personnel decisions.

Another recommendation made by the Fordham Foundation includes empowering building-level administrators to make decisions regarding personnel. The assignment of such key decisions should be delegated to building-level leaders. Additionally, tenure should not interfere with those decisions. Furthermore, states should work to develop plans for differential pay for teachers. Iowa received a grade of “F” in this area because continuing contracts are issued to teachers after a two-year probationary period and the lack of a variable pay structure for teachers (Finn et al., 1999).

Quality control.

The third area of recommendations for states included systems of quality control. Indicators in this area included background checks for all teaching candidates, as well as the requirement that all teachers have solid background in general education and subject matter knowledge. Iowa received a grade of “A” in this area because of strict guidelines for teacher licensing (Finn et al., 1999).

Alternative licensure.

The fourth area evaluated by the Fordham Foundation included the de-emphasis of teacher education in the traditional sense and the development of means to broaden opportunities for a larger pool of talent to enter the teaching profession. Included in this area of evaluation are indicators related to simplifying the certification process and the appraisal of teacher preparation programs. Additionally, states were encouraged to expand their talent pool by developing a process whereby talented teaching candidates educated outside the field

of education could transition into the teaching profession. Financial incentives for the purpose of attracting talented teachers to the teaching profession were encouraged. Iowa received a grade of “F” in this area because of the absence of any plan for alternative teacher licensing (Finn et al., 1999).

Overall, a grade of D+ was assigned to the 49 participants (the District of Columbia and Oregon declined to participate in the study). Nine states involved in the study received grades of either an “A” or “B.” Eighteen states received an overall grade of “C.” Nine states received “D’s,” and 13 states received a grade of “F.” Iowa was included in the last category (Finn et al., 1999). Reports such as this directly influenced the Iowa Legislature to develop the Teacher Quality Act.

Teacher Quality in Iowa

In May of 2001, the Iowa legislature passed legislation intended to improve the quality of instruction in Iowa (Senate File 476 and House File 672) (Teacher Quality Legislation) (Iowa General Assembly, 2001). At that time, the percentage of students in grade 4 performing at the 41st percentile or above (proficient) in reading comprehension on the ITBS was 76.7 (using biennium scores, 2002-2004) (IDE, 2004). The percentage of students at grade 4 proficient in mathematics for the same time period and on the same measure of assessment was 76.8. Almost twenty-five percent of Iowa’s students in grade 4 were not proficient in either reading or mathematics.

Iowa’s Teacher Quality Legislation was intended to address both student achievement and the quality of instruction in Iowa. Fordham Foundation’s *The Quest For Better Teachers: Grading the States* provided signs of possible inadequacies with regard to education in Iowa, specifically related to teacher professional growth, teacher assessment, teacher preparation,

accountability, and alternate pathways to teaching. The Teacher Quality Legislation was enacted in response to these identified inadequacies.

The Teacher Quality Legislation was a joint effort among Iowa legislators, Iowa's Governor, Department of Education staff, Iowa State Education Association (ISEA), Iowa Association of School Boards (IASB), School Administrators of Iowa (SAI), and Area Education Agencies (AEAs). Also included in its development were key researchers in the area of school reform, including Allan Odden, Charlotte Danielson, Bruce Joyce, and Beverly Showers. This landmark piece of legislation was a bipartisan effort (J. Berger, March 13, 2006).

The Teacher Quality legislation, initially voluntary and phased in over a period of three years, included four components, including an induction program for beginning teachers, teacher growth and development (including teacher evaluation), the Iowa Professional Development Model, and the TBVP Pilot Project (White, 2002). Schools choosing to participate in the TBVP Pilot Project were required to also participate in all the other components of the Teacher Quality legislation (Binder, 2005). The TBVP Pilot Project Consultant, Diane Chadwick, was hired to oversee the TBVP Pilot Project. One of Chadwick's responsibilities included the development of a comprehensive report at the conclusion of each year of TBVP implementation in Iowa.

Chadwick's Studies

In her studies of TBVP, Chadwick (2002, 2004) employed the use of in-depth interviews and direct observation. Schools selected to participate in that process included the 18 schools selected to participate in TBVP during its first year of implementation, 2001-2002, and 10 schools selected to participate during its second year of implementation, 2003-

2004. Eight out of 10 schools participating during the 2003-2004 school year were repeat participants. The schools involved varied in geography, demographics, and student achievement (Chadwick 2002; Chadwick, 2004) (see Table 8).

In addition to interviews and observations, Chadwick (2002, 2004) employed the use of a survey with a 4-point Likert range. The focus of the survey was on teachers' perceptions of the impact of TBVP on school staff, school climate, and student achievement. The survey was distributed to all staff included in the schools' TBVP plans (Chadwick 2002; Chadwick, 2004).

During her studies, Chadwick (2002, 2004) completed at least one observation of each school's professional development sessions. Field notes were compiled based upon those observations. Informal observations were also completed as a part of her study. These observations were performed in classrooms and other areas staff congregated to examine patterns of interaction and building climate.

Chadwick (2002, 2004) collected demographic information and data related to goals and student academic performance. Each participating school's Comprehensive School Improvement Plan (CSIP) and Annual Progress Report (APR) were reviewed. Information was also collected from each school's application to participate in TBVP. As a part of the analyses in Chadwick's (2002, 2004) studies, case studies were completed for each participating school. The use of taped interviews with building administrators and teachers allowed for the identification of major themes and issues entrenched in their responses to questions. Primarily, qualitative techniques were utilized to analyze the data collected.

Table 8: TBVP Participants for 2001-2002 and 2003-2004

School	2001-2002 Participant	2003-2004 Participant	Grade levels	Student Enrollment	Certified Staff FTE	FTE	% Low SES	%Minority	Population of city or town (2000)
School #1	X	X	PK-4	476	39.37	12.1	37%	3%	2,601
School #2	X	X	K-5	411	32.4	12.7	57%	26%	198,682
School #3	X	X	K-5	444	36.6	12.1	7%	8%	8,649
School #4	X		K-5	430	28.5	15.1	13%	5%	26,294
School #5	X		K-5	130	9.28	14.0	68%	10%	6,692
School #6	X		K-5	133	10	13.3	31%	3%	1,039
School #7	X		K-5	112	9.55	11.7	63%	12%	6,692
School #8	X		PK-5	394	30.3	13.0	39%	4%	6,692
School #9	X	X	PK-6	99	10.6	9.3	25%	0%	746
School #10	X		K-6	156	13	12.0	30%	2%	unincorp
School #11	X		K-6	168	13.5	12.4	33%	1%	284
School #12	X	X	6-8	1043	75.3	13.9	3%	7%	8,649
School #13	X		6-8	243	16.48	14.7	27%	3%	2,992
School #14	X	X	5-8	376	24.05	15.6	32%	2%	2,601
School #15	X		6-9	381	30.2	12.6	39%	3%	6,692
School #16	X	X	9-12	1291	75.4	17.1	3%	7%	8,649
School #17	X		9-12	478	36.36	13.1	23%	1%	6,692
School #18	X	X	K-12	295	26	11.3	20%	4%	235
School #19		X	4-5	274	16.35	16.76	26%	5%	10,106
School # 20		X	6-8	382	28.40	13.45	27%	4%	10,106

Quantitative measures were used to analyze student achievement with mixed results; however, ITED and ITBS scores were not available from each participating school.

Benefits of TBVP

The benefits of participating in TBVP, according to Chadwick (2002, 2004) were perceived as mixed. Many participants viewed the experience as extremely positive. Others, however, exuded far less enthusiasm about the experience. This section outlines some of Chadwick's findings.

Goals.

Most interviewees indicated that, through the TBVP experience, staff awareness of goals was heightened. This provided for increased efforts to incorporate goals into everyday classroom practices. Additionally, an increased focus on pre- and post-tests was motivating. Teachers interviewed and surveyed indicated an increased level of pride from increased student achievement scores. Teachers also indicated the intrinsic rewards gained through this experience far outweighed any monetary reward. Administrators indicated that having all staff share in the rewards was a positive experience (Chadwick 2002; Chadwick, 2004).

Many schools posted their goals throughout the school building. This increased focus on goals, according to several interviewees, led to an increased level of awareness and fostered numerous conversations. Chadwick (2002), however, indicated that at least one teacher from one participating school viewed the focus on goals as detrimental to collaboration among teachers in the building.

Ten schools participating in TBVP during 2001-2002 met their goals and received a monetary award (ranging from \$8,400 to \$44,400 building-wide), totaling \$237,325 (Chadwick, 2002). During the 2003-2004 school year, seven schools met their goals and received monetary awards (ranging from \$9,600 to \$112,900 building-wide), totaling \$384,000. One of the schools receiving awards during the 2003-2004 school year was a repeat participant (receiving awards for both participating years). Four of the schools participating for a second year met their goals during the second year of participation, but not the first year. Two of the repeat participants met their goals during the 2001-2002 school year, but not 2003-2004. One repeat participant did not meet its goals either year (Chadwick,

2004). Thus, during the first two years of TBVP implementation, staff from numerous participating schools received monetary awards.

Concerns About TBVP

Several concerns about TBVP emerged during the first year of implementation. Those concerns were related to professional disrespect, the use of assessment data to make judgments, and variables over which schools have no control. Additionally, teachers expressed concern regarding the amount of time required of staff during TBVP participation, increased anxiety and pressure for teachers, and variation among schools regarding the way in which goal attainment was measured (Chadwick, 2002).

Student Achievement

Schools participating in TBVP used ITBS, ITED, or some other curriculum-based measure (CBM) to assess student achievement. Some schools based their goals on average building growth or the percentage of students moving from basic to proficient. The schools with such goals were more likely to meet their goals than schools for which goals were written based upon classroom or grade level improvement. Schools with the latter type did not meet their goals if even one grade level failed to achieve the predicted rate of growth (Chadwick, 2002). During the 2001-2002 school year, 10 out of 18 schools met their goals. Six out of those 10 schools had building level goals. During the 2003-2004 school year, seven of the 10 schools participating met their goals (Chadwick, 2004).

Teacher Motivation

Teacher motivation was assessed during the 2001-2002 and 2003-2004 school years. Survey results indicated that TBVP had led to a greater focus on achievement in participating schools. Teachers also generally agreed that they had received support from their building

administrator. Most teachers indicated that their schools' goals were specific, attainable, and challenging. Additionally, teachers indicated a belief that it was appropriate for support staff to share the bonuses; however, few teachers indicated that their levels of motivation would have been higher if their bonuses were increased (Chadwick 2002; Chadwick, 2004).

Conclusions

Several conclusions can be made from Chadwick's (2002, 2004) studies. Preliminary results indicated the potential for TBVP to increase the levels of focus and teamwork among teachers. Chadwick also suggested that TBVP might positively impact student achievement. Chadwick however, noted certain costs for TBVP participation, including teacher dissatisfaction and increased stress. Certified staff interviewed generally indicated a desire to see the program continue, but were uncertain as to its value (Chadwick, 2002).

Additionally, Chadwick (2002, 2004) concluded some inconsistencies exist with regard to the impact of participating in TBVP on increased student achievement. Those results indicated student achievement in mathematics increased in the TBVP schools during 2003-2004; however, during that same year, student achievement in reading increased but not significantly compared to the matched, non-TBVP schools. The 2002 study of TBVP indicated positive, but negligible gains in both reading and mathematics (Chadwick, 2002).

Chadwick (2002) noted certain methodological limitations after one or two years of TBVP implementation. She described one of these limitations as an "apple and orange" problem (Chadwick, 2002, p. 52). Quantitative meta-analysis techniques were not utilized because of a lack of student level quantitative data. ITBS/ITED data were only available at grades 4, 8, and 11 (not cohort data).

Another problem cited by Chadwick (2002) included lack of control over comparison groups. Studies of only participating schools provided a limited view of the types of changes that might naturally occur in participating schools. What is needed, according to Chadwick (2002), is the use of comparison groups.

Recommendations.

At the close of her studies, Chadwick (2002, 2004) offered several recommendations, one of which includes further study. Further study, Chadwick (2002) concluded, is needed to determine the way in which student achievement in TBVP schools compares to that of schools not participating in TBVP. This study attempted to address some of those limitations by comparing the ITBS/ITED scores from schools participating in TBVP and schools that applied to participate in TBVP but were not selected. Cohort data were also utilized for all grade levels tested during their year(s) of participation in TBVP.

Binder's Study

Binder (2005) completed a study of *The Importance of the Teams in Iowa Team-Based Variable Pay Pilot Project Schools*. The purpose of her study was to examine the importance of *teamness*, as defined by Hall (1995), in the success of schools participating in TBVP. Her study utilized qualitative techniques, including case studies of three elementary teacher teams.

Binder (2005) illustrated a number of findings from her research, including those regarding the functions that teacher teams play in TBVP. One related finding indicated that in TBVP, teacher teams function as communities to support student learning. Additionally, in TBVP, teacher teams function as communities to support teacher learning.

The Impact of Teacher Teams on Student Achievement

In her study, Binder (2005) determined that the three elementary teams included in her study made progress with increased student achievement during their participation in TBVP; however, only one met its TBVP goals. Binder concluded that this might have been, in part, due to the challenging nature of the goals set (self-selected goals). In all three of the elementary schools, the principals and the teachers indicated that they felt strongly the teacher teams had a positive impact on increased student achievement.

Recommendations

Binder (2005) recommended continued study of the types of teachers teams in use, the roles and characteristics of those teams, strategies administrators use to promote the use of teams, the role of teacher teams in increasing student achievement, and the role of teacher teams in promoting professional growth. Binder also recommended similar studies be conducted in schools not participating in TBVP schools. This study focused on the findings of Binder related to teamness reflected in the goal setting process and teacher activities.

Summary

Numerous attempts have been made through the years to implement alternate teacher pay programs. Among those have been individual performance related teacher pay and School-Based Performance Award (SBPA) plans. Studies of various alternative teacher pay plans have revealed promise of impact on student achievement, while others have provided inconclusive results at best. TBVP has been implemented in several schools across Iowa for three years. Questions remain, however, regarding the impact of this pilot project on student achievement. Specifically, it is unclear whether paying teams of teachers for improved student achievement or setting rigorous goals results in significant increases. Thus, this study

attempted to determine if rigorous goals associated with TBVP impact student achievement and if differences exist among gains in student achievement in schools that applied to participate in TBVP and those that applied without selection.

Chapter 3: Methodology

This chapter explains the quantitative methods used in carrying out this study of the relationship between Team-Based Variable Pay (TBVP) and increased student achievement, including an emphasis on data analysis.

The General Perspective

Quantitative methods were used to determine the relationships among TBVP, gains in student achievement, and goal rigor. Because of the unavailability of control groups and the impossibility of random assignment, it was not viable to utilize an experimental approach. Instead, a quasi-experimental approach was used.

Pre-test (baseline) and post-test data were used to determine gains in student achievement, utilizing the Iowa Tests of Basic Skills (ITBS) and Iowa Tests of Educational Development (ITED). Comparative groups were selected based upon application to participate in TBVP. Analysis of co-variance was used to determine if participation in TBVP is related to gains in student achievement. Correlational analyses were conducted to determine if goal rigor is related to gains in achievement and TBVP.

The Research Context

This study involved 16 Iowa schools. Participating schools were selected on the basis of their application to participate in TBVP, the time of year the schools administered the ITBS/ITED, and their grade level configuration: eight schools at the elementary level, four schools at the middle/junior high level, and four schools at the high school level (see Table 9 for time of year tested, year of participation, baseline year of data, and TBVP status).

Table 9: Baseline Years for Data

TBVP Schools	Non-TBVP Schools	Year of Participation		Time of Year Tested	Baseline Year			
		2001-02	2003-04		2000-01	2001-02	2002-03	2003-04
Johnny Carson			X	Spring			X	
Norman Borlaug		X		Fall		X		
Bill Cody		X		Fall		X		
Simon Estes			X	Mid			X	
George Gallup		X		Mid	X			
Ann Landers			X	Mid			X	
Cloris Leachman		X		Fall		X		
	Bill Cody		X	Fall				X
	Glenn Miller	X		Spring	X			
	Harriet Nelson	X		Fall		X		
	Donna Reed		X	Fall				X
	John Wayne		X	Mid			X	
	Andy Williams		X	Mid			X	
	Bess Aldrich		X	Mid			X	
	Susan Glaspell	X		Fall		X		
	Alex Karras	X		Fall		X		
	Harry Reasoner	X		Fall		X		

Quantitative measures were used in this study to compare the mathematics and reading achievement data for cohort groups of students from the 16 participating schools. Seven of the schools served as the TBVP comparison group and the others served as the non-TBVP comparison group. The TBVP comparison group was defined as those schools that applied to participate in the Team-Based Variable Pay (TBVP) Pilot Project and were selected. The non-TBVP comparison group was defined as those schools that applied to participate in TBVP and were not selected.

Time of year tested determined the baseline year for ITBS/ITED data. For example, for schools that tested in the fall, the year of participation in TBVP served as the baseline [pre-test] year; for schools that tested in the spring, the year previous to TBVP participation served as the baseline year; and for schools that tested mid-year, the year previous to TBVP participation served as the baseline, and data were collected for the following two years to ensure that data represented the full treatment year (see Table 9 for time of year tested, year of participation, baseline year of data, and TBVP status).

This study included data from approximately 2,825 students (see Table 6 for the numbers of students enrolled in each participating school). Achievement data from the Iowa Tests were used to analyze gains in student achievement and determine the impact of participation in TBVP. Furthermore, cohort data, defined as all students that were enrolled in a particular grade level within a school from one year to the next (e.g., the same students in third grade one year and fourth grade the next year), allowed for analysis of student achievement gains (see Table 6). This approach also allowed for an analysis of differences in goal rigor, as measured by the rubric that served to determine selection for participation in the pilot project (see Appendices A and B).

In this study, no direct contact was made with students; however, student achievement data (grade level averages) were obtained directly from Iowa Testing Program after acquiring the written permission of the respective superintendents of the participating schools (see Appendices C, D, and E). Student, district, and building identities were protected.

TBVP Selection Process

The selection process for TBVP was based upon a scoring system utilizing a rubric. The rubric yielded scores in six areas, including the school's assessment system, goals and targeted levels of improvement, local board adoption regarding financial rewards, demonstration of readiness, financial award system (2003-04 rubric only), and previous participation (2003-04 rubric only). Schools were able to earn a maximum number of points for their TBVP applications (70 points using the 2001-02 rubric and 72 points using the 2003-04 rubric). During the selection process, the TBVP Selection Committee reviewed all applications using the TBVP Rubric (see Appendices A [2001-2002 rubric] and B [2003-2004 rubric]).

Assessing inter-rater reliability, including the comparison of independent coding, is a common practice in quantitative research. The value of such methods for ensuring rigor and reliability in a qualitative study, however, is not clear, nor has it been formally examined in an empirical qualitative study (Armstrong, Gosling, Weinman, & Martaeu, 1997). The DE's studies of TBVP (2002 and 2004) were primarily qualitative in nature. For these reasons, inter-rater reliability was not utilized during the TBVP application process to determine overall scores of schools' applications to participate in TBVP.

Initially, Chadwick read all TBVP applications and scored them using the TBVP rubric. Afterward, pairs of readers were assigned to read and score each application without knowledge of Chadwick's rating. Scores from each application were then reviewed by the TBVP Committee to ensure consistency in rating among all raters and to institute a consensus process. Scores were adjusted when it was determined that any inconsistencies existed (Chadwick, August 4, 2005).

TBVP Application Criteria

During the TBVP application evaluation process, a number of criteria received consideration. These included the identification of an assessment instrument, goal rigor, local Board approval, and a demonstration of readiness to participate in TBVP.

Assessment system.

One requirement of the TBVP application process included evidence that the school used at least one assessment instrument for reading and mathematics that would yield a pre- and post-score. In the event that no evidence of such was provided, schools were awarded zero points. If only reading or mathematics was assessed using a pre- and post-assessment, or only a portion of the student body was assessed, three points were awarded. A score of five was assigned when schools demonstrated that all students were assessed using pre- and post-assessments for both reading and mathematics.

Another component of the assessment system included evidence that the school used the same assessment instrument for both the pre- and post-assessment (or the equivalent, such as an alternate form or one that is statistically equivalent). When this was not evident, a score of zero was assigned. When evidence was provided to support the use of such equivalent measures, a score of three was assigned (on the 2001-02 rubric, 3 points were assigned for partial evidence and 5 points were assigned for adequate evidence).

Included in the evaluation of schools' assessment systems was indication of when the pre- and post-assessments were to be administered, even if they were only approximates. Absence of such evidence resulted in a score of zero. Presence of such yielded a score of one.

If data from the pre- and post-assessments were available at the time of TBVP application, they were to be included. Failure to submit these data resulted in a score of 0.

Indication that they were forthcoming resulted in a score of one on the 2001-02 rubric.

Inclusion of the data or indication that they were forthcoming yielded a score of one on the 2003-04 rubric. Additionally, on the 2001-02 rubric, the inclusion of the data that were reliable and valid resulted in a score of 3.

Schools applying to participate in TBVP were able to earn an additional 5 points toward the evaluation of their assessment systems by supplying data from a measure in addition to the Iowa Tests for both reading and mathematics. These measures must have been utilized for at least two years prior to application in order for schools to earn a score of five. A score of 0 was assigned in the event that these data did not exist for either reading or mathematics. If schools included these data for only reading or mathematics, or for only a portion of the student body, a score of 3 was assigned. A total of 29 points was possible for the total assessment system on the 2001-02 rubric, and a total of 20 points was possible on the 2003-04 rubric.

It was possible for TBVP applicants to earn as many as 29 points (2001-02) or 22 points (2003-04) for their goals and targeted levels of improvement. Schools were required to develop goals for both reading and mathematics. Exceptional evidence was worth 5 points. With regard to the goals developed, exceptional evidence yielded 5 points, adequate evidence yielded 3 points, and 0 points were awarded for no evidence of goals or indicators of success.

Goal rigor.

One of the most important factors considered in assigning points to schools' goals and progress indicators was rigor (D. Chadwick, June 29, 2005). In order to achieve the maximum points (10), schools must have identified expected numeric gains, based the goals upon improvement, and provided an explanation of how the amount of growth desired was

chosen. In the event that applicants provided exceptional evidence of these requirements, a score of 10 was assigned (e.g., two year's growth) (2003-04 only). When exceptional evidence existed with the absence of rigor (e.g., little more than a year's growth), a score of 5 was assigned. Adequate evidence (e.g., at least a year's growth in student achievement) yielded a score of 3, and no evidence of these factors yielded a score of 0 (e.g., less than a year's growth).

In terms of numeric gains, a goal stating that students will improve in the area of reading comprehension, as opposed to a goal stating that students will increase by an average of 1.3 grade equivalents in the areas of reading comprehension would be assigned a score of 0. Additionally, a goal stating that students will achieve a National Standard Score of at least 80 in the area of vocabulary was not considered to be based upon improvement if students were already performing at that level. Furthermore, schools that provided a narrative explanation of how the goals were determined (based upon some data) were given additional credit.

Another requirement in the TBVP application process included evidence of both a mathematical procedure for determining increases in achievement and evidence of the data for which the goals were established. On the 2001-02 rubric, exceptional evidence of each of these components yielded a score of 5, adequate evidence resulted in a score of 1 and no evidence resulted in 0 points. On the 2003-04 rubric, it was possible for schools to earn only 3 points for the inclusion of each component (adequate evidence). One point was assigned for some evidence and 0 points if the inclusion of these components was not evident. As in the section regarding goal rigor, schools submitting goals that made no mention of gains based on any specific mathematical measurement (e.g., percentage of students proficient,

grade equivalents, National Standard Scores, or National Percentile Ranks) or evidence of data upon which the goals were based, failed to demonstrate meeting these requirements and were assigned a lower score.

When applying to participate in TBVP, schools were required to demonstrate that building goals were aligned with the student achievement goals at the district level. District level goals were a part of the school district's Comprehensive School Improvement Plan (CSIP). A score of one was assigned when some evidence existed, and zero points were assigned when no evidence was provided.

In their applications to participate in TBVP, schools were required to specify the assessment measures that would be used to document goal achievement. When the assessment instrument was not identified, zero points were assigned. Some evidence of what assessment instrument was assigned resulted in one point. For example, any mention of the use of an assessment instrument (without the identification of the specific instrument) would be considered *some evidence*.

On the 2001-02 TBVP application, an additional 5 points were available for the inclusion of information related to the reliability and validity of the assessment instrument(s) used (ranging from some mention of validity and reliability to a detailed chart describing validity and reliability). If adequate evidence was provided, 3 points were assigned. If exceptional evidence was included, 5 points could be earned.

Local board approval.

To participate in TBVP, schools were required to gain approval from their local boards of education. A total of 4 points were allocated when schools obtained board approval for the method in which they would disperse any financial awards to staff members and

included evidence of board approval. Partial evidence of these requirements yielded partial points. Zero points were assigned in the event that this requirement was absent.

Demonstration of readiness to participate in TBVP.

Schools were required to demonstrate their readiness to participate in TBVP. The components of readiness included documentation of plans for professional development, availability of the data at the local building level, and involvement of all building staff in meeting the building goals. A possible 8 points (2001-02 rubric) or 12 points (2003-04 rubric) could be earned for this portion of the TBVP application. Schools could earn as much as 5 points for providing exceptional evidence of professional development plans. A maximum of 1 point (2001-02) or 3 points (2003-04) could be earned for each of the areas involving the use of data and the involvement of all staff. Documentation of the willingness to participate in TBVP yielded 1 point.

When applicants included their plans for dispersing any earned financial awards, they could earn 1 point (2003-04 only). In the event that a school was a repeat participant, an additional 15 points were assigned (2003-04 only). The total number of points possible through the TBVP application process was 70 (2001-02) or 72 (2003-04).

Basis for Comparison Groups

The first criterion used for the selection of participating schools was demonstration of willingness to participate in TBVP (as determined by the TBVP rubric). A number of factors may motivate schools to apply for participation in a program designed to increase student achievement while offering school staff the opportunity to earn financial rewards. The application itself may indicate a certain level of willingness and motivation on the part of school staff. Willingness to participate in TBVP was identified as the common factor among

schools participating in this study because it is a reflection of teacher commitment. Teachers who are committed to teaching may have increased contribution to the academic achievement of students.

Sampling Process

Participating schools.

The research process began with the collection of data regarding all schools that applied to participate in TBVP in Iowa. In all, 50 schools applied to participate in TBVP during at least one year that it was funded, 2001-02, 2003-04, or 2004-05. Fourteen schools applied to participate in TBVP more than one year.

Grade level configuration.

Information was then reviewed regarding grade level configuration to determine the grade level data that could be utilized for those schools that had participated in TBVP and those that had applied but had not been selected. It was determined that of the 30 elementary schools applying to participate in TBVP, 15 had participated at least one year. At the middle school level, eight schools had applied to participate; five had participated at least one year. Of the high schools applying to participate in TBVP, only two had been selected (one of the high schools participated one year, while the other participated two different years). None of the three schools applying as a 7-12 building were selected to participate in TBVP; however, one of the K-12 buildings was selected to participate. Thus, it was determined that the majority of applicant schools were at the elementary level. Additionally, the majority of schools actually participating in TBVP were at the elementary level, providing for the inclusion of fewer schools at the secondary level.

Common assessment instrument.

An analysis of the assessment instruments used by schools to measure goal attainment in the TBVP process indicated little commonality among the 50 applicants. The assessment instrument common to most was the ITBS or ITED. It was determined that ITBS and ITED data would be utilized to compare gains in student achievement among those participating in this study.

Time of Year tested.

The time of year each applicant school administered the ITBS/ITED was reviewed to ensure consistency of test administration for each of the schools between the school years 2001-02 and 2004-05 (fall, mid-year, or spring norms). Analysis of the data revealed several schools had changed their testing times from one year to the next during their participation in TBVP, making it impossible to include their data in this study. For example, some schools that had a history of administering the Iowa Tests during the spring of the school year changed to mid-year or fall testing during their participation in TBVP. In cases such as these, it was impossible to measure the full impact of TBVP on student achievement because the data did not represent a full year of participation.

In several instances, data were not available for some schools at certain grade levels. These data were requested from Iowa Testing Service; however, they were not obtained because they did not exist. This caused the elimination of certain grade levels within participating schools from this study. In such cases, the schools were represented in this study; however, fewer cohort groups were included.

In other cases, data were not available due to the tests being administered at grade levels other than those that would have produced cohort data (e.g., only students at grade four

were test each year, yielding data from different groups of students from one year to the next). These schools were also eliminated from this study. Due to inconsistencies such as changes in testing months, as well as the unavailability of ITBS/ITED data, 33 schools were eliminated from this study.

In one case, the data from two elementary buildings within the same district (the only two elementary buildings within the district) were combined. This was due to one building housing students in grades K-3 and the other housing students in grades 4-6. For the purpose of this study, the data from those two schools were combined because both schools applied to participate in TBVP during the same year (2003-04) and were not accepted. Additionally, because of their grade level configuration, they represented the same groups of students.

School Selection

After a careful analysis of the data for the remaining schools, participating schools were identified, including eight elementary schools, four middle schools, and four high schools (see Table 6). At the elementary level, eight schools were included. Four elementary buildings were included in the Non-TBVP comparison group due to their application to participate during either the 2001-02 or 2003-2004 school years without selection. Five elementary schools applied and participated in TBVP during the 2001-02 or 2003-04 school years. These schools were included in the TBVP comparison group (see Table 6). One elementary school (Bill Cody School) was included in both groups (in different years) due to having participated in TBVP during the 2001-2002 school year and applying without selection during the 2003-2004 school year.

At the middle school level, four buildings were included this study. One middle school applied and was selected to participate in TBVP during 2003-04. That school was

included in the TBVP comparison group. Three other middle schools applied to participate in TBVP during the 2003-04 school year (without selection). These schools were included in the Non-TBVP comparison group (see Table 6).

Four high schools were included in this study. Three high schools applied to participate in TBVP during the 2001-02 school year (without selection). These schools were included in the Non-TBVP comparison group (see Table 6). One high school was included in the TBVP comparison group due to its participation in TBVP during the 2001-02 school year.

Schools participating in this study administered the Iowa Tests during the fall, mid-year, or spring of the school year. In the case of the schools that administered the Iowa Tests in the spring (2001-02 or 2003-04) the year previous to the year of application/participation in TBVP (2000-01 or 2002-03) served as the pre-test (baseline) year. Data from the application/participation year (2001-02 or 2003-04) served as the post-test data, allowing for an analysis of gains in the areas of reading and mathematics for cohort groups of students (achievement data for the same group of students from one year to the next).

In the case of schools administering the Iowa Tests during mid-year, the year previous to the year of application/participation (2000-01 or 2002-03) served as the pre-test year. Data for those schools were collected over a two-year period. The post-test data were derived from the year following the year of application/participation (2002-03 or 2004-05) in order to measure the full impact of TBVP across the entire application/participation year (see Table 6 for years of pre-test data collection).

In the case of schools administering the Iowa Tests in the fall (2001-02 or 2003-04), the application/participation year served as the pre-test year. Student achievement data were

collected for cohort groups of students from the fall of the application/participation year, as well as the following school year (2002-03 or 2004-05) to determine gains in the areas of reading and mathematics (see Table 6).

Data Collection and Analysis

One method of comparing the academic progress made by students is through gains score analysis. Gain score analysis allows for the measure of proficiency in terms of student growth from year to year. This study utilized gain score analysis in comparing the academic growth of students on the ITBS/ITED in the areas of reading comprehension and mathematics for schools in the TBVP comparison group and the Non-TBVP comparison group.

In addition to achievement data from the Iowa Tests, data were collected regarding the rigor of each school's self-determined student achievement goals (see Table 10 for each school's score from the TBVP rubric regarding goal rigor). Each application was examined to determine the score assigned (in terms of percentage of possible points) to each school's application regarding goal rigor. Goal rigor alone was not a factor in the selection of schools for participation in TBVP; however, the goal rigor scores were important in providing some insight into the worthiness of the goals (D. Chadwick, August 25, 2005), as well as for determining any possible relationship between the rigor of those goals and TBVP. Participant Schools

The schools participating in this study included geographically diverse schools from around the state of Iowa. Many of them shared common characteristics such as the number of students enrolled and community size, as well as percentage of students that represented

Table 10: Rubric Scores for TBVP Applicants

TBVP Schools	Non-TBVP Schools	Year of Application	Goal Rigor During Participating Year	Percentage of Possible Points
Johnny Carson		2003-04	20/22	91%
Norman Borlaug		2001-02	19/29	59%
Bill Cody		2001-02	18/29	62%
Simon Estes		2003-04	22/22	100%
ESF		2001-02	20/29	69%
George Gallup		2003-04	20/22	91%
Cloris Leachman		2001-02	27/29	93%
	Bill Cody	2003-04	15/22	68%
	Glenn Miller	2001-02	15/29	52%
	Harriet Nelson	2001-02	12/29	41%
	Donna Reed	2003-04	16/22	73%
	John Wayne	2003-04	19/22	86%
	Andy Williams	2003-04	18/22	82%
	Bess Aldrich	2003-04	14/22	64%
	Susan Glaspell	2001-02	16/29	55%
	Alex Karras	2001-02	12/29	41%
	Harry Reasoner	2001-02	11/29	38%

families that qualified for free and/or reduced priced meals (i.e., Low SES) and the percentage of families considered to be linguistically isolated (i.e., households in which all members 14 years of age or older speak a language other than English and also have difficulty with English) (SETA, 2005). Many of the schools are located in rural areas of the state; however, other participating schools represent communities either in large cities or in

close proximity to larger cities (see Table 11 for a brief description of each participating school).

Instruments Used to Collect Data

Grade level data were obtained from the Iowa Tests of Basic Skills (ITBS) and Iowa Tests of Educational Development (ITED). With regard to validity, the Iowa Tests (ITBS and ITED) were constructed to correlate to commonly selected academic goals in schools throughout the nation; however, local differences in standards and curriculum, as well as differences in student characteristics, have an impact on test validity. (Hoover, Dunbar, Frisbie, Oberley, Ordman, Naylor, Bray, Lewis, Qualls, Mengeling, & Shannon, 2003).

The content specifications for the Iowa Tests have experienced numerous revisions over the past 60 years. Test development has included research in the areas of curriculum practices, test design, procedures of technical measurement, and assessment interpretation. Test item selection and placement has included a number of criteria.

Among those are criteria are consideration of instructional materials (including textbooks); recommendations from the educational community; feedback from students, teachers, and administrators; independent reviews from diverse populations; and empirical studies related to differential item functioning (Hoover et al., 2003).

Reliability may be measured by a reliability coefficient between .00 and .99. The closer the coefficient is to .99, the less likely that the scores have been influenced by factors that temporarily impact student performance. The comparison of reliability coefficients may be useful in determining the stability of the concluding scores. Two methods were used to estimate the reliability of the Iowa Tests, Kuder-Richardson Formula 20 and estimates of equivalent forms for Forms K and A (Hoover et al., 2003).

Table 11: Description of Participating Schools

TBVP Schools	Non-TBVP Schools	Grades Served	# Students Enrolled in District/ Building	# Residing in District	Location	% White	# Linguistically Isolated (County-wide)	% Low SES District/Building
Johnny Carson		4-5	1,700/301	14,600	Suburban	99%	41	25.2/29.6%
Norman Borlaug		K-5	32,000/331	205,684	Urban	83%	3,322	52.5/63.1%
Bill Cody	Bill Cody	K-5	5,000/435	25,877	Metro	95%	500	12.5/14%
Simon Estes		K-5	5,000/458	11,000	Suburban	96%	3,322	14.1/6.8%
George Gallup		K-6	99/99	1,300	Rural	99%	22	27.5/27.5%
Ann Landers		5-8	1,270/400	8,200	Rural	98%	79	35.5/36.1%
Cloris Leachman		10-12	5,000/1,000	11,000	Suburban	96%	3,322	14.1/6%
	Glenn Miller	K-5	1,100/460	1,714	Rural	98%	85	28/30.2%
	Harriet Nelson	K-3	575/147	2,900	Suburban	99%	35	24/23%
	Donna Reed	K-6	740/203	4,000	Rural	99%	20	37/40.4%
	John Wayne	7-8	550/104	2,758	Rural	90%	23	33.3/33%
	Andy Williams	K-8	118/118	678	Rural	99%	13	49.2/49.2%
	Bess Aldrich	7-12	450/235	2,500	Rural	99%	35	16/14.3%
	Susan Glaspell	7-12	450/225	2,300	Rural	99%	41	16/14%
	Alex Karras	7-12	575/195	2,900	Suburban	99%	35	24/21%
	Harry Reasoner	7-12	740/265	4,000	Rural	99%	20	37/32%

In this study, scores from the Iowa Tests included grades 2 through 11. Subtests for which data were utilized at each of these grade levels included reading comprehension and total mathematics. Reliability of the Iowa Tests for these grade levels in the areas of total mathematics and total reading are similar (see Tables 12 and 13) (Forsyth et al., 2003; Hoover et al., 2003).

Table 12: ITBS Summary of Reliability Coefficients (Levels 8-14)

Test Level	Grade Level	Reading Total	Mathematics Total
15	9 (fall)	.950	.946
15	9 (spring)	.952	.952
16	10 (fall)	.950	.954
16	10 (spring)	.951	.958
17/18	11 (fall)	.946	.952
17/18	11 (spring)	.949	.956

Table 13: ITED Summary of Reliability Coefficients (Levels 15-18)

Test Level	Grade Level	Reading Total	Mathematics Total
8	2 (spring)	.939	.922
9	3 (spring)	.946	.934
10	4 (spring)	.944	.940
11	5 (fall)	.934	.936
11	5 (spring)	.943	.947
12	6 (fall)	.938	.936
12	6 (spring)	.944	.944
13	7 (fall)	.941	.934
13	7 (spring)	.948	.945
14	8 (fall)	.944	.939
14	8 (spring)	.950	.949

Procedures

In carrying out the research design, several specific procedures were used. A list of all the schools that had applied to participate in TBVP during each of the school years 2001-2002, 2003-2004, and 2004-2005 was obtained (see Tables 1-5). The applicants were grouped according to building level. In an attempt to identify commonalities among applicant schools, data were collected and reviewed for each, including the month in which the Iowa Tests were administered during each school year since 2000-2001.

This review yielded two comparison groups (see Table 6). At the elementary level, five schools were included in the TBVP comparison group and four schools were included in the Non-TBVP comparison group. At the middle school level, one school was included in the TBVP comparison group, while three schools were included in the Non-TBVP comparison group. At the high school level, one school was included in the TBVP comparison group, while three schools were included in the Non-TBVP group.

Baseline years were established for each comparison group (TBVP and Non-TBVP), depending upon the time of year students were tested in order to identify the school years from which to obtain pre- and post-test data. ITBS and ITED data were obtained directly from the Iowa Testing Service for cohort groups of students enrolled in each school participating in the study to determine academic gains from one school year to the next for schools testing in the fall or spring of the year and over a two-year period for schools testing mid-year (see Table 6). Seven schools included in this study participated in TBVP during either the 2001-2002 or 2003-2004 school years (see Table 6); consequently, the student achievement data from those schools were compared to data from the 10 schools that applied to participate in TBVP during either the 2001-02 or 2003-04 school years but were not

selected (Non-TBVP schools). One elementary school (Bill Cody School) participated as both a Non-TBVP school and as a TBVP school (in different years) due to having participated in TBVP during the 2001-02 school year and having applied to participate during the 2003-04 school year and not being selected. Pseudonyms were assigned to each participating building to preserve both student and school identities.

An extensive review of the literature related to alternative pay structures was completed. This review focused on the history of performance-related teacher pay, as well as underlying theories of motivation. Information was reviewed regarding TBVP in Iowa to determine what questions were identified by Chadwick, Administrative Consultant for Teacher Quality at the Iowa Department of Education at the conclusion of the third year of implementation (2004-05). The researcher obtained copies of the TBVP applications from Chadwick. Periodic interviews were conducted with Chadwick to ensure accuracy of information regarding the TBVP applicants.

The appropriate application materials were submitted to the IRB for approval. IRB approval was granted on August 26, 2005. Included in those materials were copies of the TBVP application rubric (see Appendices A and B), sample letters to superintendents requesting permission to obtain ITBS/ITED data from Iowa Testing (see Appendices C and D), and the Informed Consent Document (see Appendix E). Superintendents were contacted and permission was granted to contact the Iowa Testing Program at the University of Iowa for the purpose of obtaining the appropriate ITBS/ITED grade level data (National Standard Scores and National Percentile Ranks) (see Table 6).

After the appropriate written permission was obtained from superintendents, the Iowa Testing Program was contacted and provided with copies of written permission to release the

appropriate ITBS/ITED data. ITBS/ITED National Standard Score and National Percentile Rank data were obtained for the appropriate grade levels from the participating schools. These data were analyzed to determine the relationship among increased student achievement, goal rigor, and TBVP.

Data Analysis Procedures

Variables for sub- question 1.

Sub-question 1 addresses the relationship between level of goal rigor found in TBVP applications (regardless of whether a school was or was not selected to participate in TBVP) and student gains in achievement. Regression analyses were completed to test the strength of the relationship. No attempt was made to conclude a causal relationship; therefore, the terms dependent and independent variable are used only loosely here.

The dependent variable for sub-question 1 was the average ITBS/ITED grade level Normal Curve Equivalent (NCE) at post-test time for reading and mathematics, as described earlier. First, the national percentile rank was collected from the Iowa Test school summary reports for all relevant grade levels of participating schools. Percentile ranks were chosen because pre-test and post-test times of year varied from fall to mid-year to spring among participating schools. Percentile ranks provide the grade levels' relative standing with respect to a norm group regardless of when the test was given. This allows one to compare the achievement gain from fall of one year to fall of the following year of one school to the achievement gain from spring of one year to spring of the following year of another school.

Next, the percentile ranks were converted to NCEs with Statistical Package for the Social Sciences (SPSS) program statements based on the standard percentile to NCE conversion table. NCEs were used rather than percentile ranks because NCEs employ an

equal interval scale, a requirement for running parametric statistical procedures such as regression and analysis of covariance. The reading dependent variable was the average grade level NCE for the reading comprehension subtest of the Iowa Tests and the mathematics dependent variable was the average grade level NCE for the total mathematics subtest.

The independent variable was continuous, the percentage of total goal rigor points as measured by the application scoring rubric described on pages 63-67. A covariate, the average ITBS/ITED grade level NCE at pre-test time, was used to determine gains in student achievement from pre-test time to post-test time.

Data analysis for sub-question 1.

The hypothesis for sub-question 1 states that student achievement gains on the Iowa Tests are not related to the goal rigor expressed in schools' applications to participate in TBVP. This hypothesis was addressed through the SPSS General Linear Model procedure. The first step was to enter the pre-test covariate in a regression equation and allow the pre-test to predict or explain the variability of the post-test; this was how achievement gain from pre-test to post-test time was measured. Subsequently, goal rigor was entered into the equation to determine if it had a significant relationship with the post-test after entering the pre-test. Because the hypothesis states that there will be no relationship between achievement gain and goal rigor, a two-tailed test was used. For this hypothesis, a Type I error would occur if the hypothesis was actually true but was mistakenly rejected. The significance level was set at a p -value (probability of a Type I error) of less than or equal to .05. Stated in another way, if the probability of a Type I error was .05 or less, then the hypothesis of no significant relationship would be rejected – the relationship would be deemed to be significant at the .05 level. If the probability of a Type I error was more than .05, then the

hypothesis would not be rejected and it would be concluded that goal rigor and achievement gain were not significantly related. The General Linear Model was estimated for mathematics and reading for all TBVP and Non-TBVP schools in the 2001-02 and 2003-04 year combined.

Variables for sub- question 2.

Sub-question 2 examines the effect of TBVP vs. Non-TBVP on student gains in reading and mathematics. The dependent variable was the average ITBS/ITED grade level NCE at post-test exactly as described in the previous section on variables for sub-question 1. The independent variable for sub-question 2 was dichotomous – selection to participate in TBVP versus non-selection (Non-TBVP). The average ITBS/ITED grade level NCE at pre-test time, was used as a covariate to determine gains in student achievement from pre-test time to post-test time. Goal rigor was used as a second covariate. This is described in the next section on data analysis.

Data analysis for sub- question 2.

Regression analysis of covariance via the SPSS General Linear Model was chosen for three reasons 1) it provides more power/sensitivity to detect significant differences, if true differences exist, than analysis of variance; 2) analysis of covariance mathematically uses pre-test and goal rigor to adjust the post-test scores making the groups statistically equivalent at the time of the pre-test, a definite advantage if the TBVP and Non-TBVP groups were not similar on the pre-test and goal rigor; and 3) the mathematical adjustment of the post-test score based on the pre-test score is a more statistically reliable measure of achievement gain than subtracting the pre-test score from the post-test score (T. Stinard, February 13, 2006).

The sub-question 2 hypothesis states that mean achievement gains for TBVP and Non-TBVP schools are not significantly different. Therefore, a two-tailed test was used. For this hypothesis, a Type I error would occur if the hypothesis was actually true but was mistakenly rejected. The significance level was set at a p -value (probability of a Type I error) of less than or equal to .05. Stated in another way, if the probability of a Type I error was .05 or less, then the hypothesis of no significant differences in achievement gain between the TBVP and Non-TBVP schools would be rejected – the difference would be deemed significantly different at the .05 level. If the probability of a Type I error was more than .05, then the hypothesis of no significant differences in achievement gain between the TBVP and Non-TBVP schools would not be rejected, and the difference would be considered not significant at the .05 level.

Regression models using the SPSS General Linear Model procedure were estimated for all 2001-02 and 2003-04 elementary, middle, and high schools combined, one for reading and one for mathematics. The first step was to enter the pre-test and goal rigor covariates in a regression equation and allow them to predict the post-test. Then the TBVP/Non-TBVP independent variable was entered into the equation to determine if there was a significant treatment effect on the post-test after entering both covariates. The test addresses the question, *Is there a significant difference in achievement gain between TBVP and Non-TBVP above and beyond the goal rigor relationship?* Analysis of covariance assumes the correlations (slopes) between the covariates and the post-test for the TBVP group and for the Non-TBVP group are equal. This equality of slopes assumption was tested with the SPSS General Linear Model. Another assumption is related to homogeneity of error variance between the two groups. For analysis of covariance, the error variances of adjusting the post-

test score based on the covariates for the TBVP group and for the Non-TBVP group should not be significantly different. Levene's Test, an option in the General Linear Model, was employed to test this assumption.

The Researcher's Role

The researcher's lens is different from that of the staff employed by TBVP schools because of the researcher's role as a consultant at the Iowa Department of Education. The researcher had no opportunity to observe the process utilized to develop rigorous goals or the actions taken by school staff to meet those goals, including increased teacher collaboration, professional development, or administrative support. Simply through an analysis of the ITBS/ITED data, these elements did not play any role in determining the success of TBVP. The researcher performed a quantitative study of the success of TBVP based upon the relationship of goal rigor, increased student achievement, and TBVP. The researcher did not make any personal contact with any school personnel, except in terms of obtaining written permission from superintendents of the participating schools to obtain ITBS/ITED data directly from the Iowa Testing Service. TBVP application materials were reviewed to gather data regarding goal rigor. The researcher's role was strictly as an outside observer of the data related to TBVP.

The researcher had access to all TBVP application materials as a consultant for the Department of Education. This may have provided a different lens through which to reflect upon the performance of all TBVP applicants. Staff at each of the participating schools may have had a perspective on their experience related to participation in TBVP, having been involved in the development of their own goals for improved reading and mathematics achievement. Some of those applicants participated in TBVP, while others did not. Due to

the quantitative nature of this study, however, these possible differences in perspective had no impact on the outcome of the study.

Summary

This chapter has explained the methods used in this study of the relationship between participation in TBVP, goal rigor, and increased student achievement among 16 of Iowa's schools. This study included data from the Iowa Tests in terms of Normal Curve Equivalents. It also included data from the TBVP application process. The next chapter contains the results of these methods.

Chapter 4: Results

The main questions that this research attempted to answer are *Does Team-Based Variable Pay (TBVP) work?* and *What is the relationship among student achievement, goal rigor, and TBVP in Iowa?* This chapter presents results for the two sub-questions.

Sub-question 1

What is the relationship between the level of goal rigor found in the TBVP applications (regardless of whether a school was or was not selected to participate in TBVP) and student gains in achievement?

- Hypothesis – There will be no significant relationship between goal rigor and student achievement gains.

This hypothesis was addressed through the General Linear Model procedure of the Statistical Package for the Social Sciences (SPSS). The first step was to convert average grade level ITBS/ITED percentile ranks to Normal Curve Equivalents (NCEs). Tables 14 and 15 show the descriptive statistics for pre-test, post-test, and goal rigor for reading and

Table 14: Descriptive Statistics for ITBS/ITED Reading NCEs and Goal Rigor

	Pre-Test	Post-Test	Goal Rigor
Count	37	37	37
Average	57.92	57.99	68.16
Standard Deviation	6.90	5.81	17.26
Minimum	44.70	46.30	38.00
Maximum	72.80	69.30	100.00

Table 15: Descriptive Statistics for ITBS/ITED Mathematics NCEs and Goal Rigor

	Pre-Test	Post-Test	Goal Rigor
Count	34	34	34
Average	59.58	59.50	69.09
Standard Deviation	7.48	5.19	17.56
Minimum	47.90	46.30	38.00
Maximum	79.60	70.10	100.00

mathematics, respectively. Both the pre-test and post-test had to be present for a cohort group to be included in the analyses. The n count for math was three less than for reading because three grade levels did not have math pre-test scores.

SPSS General Linear Model results for reading gain are shown in Table 16. The pre-test covariate was entered first in the regression equation and then goal rigor was entered to determine if it had a significant relationship with the post-test. The F value for goal rigor was significant at the 0.05 level ($F= 5.276$; $df=1,34$; $p=0.028$), indicating a significant positive relationship between goal rigor and reading achievement. Mathematics results are shown in Table 17. The relationship was positive and close to being considered significant at the 0.05 level ($F=3.919$; $df=1,31$; $p=0.057$).

Table 16: Test for Relationship Between Goal Rigor and Reading Gain
Dependent Variable: postread

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	748.761(a)	2	374.380	27.286	.000
Intercept	179.398	1	179.398	13.075	.001
preread	508.837	1	508.837	37.086	.000
goal rigor	72.395	1	72.395	5.276	.028
Error	466.495	34	13.720		
Total	125636.860	37			
Corrected Total	1215.256	36			

Table 17: Test for Relationship Between Goal Rigor and Mathematics Gain
Dependent Variable: postmath

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	237.444(a)	2	118.722	5.657	.008
Intercept	680.197	1	680.197	32.413	.000
premath	112.521	1	112.521	5.362	.027
goal rigor	82.247	1	82.247	3.919	.057
Error	650.546	31	20.985		
Total	121268.390	34			
Corrected Total	887.990	33			

The results of these findings indicate that the greater the rigor of goals included in the TBVP applications, the greater the gains in reading and mathematics, regardless of participation in TBVP. This relationship is statistically significant with regard to reading comprehension, and almost significant with regard to mathematics. Thus, hypothesis number one was not supported by these findings.

Sub-question 2

How do gains in student achievement on the Iowa Tests (mathematics and reading comprehension) compare between schools that applied and were selected to participate in TBVP with schools that applied but were not selected to participate in TBVP?

2. Hypothesis – There will be no significant differences in the mean achievement gains of students in Iowa schools that applied and were selected to participate in TBVP (TBVP comparison group) as compared to the gains of students in schools that applied but were not selected to participate in TBVP (Non-TBVP comparison group).

Tables 18 and 19 present descriptive statistics for reading and math pre-test and post-test for the TBVP and Non-TBVP comparison groups.

Table 18: Descriptive Statistics for Average ITBS/ITED Reading NCEs

treatmt		preread	postread
NON-TBVP	Mean	57.60	56.67
	Count	23	23
	Std. Deviation	7.22	5.59
	Minimum	44.70	46.30
	Maximum	72.80	67.70
TBVP	Mean	58.44	60.16
	count	14	14
	Std. Deviation	6.56	5.70
	Minimum	46.30	47.90
	Maximum	66.30	69.30

Table 19: Descriptive Statistics for Average ITBS/ITED Mathematics NCEs

treatmt		premath	postmath
Non-TBVP	Mean	60.10	58.89
	Count	21	21
	Std. Deviation	8.18	4.60
	Minimum	48.40	51.60
	Maximum	79.60	70.10
TBVP	Mean	58.73	60.50
	Count	13	13
	Std. Deviation	6.40	6.09
	Minimum	47.90	46.30
	Maximum	71.80	69.30

The test for the equality of slopes assumption for reading is shown in Table 20. The “treatmt” source of variance is the independent variable (TBVP vs. Non-TBVP). The relevant source of variance for the equality of slopes test is the “treatmt * preread * grigor” row, also known as the interaction term between the independent variable and the covariates. With $F=0.638$ ($df=2,32$; $p=0.535$) it is concluded that the reading slopes for TBVP and Non-TBVP were not significantly different from each other and the equality of slopes assumption for reading was met. This was true also for mathematics, as can be seen in Table 21 ($F=2.326$; $df=2,29$; $p=0.116$).

Table 20: Test for equality of Slopes for Reading
Dependent Variable: postread

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	770.653(a)	4	192.663	13.867	.000
Intercept	235.362	1	235.362	16.940	.000
preread	284.495	1	284.495	20.476	.000
treatmt	.000	1	.000	.000	.997
treatmt * preread * grigor	17.741	2	8.871	.638	.535
Error	444.602	32	13.894		
Total	125636.860	37			
Corrected Total	1215.256	36			

Table 21: Test for equality of Slopes for Mathematics
Dependent Variable: postmath

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	284.766(a)	4	71.191	3.423	.021
Intercept	644.455	1	644.455	30.982	.000
premath	44.546	1	44.546	2.142	.154
treatmt	47.006	1	47.006	2.260	.144
treatmt * premath * grigor	96.769	2	48.385	2.326	.116
Error	603.224	29	20.801		
Total	121268.390	34			
Corrected Total	887.990	33			

SPSS output for the tests for equality of error variance between TBVP and Non-TBVP are presented next with reading in Table 22 and mathematics in Table 23. Levene's Test of Equality of Error Variances tests the null hypothesis that the error variance of the dependent variable is equal across groups.

Table 22: Levene's Test of Equality of Error Variances - Reading
Dependent Variable: postread

F	df1	df2	Sig.
.284	1	35	.597

a Design: Intercept+preread+treatmt

Table 23: Levene's Test of Equality of Error Variances - Mathematics
Dependent Variable: postmath

F	df1	df2	Sig.
.196	1	32	.661

a Design: Intercept+premath+treatmt

For both reading and mathematics, the error variances for the TBVP and Non-TBVP groups were not significantly different, so the assumption of equality of error variances is considered to have been met for reading and mathematics.

The final step for sub-question 2 was to run a General Linear Model regression to test the effect of the treatment independent variable (TBVP v. Non-TBVP) on gain after entering pre-

test and goal rigor in the regression equation as explained in Chapter 3. SPSS output for reading is shown in Table 24. The relevant row in Table 24 is “treatmt” which shows no significant difference between TBVP and Non-TBVP in reading achievement gain ($F=1.759$; $df=1,33$; $p=0.194$).

Table 25 shows the SPSS results for the treatment effects of TBVP vs. Non-TBVP on mathematics achievement gain. As with reading, the difference in mathematics gains between TBVP and Non-TBVP was not significant ($F=0.024$; $df=1,30$; $p=0.879$).

Table 24: Test for Treatment Effect on Reading Achievement Gain
Dependent Variable: postread

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	772.363(a)	3	257.454	19.183	.000
Intercept	200.063	1	200.063	14.907	.000
preread	527.647	1	527.647	39.315	.000
grigor	19.451	1	19.451	1.449	.237
treatmt	23.603	1	23.603	1.759	.194
Error	442.893	33	13.421		
Total	125636.860	37			
Corrected Total	1215.256	36			

a R Squared = .636 (Adjusted R Squared = .602)

Table 25: Test for Treatment Effect on Mathematics
Dependent Variable: postmath

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	237.956(a)	3	79.319	3.661	.023
Intercept	672.724	1	672.724	31.047	.000
premath	110.100	1	110.100	5.081	.032
grigor	49.959	1	49.959	2.306	.139
treatmt	.512	1	.512	.024	.879
Error	650.034	30	21.668		
Total	121268.390	34			
Corrected Total	887.990	33			

The results of these findings indicate no differences between the gains in reading comprehension and mathematics for schools in the TBVP comparison group and the Non-TBVP comparison group. Thus, hypothesis number two was supported by these findings.

Chapter 5: Summary of Findings

To assist the reader, this concluding chapter of the dissertation reiterates the research problem related to this study. The major segments of this chapter summarize the results of the study and discuss their implications regarding the relationship among Team-Based Variable Pay (TBVP), goal rigor, and increased student achievement in Iowa.

Problem

As was stated in Chapter 2, school reform has been at the forefront of education for years. The quest for a reform movement that will positively impact student achievement has caused educators, legislators, and the general public to focus on areas such as public school choice, tuition tax credits, vouchers, charter schools, preschool for all 3- and 4-year-olds; implementation of state standards, and reduced class size (Drew, 1984; Ferraiolo, Hess, Maranto, & Millman, 2004; Odden, 1994).

At the heart of educational accountability has been reform related to teacher pay (Leithwood & Earl, 2000). Numerous alternative teacher pay structures have been attempted in this country throughout history. These efforts have included such alternative pay structures as merit pay, career ladders, and various other monetary incentives. Some have been based upon teacher inputs such as earned college credit and the assumption of additional responsibility; others, however, have been based upon outputs such as improved teacher performance (teacher quality) and increased student achievement. Efforts in this county to implement alternatives to teacher pay based upon these types of outputs have been met with mixed response (Evans, Stewart, Mangin, & Bagley, 2001).

Some would argue that teacher quality has little impact on increased student achievement (Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, & York, 1966).

Other researchers, however, have determined that teacher quality is vital to increased student achievement (Ferguson, 1991; Jordan, Mendro, & Weersinghe, 1997; Sanders & Rivers, 1996; Wright, Horn, & Sanders, 1997). What has been a topic of debate is whether paying teachers for increased student achievement actually works. This debate will likely continue.

Summary of the Results

This section describes the findings from this study. Two hypotheses were included related to the relationship among participation in TBVP, increased student achievement, and goal rigor. One hypothesis was supported by this study's findings; the other hypothesis was not.

Goal Rigor and Student Achievement Gains

Hypothesis #1 indicated that no correlation would be found between goal rigor and reading and mathematics gains for schools that participated in TBVP (TBVP Schools) and schools that applied to participate without selection (Non-TBVP Schools). That hypothesis was not supported by the results of this study. On the contrary, goal rigor was determined to be significantly and positively related to gains in reading achievement. The higher the goal rigor noted in the TBVP application rubric, the greater the reading gains, regardless of selection/non-selection to participate in TBVP. The relationship between goal rigor and mathematics gain was also positively related and almost significant.

TBVP/Non-TBVP Participation and Gains in Student Achievement

In addition to the impact of goal rigor on increased student achievement, this study sought to determine if significant differences exist with regard to the gains in reading and mathematics achievement between schools that participated in TBVP and those that applied to participate but were not selected. Hypothesis #2 indicated that no significant differences

would be found between the two comparison groups. The findings from this research support that hypothesis. The gains in student achievement between schools participating in TBVP and those that applied to participate without selection were not significantly different.

On the basis of this study alone, it would be difficult to derive final conclusions regarding the relationship among TBVP, increased student achievement, and goal rigor. Several researchers have indicated a possible connection between School-Based Performance Awards (SBPA) and increased student achievement (Heneman & Milanowski, 1999; Kelley, 1999; Kelley, Odden, Milanowski, & Heneman, 2000; Odden, 2000; Odden & Kelley, 2002). Overall, their work has not been successful in demonstrating a strong link.

Discussion

Teacher Pay in SBPA Programs as Motivator of Student Achievement

Some educators and policy makers believe that accomplishments should be rewarded. Such beliefs may have found receptive audiences among educators and legislators alike. Several states and local school districts have developed policies based upon principles of greater teacher pay for greater student accomplishments.

What has not been established in previous studies is whether teachers as a group are motivated to work harder due to the promise of monetary incentives. While school reform efforts often include moves toward greater school accountability, it is not clear if the desire to attain rewards will increase teacher motivation or keep teachers focused on student achievement. Due to the high cost of SBPA programs, though, it is important to determine if the monetary awards associated with such programs actually contribute to increases in student achievement.

The Iowa Legislature adopted TBVP in 2001 as part of the Teacher Quality Act (Senate File 476). This legislation was created for the purpose of providing incentives to staff for increased student achievement. Since its introduction, over a half-million dollars has been allocated to this pilot project. One question raised by this study relates to whether it has contributed to a half-million dollars worth of gains in student achievement, assuming that a monetary value could be placed on such gains. This study suggests that it has not.

Over the past few years, several states have implemented SBPA programs at the state level, including North Carolina, Georgia, and Kentucky. District level plans have also been implemented in some local school districts, including Dallas, Texas. Some programs have been mandatory; others have been voluntary. SBPA plans have varied in a number of ways; however, one common element has been the promise of monetary awards.

In light of the amount of funds that have been allocated to SBPA programs across this nation, consideration should be given to how to achieve the greatest return (in terms of increased student achievement) for investment in education. This study suggests that additional support for other elements typically associated with SBPA programs, however, may prove to be instrumental to improved student achievement. Collaboration of school personnel toward efforts of rigorous goal establishment, professional development, and focused attempts to meet those goals may be among those elements.

As is consistent with existing research, little evidence was provided by this study to judge the effectiveness of performance-related pay to increase student achievement (Burgess, et al., 2001). Burgess, Croxson, Gregg, and Propper (2001) indicated that the evidence necessary for making this determination is limited, due in part to the small numbers of schools participating in teacher performance-related pay plans.

Evidence from research of teacher performance-related pay plans suggest that it may also not be feasible to compare the results of voluntary teacher performance-related pay plans with those of an involuntary nature. TBVP in Iowa, as was the case in South Carolina's Plan1 (in individual performance-related teacher pay plan), has been voluntary in nature.

Researchers, such as Burgess, Croxson, Gregg, and Propper (2001) and Cooper and Cohen (1997) determined that a small percentage of teachers in South Carolina chose to participate in Plan1 (as has been the case in Iowa's TBVP Pilot Project); however, the majority of teachers choosing to participate received a monetary award. Several conclusions can be drawn from these findings, including the possibility that only those most likely to meet the established goals actually applied to participate, confounding both the award effect and selection effect.

Inconsistent with studies of SBPA in Georgia and Dallas, Texas, the findings from this study did not determine any differences in the reading and mathematics performance of students in participating schools versus the performance of students in the comparison schools (Clotfelter & Ladd, 1996). Clotfelter and Ladd (1996) noted greater reading and mathematics gains in the participating Dallas schools versus the comparison schools. Similarly, in a study of SBPA in Georgia, students from participating schools achieved greater gains in reading and mathematics than other non-participating schools in the state during the late 1990s (Georgia Department of Education, 2000).

Goals

By engaging key stakeholders in the development of rigorous goals, designing effective processes to meet those goals, and focusing participants on the right outcomes, schools may achieve the desired results, increased student achievement. This study suggests

that professional development driven by well-defined goals may be linked to effective process and the right outcomes.

Other research indicates that goal setting is a fundamental element of self-regulation (Schunk, 2001). Goals actually enhance self-regulation by motivating individuals to perform actions at some level and to evaluate the progress of those actions toward a goal. In Iowa's TBVP project, teams of school personnel (including teachers) were charged with the development of rigorous goals for student achievement. Teacher involvement in the development of TBVP goals may have increased teacher buy-in, and teacher buy-in may have been one factor contributing to the significant relationship found in this study between goal rigor and reading achievement gains.

In early SBPA programs, teacher buy-in and motivation were not fully achieved (Kelly et al., 2000). However, more recent SBPA programs have been shown to increase teacher attention to focus on both teaching practice and goals (Kelley, 1999). Findings from this study support that theory. Setting rigorous goals through the TBVP process may indicate teachers' desire to accomplish a certain level of student achievement. Results from this study indicate that the more rigorous the goals, the greater the reading and mathematics gains. This study also suggests that, in both TBVP and Non-TBVP schools with rigorous goals, the gains may also be to a certain extent attributed to teacher buy-in, motivation, and focus resulting from the goal setting process.

This study provides a new direction for educational reform, support for goal development. Support for school personnel in the area of goal development should be considered vital to any school improvement effort. Whether this kind of support is associated with an SBPA program is not important.

School leaders and legislators may be compelled, as a result of this study, to reconsider funding programs that promise monetary awards for teachers. If gains in student achievement are the desired outcome, greater focus on rigorous goals defined by specific numeric terms, mathematical procedures, alignment with district-wide goals, and specific assessment instruments by which to measure gains in achievement may assist schools in accomplishing those outcomes.

Other considerations should be given to whether rigorous goals that are *imposed* upon teachers and schools are positively and significantly related to gains in student achievement. In some states and school districts, SBPA programs are mandatory and involve goal decisions over which school personnel have no control. In such cases, local school and state level decision-makers should consider changes in policy, allowing local school personnel to determine their own goals for student achievement and ensure the rigor of those goals by some standard. By involving school personnel in the goal setting process, teacher buy-in, focus, and motivation may be positively affected and increase the likelihood of student academic gains.

The results of this research suggest that the degree of goal rigor expressed in the TBVP application process had a greater impact on gains in student achievement than actual participation in TBVP or the promise of earning a monetary award, a finding that was not anticipated. These results suggest that school personnel might be more motivated by intrinsic than extrinsic rewards. These findings do not support those of Kreps (1997), who suggested that teachers with strong intrinsic motivation are also motivated extrinsically, typically by the promise of monetary awards.

Goal setting.

One component of the TBVP application process included goal setting. Each applicant school was required to set goals for increased student achievement in the areas of reading and mathematics. School staff had the option of defining their goals in a number of different ways. These included basing them upon average growth within the school building, percentage of students moving from the less than proficient range to the proficient range of achievement, or upon individual grade level improvement.

During 2001-2002, three out of four TBVP schools participating in this study met their goals. During the 2003-2004 year of TBVP implementation, two out of three schools participating in this study met their goals (Iowa Department of Education, 2004). Because each individual applicant school set its own student achievement goals, as well as the criteria for achieving those goals, these findings may not speak to the relationship of those particular goals to gains in student achievement; however, in this study the rigor of each school's goals was found to be positively and significantly related to student achievement gains.

A sense of accomplishment may be the driving force behind school personnel working toward the achievement of rigorous goals associated with TBVP, a finding compatible with that of Kelley (1999). The fact that no significant differences were found between student achievement gains between the TBVP comparison group and the Non-TBVP comparison group also points toward the role of teacher motivation and commitment to improving student achievement, a finding analogous to that of Bandura (1997) and Schunk (1995). It can be argued that the level of commitment exhibited by school personnel in applying to participate in TBVP may have a direct impact on levels of school personnel performance and effort, a finding supported by Locke and Latham (1990).

Goal rigor.

The relationship between improved student achievement and rigorous academic goals in an SBPA program is complex. Findings from this study indicate that goal rigor is important to the success of an SBPA program. This conclusion is supported by the findings of Borman, Hewes, Overman, and Brown (2002).

During the TBVP application process, teams of school personnel were required to work collaboratively to develop rigorous goals. During the goal setting process, school personnel were charged with setting expectations for the amount of student achievement gains, specifying those expected gains in numeric terms, determining the mathematical procedure to be used in determining goal attainment, aligning the goals with district-wide goals, and selecting the instrument to be used in measuring achievement gains. The inclusion of personnel in making such decisions may have resulted in increased teacher buy-in and perceived fairness of the goals, components deemed to be missing in early SBPA programs (Kelly et al., 2000).

Chadwick (2002) found that participation in TVBP led to increased focus on and awareness of goals. Additionally, her study noted that teachers possessed an increased level of pride resulting from increased student achievement. She also concluded, based upon teacher surveys and interviews, that intrinsic rewards teachers gained as a result of meeting TBVP goals far outweighed any monetary reward. The findings from this study support Chadwick's findings. Consequently, the accomplishment of goals related to student achievement, may be more motivating than actual participation in TBVP or any associated monetary benefits.

As to the importance of goal rigor in an SBPA program, several implications exist. Results from this study suggest that measurable, clear, commonly defined (rigorous) goals may be associated with increased student achievement, a finding similar to that of Borman, Hewes, Overman, and Brown (2002) and Silver (2004). In this study of TBVP in Iowa, schools with goals that were more rigorous experienced greater reading and mathematics student achievement gains than those schools with less rigorous goals, regardless of participation in TBVP. This finding appears to support the idea that the development of achievable goals may influence teacher buy-in, compatible with the conclusions of Kelley et al. (2000) and Kelley, Milanowski, and Heneman (2002).

Intrinsic Versus Extrinsic Motivation

Extrinsic motivation is most often associated with tangible incentives or rewards, including monetary rewards. In the TBVP pilot project, monetary rewards were the results of goal attainment. What was noted in the results of this study is that no significant differences were found between the amount of gains in student achievement between TBVP schools and Non-TBVP schools, even though staff from the Non-TBVP schools had no chance of earning any monetary award due to non-selection for participation in TBVP. It may be concluded from this study that teachers were more driven to action by intrinsic motivation.

Intrinsic motivation may be considered motivation that prompts individuals to engage in an activity for its own sake. This type of motivation may be linked to a sense of obligation, enjoyment, or feelings of self-accomplishment at successfully completing a task or achieving a goal. This type of motivation appears to be at the heart of staff willingness to participate in TBVP, with or without selection. The findings from this study suggest that staff from schools

applying to participate in TBVP may be more greatly motivated by goal attainment (related to student achievement) than the promise of any monetary reward.

Generalizability of the Study

Conclusions reached by this study after one or two years of implementation are speculative, at best. Because few schools have participated in Iowa's TBVP Pilot Project during its short life, this study provided little evidence by which to judge the effectiveness of TBVP on increased student achievement. Future opportunities for schools' participation in TBVP over a longer period of time may address this limitation.

What may be generalizable from this study are the findings related to goal rigor. In this study, goal rigor was found to be positively and significantly related to gains in reading achievement. The relationship between mathematics achievement and goal rigor was also positive, but not significant at the .05 level. At .057, however, it was very close.

A number of states and school districts across the country are currently implementing SBPA programs. The findings from this study may inform research related to current programs, especially those in which teams of school personnel work collaboratively to develop the goals of the program. The provision of support for school personnel in the development of more rigorous goals may lead to greater increases in student achievement gains.

Most of the schools participating in this study had relatively homogeneous populations, as was concluded in other studies of SBPA programs across the country. The number of students enrolled in TBVP schools in Iowa has also been relatively small, impacting the amount of data available. Similar to other studies, these restraints might

prevent any final conclusions from being made as to the impact of TBVP on increased student achievement.

When compared to other studies of TBVP in Iowa, the findings from this study differ. The conclusions from this study suggest that participation in TBVP was not related to increased reading and mathematics achievement. Chadwick (2002) found positive, yet inconsequential gains in both reading and mathematics during the first year of TBVP implementation. At the conclusion of the second year of TBVP, Chadwick (2004) found significant and positive differences between the gains in mathematics achievement for TBVP schools compared to matched, Non-TBVP schools; however, gains in the reading achievement for TBVP schools were positive, yet insignificant, when compared to the Non-TBVP schools.

Explanation of Unanticipated Findings

Hypothesis number one stated that no significant relationship between goal rigor and student achievement gains would be found. A positive and significant relationship was found between goal rigor and reading achievement. A positive (almost significant) relationship was noted between goal rigor and mathematics achievement. These relationships were noted for both TBVP and Non-TBVP schools. In attempting to account for these unanticipated findings, one might reflect on the activities (such as professional development) in which school personnel were engaged throughout the TBVP application year to meet their goals. If rigorous goals are related to motivation, commitment, and effort, these activities may provide some insight into these unanticipated findings.

Professional development emphasis.

During the years of TBVP implementation, Iowa schools have been heavily involved in professional development efforts (D. Chadwick, February 1, 2006). If rigorous goals are positively linked to teacher motivation and effort, increased staff efforts through professional development may have played some role in their relationship to increased student achievement. One reason reading was found to be more significantly related to goal rigor than mathematics may be due to the focus of schools' professional development efforts.

During the TBVP implementation years, schools were focused to a greater degree on increasing staff capacity to improve reading than mathematics (D. Chadwick, February 1, 2006). Even though the primary efforts were in the area of reading, increases in students' reading abilities impacts all other academic areas. The following paragraphs describe the recent professional development activities for the TBVP schools during their TBVP participation year.

At Norman Borlaug School, reading was the emphasis for most of the professional development sessions. Programs were designed to accelerate reading performance through the participation of teachers from special areas (e.g., art, music, and physical education). Reading mentors were utilized, as well as kitchen staff reading aloud to students during lunchtime. Various strategies were employed such as a before school reading box; Stop, Drop, and Read; and computer software specifically designed to identify the mode of delivery for students' reading instruction (Chadwick, 2002).

At Bill Cody School, teachers were focused on strategies to enhance reading fluency, comprehension, and accuracy. The Diagnostic Reading Assessment was used to assist teachers in building capacity in terms of assessment literacy. This focus was perceived as

helpful to teachers in the examination of student growth patterns and the charting of student progress (Chadwick, 2002).

Teachers at George Gallup School participated in a Literacy Initiative for three years, ending in the TBVP participation year (2001-2002). During the TBVP participation year, George Gallup staff were working on integrating reading strategies into other content areas. Teachers also worked to create an interdisciplinary curriculum (Chadwick, 2002).

In terms of professional development during 2001-2002, staff at Cloris Leachman School emphasized curriculum mapping and technology. Specific strategies for improving student learning were not emphasized, though staff were introduced to strategies for facilitating reading in the content areas (Chadwick, 2002).

During the year of TBVP participation (2003-2004), Johnny Carson School emphasized all teachers as *reading teachers*. The counselor and physical education teacher were utilized to teach reading. Teachers utilized reading logs and *Six Traits of Reading*. Peer coaching and action planning were encouraged among staff as well (Chadwick, 2004).

Teachers at Simon Estes School worked to incorporate reading strategies into all classrooms during 2003-2004. Additionally, cross-curricular emphasis was placed on reading and mathematics strategies. Teachers were involved in curriculum mapping and *Read 180* (Chadwick, 2004).

At Ann Landers School, *Reading First* strategies were emphasized during 2003-2004. The Reading/Language Arts delivery was altered to include a 102-minute block period. Additionally, reading was incorporated/integrated into other curricular areas (Chadwick, 2004).

Though in most schools some focus was placed upon increasing students' skills in mathematics, the primary focus was on reading, as well as reading in other content areas. Because of the integrative nature of reading, focus on reading strategies would likely impact student achievement in multiple curricular areas.

Schools' heavy emphasis on professional development in the area of reading may provide some explanation for the differences found in this study regarding their relationship to goal rigor. Perhaps a greater emphasis on professional development in the area of mathematics would have led to different results.

Limitations

This study was bound by a number of limitations. In particular, limitations were related to the number of schools that have participated in TBVP, the availability of individual student data, the availability of cohort data, and the time of year schools administered the ITBS/ITED.

Participating schools.

Few schools in Iowa participated in TBVP for more than one year. This study was limited to the study of TBVP participation by Iowa schools across one school year for schools that administered the Iowa Tests during the spring or fall (pre-test data from one year and post-test data from the next year). Data for schools that administered the Iowa Tests mid-year spanned two years to include the full year of TBVP treatment (pre-test data from the year previous to the TBVP application year and post-test data from the year following the TBVP application year). Thus, it was not possible to measure the impact of TBVP across more than one year of participation.

Contributing to the number of participating TBVP schools was the number of years TBVP was funded. TBVP received state funding during the 2001-2002 school year. It did not, however, receive funding during the 2002-2003 school year. It was funded the following two school years (2003-2004 and 2004-2005). During the 2005-2006 school year, TBVP was once again not funded. These gaps in funding are partially responsible for the few number of schools participating in TBVP, as well as the few number of schools participating more than one year. Consequently, study of the long-term impact of TBVP on increased student achievement in Iowa has not been possible.

Individual student data.

During the school years represented in this study, Iowa did not yet have a student management system for assigning individual student identification numbers. The absence of such a system prevented the analysis of achievement gains for individual students. Thus, grade level averages were utilized in this study.

Cohort data.

Grade level averages were used in this study to represent cohort groups of students, all students that were enrolled in a particular grade level within a school from one year to the next (e.g., students in third grade one year and fourth grade the next year). The use of pure cohort groups, however, was not possible. In the absence of a student management system, it was not possible to eliminate data for individual students that were represented in the pre-test data, but not the post-test, or in the post-test data, but not the pre-test. Consequently, the cohort data used in this study did not represent the exact same students in the pre-test and post-test years.

Related to the availability of cohort data was the specific grade levels participating in the Iowa Tests during the years represented in this study. Prior to 2004, a number of schools in Iowa did not administer the Iowa Tests to students in grades other than those required by the state (grades 4, 8, and 11). Data for students in a particular grade level during the designated pre-test year may have been available; however, data for the same group of students may not have been available during the designated post-test year due to their non-participation in the administration of the Iowa Tests. Thus, data representing numerous cohort groups could not be included in this study.

Time of year tested.

Several TBVP applicant schools changed the time of year in which they administered the Iowa Tests during either the designated pre-test or post-test year. Data for these schools could not be included because data to measure the full impact of TBVP were not available. Hence, data from more schools were eliminated from this study.

Comparisons.

Certain methodological limitations exist after only three years of TBVP implementation. One of these limitations can be described as an “apple and orange” problem related to the existence of methodological limitations related to each school’s approach to the establishment and measurement of TBVP goals (Chadwick, 2002, p. 52). Further assessment reveals the limitation of measuring growth based upon assessment data from different groups of students. These limitations are still present, to some degree.

It was the researcher’s intent to utilize a greater number of cohort groups of students in this study; however, for reasons described in Chapter 3, far fewer data were available than for

which were originally planned. Even so, this study represents the best possible attempt to determine the effectiveness of TBVP to increase student achievement.

Previous to this study, quantitative techniques were not utilized in evaluating TBVP because of the unavailability of student level quantitative data. ITBS/ITED data were only available at grades 4, 8, and 11 (no cohort data). This study attempted to address the need for the use of common quantitative data to compare the growth of two comparison groups; however, many participants were eliminated for various reasons described in Chapter 3. Nevertheless, this study shows that even with a limited number of data sets, participation in TBVP does not matter. What does matter is that teams of school personnel work collaboratively to establish rigorous goals for student achievement and focus on activities designed to meet those goals.

Implications for Future Research

In terms of the success of SBPA programs to increase student achievement, few conclusions can be made. At the finish of this study, little evidence exists by which to judge the effectiveness of performance-related pay to increase student achievement. One difficulty in judging the effectiveness of TBVP to increase student achievement in Iowa relates to the short life of this pilot project. Additionally, the data related to TBVP in Iowa were limited and involved mostly small school districts with relatively homogeneous populations, a constraint described by Murnane and Cohen (1986). Consequently, more studies may be needed to assess the impact of TBVP on student achievement.

To date, this study has provided the most comprehensive review of the success of TBVP to improve student achievement in Iowa. While other studies have focused on the importance of team building to the success of TBVP, as well as the achievement of self-

determined, uncommonly defined goals, this study was the first attempt to utilize common assessment data to compare the gains in student achievement between schools that participated in TBVP and schools that applied to participate in TBVP without acceptance. While other studies of TBVP in Iowa utilized a case study approach or mixed methodology, this study utilized quantitative measures to determine the relationship between goal rigor and gains in student achievement, as well as the relationship between participation in TBVP and gains in student achievement.

Additional study is justified prior to the implementation of the TBVP model statewide. Recent changes to data collection and reporting for all schools could confound additional study of this concept. Beginning with the 2005-2006 school year, school districts in Iowa were required to assess students in grades 3-8 using the ITBS and grade 11 using the ITED. This factor alone will greatly impact the amount of data available for study because cohort data will be more readily available. While further funding of TBVP would provide more data to study this concept, it is unclear whether it would yield any benefits beyond those already noted.

Access to data (in terms of pure cohort groups and individual students) was cited as one limitation of this study. During 2005, the Iowa Department of Education began the process of assigning individual student identification numbers through the Electronic Access for Iowa Education Records (Project EASIER). This electronic program will greatly impact the availability of individual student achievement data. Additionally, it will enable researchers to measure the academic growth of both individuals and cohort groups of students.

Another limitation identified in this study is related to the lack of long-term participation in TBVP. Further funding of TBVP would allow researchers to complete longitudinal studies of the success of TBVP, as well as evaluate the sustainability of any increases in student achievement over time. In order to ensure the availability of consecutive years of data would require the willingness of schools to participate in TBVP for consecutive years. Incentive for schools to participate in consecutive years could be provided through the assignment of additional points in the TBVP application process.

Policy Recommendations

In light of the findings from this study related to the importance of setting rigorous goals, staff from applicant schools might be provided technical assistance in the area of goal setting. Some technical assistance in goal writing has already been provided to Iowa schools through the implementation of other sections of the Iowa Teacher Quality Legislation (Chadwick, 2002). Specific assistance to TBVP applicant schools, however, might complement that training.

The primary question posed by this study was, *Does Team-Based Variable Pay Work?* The answer to that question appears to be yes, in that it requires participants to engage in the type of activities shown to impact motivation, effort, and actions, a finding supported by the research of Chadwick (2002, 2004) and Binder (2005). Based upon the findings from this study, working toward the achievement of a monetary award does not appear to be a necessary component to impact student achievement. TBVP participation may encourage teams of school personnel to work collaboratively to define a desired outcome (increased student achievement) and work toward its accomplishment; however, findings from this

study suggest that intrinsic rewards have a greater impact on increased student achievement than extrinsic rewards.

Several recommendations can be made at the conclusion of this study. Based on the findings of this research, the researcher has proposed a number of recommendations. Included in those recommendations are further studies of the impact of rigorous goals on student achievement, particularly in schools/states where SBPA programs include student achievement goals that are imposed upon schools. Another recommendation relates to study of the type of support necessary to promote team building among school personnel. A final recommendation includes study of how to achieve teacher motivation, buy-in, and focus on desired results without an SBPA program.

The impact of imposed goals.

In several states and local school districts, SBPA programs are mandatory. Included in those programs are typically goals for reading and mathematics based upon local or state assessments. Those goals, however, are usually imposed on teachers/schools without the participation of local school personnel in their development. In such cases, it would appear that what is missing are the elements of teacher buy-in, motivation, and collaborative work toward a desired outcome.

Studies of the impact of those goals, however rigorous they may be, would be necessary to determine if they have the same impact on increases in student achievement as was determined in this study. This study demonstrated the relationship between rigorous goals and increases in student achievement; however, their relationship may have been strengthened by the following teamness characteristics: “1) common tasks, common identity, and shared tenets; (2) mutual trust; (3) open, direct communication and conflict, (4) risk

taking, and (5) awareness and acceptance of group structure” (Binder, 2005, p. iv). It is unlikely that these characteristics are present in mandatory SBPA programs. Consequently, further study of these programs may determine their effectiveness/ineffectiveness to increase student achievement.

Support for team building.

Numerous studies have been completed related to school culture. Binder indicated that the “creation of a caring school culture” is vital to meeting the needs of both teachers and students (2005, p. 14). The creation of this type of school culture, evidenced by teamness, may require the leadership of both administrators and teachers.

At the heart of TBVP is this aspect of teamness. Chadwick (2002, 2004) and Binder (2005), however, determined that it was not the monetary awards associated with TBVP that mattered to teachers, a finding complemented by this study. If the monetary award is not important, it appears that what is needed is further study focused on teamness. Specifically, additional study may be needed to determine the strategies utilized by school leaders to promote teamness in their schools.

Binder’s (2005) study was a case study of teamness in three elementary buildings that participated in Iowa’s TBVP pilot project. Future research is needed to determine not only how teamness can be promoted at the secondary level, but also how teamness can be promoted in schools not participating in an SBPA program. As it is unlikely that teamness is unique to Iowa, future study may also be needed of the characteristics of successful teams in other states.

Results without an SBPA program.

As was stated earlier in this chapter, Iowa has allocated at least a half-million dollars to date on the TBVP pilot project. If the desired results can be achieved without such a program, perhaps it is time to pursue something different, something that has been determined to successfully impact increased student achievement without the *dangling carrot*, the promise of monetary awards. If rigorous goals, bolstered by teamness that includes the elements of collaboration, teacher motivation, and focus on common outcomes can lead to increased student achievement, then it is unclear why states and school districts continue to fund SBPA programs.

Perhaps the focus should be on helping school personnel build school cultures defined by the positive attitudes and beliefs of all stakeholders. Specifically, focus should be on determining how to ensure that stakeholder beliefs and attitudes reflect agreement, a sense of community, and teamness. Chadwick (2002) noted that many teachers reported that teamwork and collaboration were a result of participation in TBVP; however, she also indicated that 93% of the TBVP staff she interviewed indicated they would have worked equally as hard to achieve the school's goals, even without a bonus. Future research to determine how to create such a school culture without an SBPA program may be needed.

Remaining questions.

Numerous questions have emerged as a result of these findings. One question includes: Is student achievement impacted to a greater degree by goal rigor or the goal-setting process? In TBVP, school personnel were charged with setting rigorous goals defined by a set of criteria (included in the TBVP application rubric). What was not determined by this study is the *process* utilized by school personnel to reach agreement on the goals.

Consideration of this *process* leads to additional questions regarding the following: What is the driving force behind the motivation of school personnel to develop rigorous goals? When rigorous goals are developed, do teachers drive them? What happens when rigorous goals are driven by administrators at the building/district level or state legislators (in a top down approach)? Is goal rigor present when teachers are not involved in the goal setting process? How do school leaders encourage/motivate school personnel to set rigorous goals?

Additional questions have also emerged with regard to the impact of NCLB on TBVP in Iowa. Specifically, what role, if any, does extrinsic motivation defined by the threat of possible sanctions play in the success of rigorous goals associated with TBVP? During the first year of TBVP implementation (2001-2002), NCLB, intended to provide increased opportunities for children to succeed academically, was signed into law (January 8, 2002). As a part of its application with the United States Department of Education (USDE), the Iowa Department of Education was compelled to develop state level trajectories for reading and mathematics based upon the proficiency levels of school districts in Iowa. In turn, Iowa school district leaders were charged with developing their own trajectories for achieving proficiency for all students by the 2013-2014 school year, based upon the state's trajectories.

Since that time, each school district in Iowa has been charged with maintaining its status in terms of the percentage of students proficient on the Iowa Tests (if it was already performing above the state's trajectory) or working to increase the percentage of students proficient until they are in line with the state's trajectories (if it was performing below the state's trajectories) (IDE, 2002). It is not clear whether NCLB, inclusive of sanctions for performance below the established school district trajectories, influenced the efforts of school personnel to work harder to increase student achievement. Furthermore, it is unclear whether

a correlation exists between schools' trajectories, baseline of student achievement levels, the rigor of district improvement goals, and gains in student achievement.

Another question unanswered by this study includes: Does goal rigor differ in its impact on Iowa schools depending upon their location within the state? The state of Iowa is divided into twelve educational regions (Area Education Agencies, intermediary agencies that provide support services to local school districts). What was not determined by this study is if schools are more likely to experience greater gains in student achievement depending upon the region in which they are located. Additionally, it is also unclear as to whether the rigor of school district's goals are impacted by the region in which they are located.

It is possible that Team-Based Variable Pay has come and gone in Iowa. Having been funded for only three out of the past five years, its future is unclear. As a result of this study, several recommendations can be made regarding the design of any future pilot projects in Iowa. Perhaps one of the most notable recommendations can be made in terms of commitment to the project. One of the greatest limitations to the success of this study includes the years of TBVP funding. Because TBVP was only funded for three of five years since its inception, data were limited with regard to TBVP participation. Increased commitment to future pilot projects on the part of the state legislature may increase the integrity of studies related to such pilot projects.

The question remains: Does Team-Based Variable Pay work? It depends upon how the word *works* is defined. If *works* is defined in terms of whether TBVP was instrumental in the accomplishment or achievement of what was intended (increased gains in student achievement), perhaps not. Results from this study indicate that what does *work* are rigorous student achievement goals established through the collaborative efforts of school personnel.

Exactly how rigorous goals translate into gains in student achievement, however, has not been established.

References

- Armstrong, D., Gosling, A., Weinman, J., & Martaeu, T. (1997). The place of inter-rater reliability in qualitative research: An empirical study. *Sociology* 31(3), 597-607.
- Bandura, A. (1997). Self-efficacy: The exercise of control. New York: Freeman. In Boekaerts, M., Pintrich, P.R., & Zeidner, M. (Eds.) (2000). *Handbook of self-regulation*. San Diego: Academic Press.
- Becker, W.E. (1998). *Standards and testing: Another view*. Retrieved December 29, 2005, from <http://www.indiana.edu/>
- Binder, S. S. (2005). *The importance of the teams in Iowa team-based variable pay pilot project schools*. Unpublished doctoral dissertation, Iowa State University.
- Borman, G., Hewes, G., Overman, L., & Brown, S. (2002). *Comprehensive school reform and student achievement: A meta-analysis*. Center for Research on the Education of Students Placed At Risk (CRESPAR), Retrieved January 7, 2006, from <http://www.csos.jhu.edu/crespap/techreports/report59.pdf>
- Boyd, V. (1992). *School context: Bridge or barrier to change*. Southwest Educational Development Laboratory, Retrieved August 6, 2005 from: <http://www.sedl.org/change/school>
- Bracey, G. W. (2004). Value-added assessment findings: Poor kids get poor teachers. *Phi Delta Kappan*. 86(4), p. 331-333.
- Burgess, S., Croxson, B., Gregg, P., & Propper, C. (2001). *The intricacies of the relationship between pay and performance for teachers: Do teachers respond to performance related pay schemes?* Retrieved January 3, 2006, from <http://www.bris.ac.uk/Depts/CMPO/workingpapers/wp35.pdf>

- Chadwick, D. (2002). *Team-based variable pay: Report of the Iowa project*. Des Moines, IA: Department of Education.
- Chadwick, D. (2004). *Team-based variable pay: Report of the Iowa project*. Des Moines, IA: Department of Education.
- Clees, W. J. & Nabors, M. L. (1992). Teacher incentive programs: Do they make better teachers? *Education*, 113, 1-4.
- Clotfelter, C. T. & Ladd, H. F. (1996). Recognizing and rewarding success in public schools. *Holding schools accountable: Performance-based reform in education*, In Ladd, H. (Ed.) 23-63. Washington, D.C.: The Brookings Institution.
- Coleman, J.S., Campbell, E.Q., Hobson, C.J., McPartland, J., Mood, A.M., Weinfeld, F.D., York, R.L. (1966). Equality of educational opportunity. Washington, DC: U.S. Government Printing Office.
- Cooper, S. T. & Cohn, E. (1997). Estimation of a frontier production function for the South Carolina educational process. *Economics of education review*, 16, 313-327.
- Council of Chief State School Officers (CCSSO). (2005). *Support for school improvement*, retrieved January 7, 2006, from <http://www.ccsso.org/content/PDFs/SSINewsletterMay05.pdf>.
- Drew, G. (1984). The comprehensive education reform act of 1984. *Education* (108)4, 427-432.
- Education Commission of the States. (2001). Performance-based pay: Key questions and lessons from five current models. Author. Retrieved May 22, 2004 from <http://www.ecs.org/clearinghouse/28/30/2830.htm>

- Evans, C., Stewart, P., Mangin, M., & Bagley, C. (2001). Teacher quality: Issues and research. *Education* 122(1), 200-205.
- Ferguson, R.F. (1991). Paying for public education: New evidence on how and why money matters. *Harvard Journal on Legislation*, 28(2), 465-498.
- Ferraiolo, K., Hess, F., Maranto, R., & Millman, S. (2004). Teachers' attitudes and the success of school choice. *Policy Studies Journal* 32(2), 209-225.
- Finn, C., Kanstaroom, M., & Petrilli, M. (1999). *The quest for better teachers: Grading the states*. Washington D.C.: Thomas B. Fordham Foundation. Retrieved April 1, 2002, from the Thomas B. Fordham Foundation website:
<http://www.edexcellence.net/better/quest/excel/iowa.html>
- Firestone, W. A. & Pennell, J. R. (1993). Teacher commitment: Working conditions and differential incentive policies. *Review of Educational Research* 63(4), 489-525.
- Forsyth, R. A., Ansley, T. N., Feldt, L. S., & Alnot, S. D. (2003). *The Iowa tests guide to research and development: Iowa tests of educational development*. University of Iowa: Riverside.
- Goorian, B. (2000). *Alternative teacher compensation* (Report No. 142). Eugene, OR: Clearinghouse on Educational Management. (ERIC Document Reproduction Service No. ED446368), Retrieved January 29, 2004 from
<http://www.ericfacility.net/ericdigests/ed446368.html>
- Grissmer, D. & Flanagan, A. (1998). Exploring rapid achievement gains in North Carolina and Texas. *National Education Goals Panel*.
- Guernsey, M. A. (1986). State-mandated teacher incentive and school improvement plans: Problems and connections. *ERS Spectrum* (6)1, 21-24.

- Hall, S. C. (1995). *The road less traveled: Elementary teacher teams*. LaVerne, CA: University of LaVerne.
- Hambleton, R.K., Jaeger, R.M, Koretz, D., Linn, R.L., Millman, J., & Phillips, S.E. (1995). Review of the measurement quality of the Kentucky Instructional Results Information Systems, 1991-1994. A report prepared for the Office of Education Accountability, Kentucky General Assembly, Frankfort, KY: Office of Education Accountability.
- Hanes, R. C. & Mitchell, (1985). Teacher career development in Charlotte-Mecklenburg. *Educational Leadership*, (43)3, 11-14.
- Heneman, H. (1998). Assessment of the motivational reactions of teachers to a school-based performance award program. *Journal of Personnel Evaluation in Education* 12(1), 43-59.
- Heneman, H. L., Ledford, G.E., & Gresham, M. T. (2000). The changing nature of work. In S. L. Rynes & B. Gerhart (Eds.), *Compensation in organizations* (pp. 195-240). San Francisco: Jossey-Bass.
- Heneman, H. & Milanowski, A. (1999). Teachers' attitudes about teacher bonuses under school-based performance award programs. *Journal of Personnel Evaluation in Education* 12(4), 327-341.
- Hood, C., Scott, C., James, O., Jons, G., & Travers, T. (1999). *Regulation inside government: Waste-watchers, quality police, and sleaze-busters*. Oxford: Oxford University Press.
- Hoover, H. D., Dunbar, S. B., Frisbie, D. A., Oberley, K. R., Ordman, V. L., Naylor, R. J., Bray, G. B., Lewis, J. C., Qualls, A. L., Mengeling, M. A., & Shannon, G. P. (2003). *The Iowa tests guide to research and development: Iowa tests of basic skills*. University of Iowa: Riverside.

Iowa Administrative Code 281 12.2[256]

Iowa Department of Education (IDE). (2002). *No child left behind act*. Retrieved April 16, 2006 from: <http://www.state.ia.us/educate/ecese/nclb/index.html>

Iowa Department of Education (IDE). (2004). *The annual condition of education report: A report on prekindergarten, elementary, and secondary education*. Retrieved May 15, 2005 from:
<http://www.state.ia.us/educate/fis/pre/coer/doc/coer05.pdf>

Iowa Department of Education (IDE). (2005). Iowa education data spreadsheets for the 2004-2005 school year. Retrieved August 30, 2005, from
<http://www.state.ia.us/educate/fis/pre/eddata/ied05/index.html>

Jacobson, S. (1992). Performance-related pay for teachers: The American experience. In Tomlinson, H. (Ed.) *Performance-related pay in education*. London: Routledge.

Jacobson, S. (1995). Monetary incentives and the reform of teacher compensation: a persistent organizational dilemma. *International Journal of Education Reform*, 4(1), 29-35.

Jordan, H.R., Mendro, R.L., & Weersinghe, D. (1997). Teacher effects on longitudinal student achievement: A preliminary report on research on teacher effectiveness. Paper presented at the National Evaluation Institute, Indianapolis, IN. Kalamazoo, MI: CREATE, Western Michigan University.

Kelley, C. (1999). The motivational impact of school-based performance awards. *Journal of Personnel Evaluation in Education*, 12(4), 309-326.

Kelley, C. (2000). *Douglas County Colorado performance pay plan*. Madison, WI: Consortium for Policy Research in Education, Wisconsin Center for Education

- Research, University of Wisconsin-Madison. Retrieved November 20, 2003, from <http://www.wcer.wisc.edu/cpre/teachercomp>.
- Kelley, C., Odden, A., Milanowski, A., & Heneman, H. (2000). *The motivational effects of school-based performance awards*. Consortium for Policy Research in Education, University of Pennsylvania.
- Kelley, C., Heneman, H., & Milanowski, A. (2002). Teacher motivation and school-based performance awards. *Educational Administration Quarterly*, 38(3), 372-401.
- Koretz, D.M. and Barron, S.I. (1998). *The validity of gains in scores on the Kentucky Instructional Results Information System (KIRIS)*. Santa Monica, CA: RAND Corporation.
- Kreps, D. M. (1997). Intrinsic motivation and extrinsic incentives. *The American Economic Review*, 87, 359-364.
- Leithwood, K. & Earl, L. (2000). Educational accountability effects: An internal perspective. *Peabody Journal of Education*, 75(4), 1-18.
- Leithwood, K. & Jantzi, D. (2000). The effects of transformational leadership on organizational conditions and student engagement with school. *Journal of Educational Administration*, 38(2), 112-129.
- Locke, E.A., & Latham, G.P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.
- Lortie, D. (1975). *Schoolteacher: A sociological study*. Chicago: University of Chicago Press.
- Luce, J. A. (1998). Career ladders: Modifying teachers' work to sustain motivation. *Education*, (119)1, 15-19.

- Marsden, D. & Richardson, R. (1994). Performing for pay? The effect of merit pay on motivation in a public service, *British Journal of Industrial Relations*, 32(2), 243-262.
- Mitchell, D., Lewin, D., & Lawler, E. (1990). Alternative pay systems, firm performance, and productivity. In A. S. Blinder (Ed.), *Paying for productivity: A look at the evidence* (pp. 15-94). Washington, DC: Brookings Institution.
- Moore-Johnson, S. (1984). Merit pay for teachers: A poor prescription for reform. *Harvard Educational Review*, 54, 175-185.
- Murnane, R. J. & Cohen, D. K. (1986). Merit pay and evaluation problem: Why most merit pay plans fail and a few survive. *Harvard Educational Review*, 56(1), 1-17.
- Nation's Report Card. (2000). *State profiles*. Retrieved December 29, 2005, from <http://nces.ed.gov/nationsreportcard/states/>
- Nelson, W. (2001). Timequake alert. *Phi Delta Kappan*, 82(5), 384-390.
- Odden, A. (1994). Decentralized management and school finance. *Theory Into Practice*, 33(2), 104-122.
- Odden, A. (2000). New and better forms of teacher compensation are possible. *Phi Delta Kappan*, (81)5, 361-366.
- Odden, A., Kelley, C., Heneman, H., & Milanowski, A. (2001, November). *Enhancing teacher quality through knowledge- and skills-based pay*. CPRE Policy Briefs. Retrieved January 16, 2004, from <http://www.cpre.org/Publications/rb34.pdf>
- Odden, A. & Kelley, C. (2002). *Paying teachers for what they know and do: New and smarter compensation strategies to improve schools* (2nd ed.). Thousand Oaks, CA: Corwin Press.

- Poggio, J. (2000). Statewide performance assessment and school accountability. In R. S. Pankrastz & J. M. Petrosko (Eds.), *All children can learn: Lessons from the Kentucky reform experience*. San Francisco: Jossey-Bass.
- Protsik, J. (1996). History of teacher pay and incentive reforms. *Journal of School Leadership*, 6(3), 265-289.
- Reed, A. & Bergemann, V. (1995). *In the classroom: An introduction to education*. Guilford, CO: Dushkin Publishing Group/Brown and Benchmark Publishers.
- The Rural School and Community Trust. (2002). *Results of four-state study: Smaller schools reduce harmful impact of poverty on student achievement*. Retrieved September 22, 2005, from <http://www.ruraledu.org/>
- Sanders, W.L. & Rivers, J.C. (1996). Cumulative and residual effects of teachers on future student academic achievement. Knoxville: University of Tennessee Value-Added Research and Assessment Center.
- Schunk, D. H. (1995). Self-efficacy and education and instruction. In J.E. Maddux (Ed.), *Self-efficacy, adaptation, and adjustment; Theory, research, and application* (pp. 281-303). New York: Plenum Press.
- Schunk, D. H. (2001). *Self-regulation through goal setting*. Greensboro, NC: Clearinghouse on Counseling and Student Services. (ERIC Document Reproduction Service No. ED462671), Retrieved January 30, 2006 from <http://web104.epnet.com/citation.asp>
- Shokraii, N. H. (1997). *Why catholic schools spell success for America's inner-city children*. The Heritage Foundation. Retrieved July 24, 2005, from <http://www.heritage.org/Research/UrbanIssues/BG1128.cfm>

- Silver, M. (2004). *Trends in school reform*. New Horizons for Learning, Retrieved January 7, 2006, from <http://www.newhorizons.org/trans/silver2.htm>.
- Skrla, L., Scheurich, J. J., Garcia, J., & Nolly, G. (2004). *Educational Administration Quarterly*, (40)1, 135-164.
- Smith, S. & Mickelson, R. (2000). All that glitters is not gold: School reform in Charlotte-Mecklenburg. *Educational Evaluation and Policy Analysis*, 22(2), 101-127.
- Social and Economic Trend Analysis (SETA). (2005). *School District Profile Reports for Iowa*. Retrieved August 31, 2005, from <http://www.seta.iastate.edu/publicservices/publications/schooldistrict/profile/>
- Stevens, N., Spaulding, A., Burleson, C., & Killgore, V. (1998). *Incentive grant programs: A report to the 76th Texas Legislature from the Texas Education Agency*. Austin, TX: Texas Education Agency.
- Strahan, D. (2003). General patterns and particular pictures: Lessons learned from reports from "beating the odds" schools. *Journal of Curriculum & Supervision*, (18)4, 296-306.
- Triplett, S.E. (1997). *A preliminary analysis of the 1996 National Assessment of Educational Progress (NAEP): The class of 2000*. Research Triangle Park, North Carolina: The Center for Research in Education. (ERIC Document Reproduction Service No. ED 414 304).
- White, B. (2002). *Performance-based teacher compensation in Iowa*. Madison, WI: University of Wisconsin-Madison. Consortium for Policy Research in Education. Retrieved October 21, 2003, from <http://www.wcer.wisc.edu.cprc>

- Whitehurst, G. J. (2002). Improving teacher quality. *Spectrum: Journal of State Government*, (75)3, 12-16.
- Wilms, W.W. & Chapleau, R.R. (1999, November 3). The illusion of paying teachers for student performance. *Education Week*, November 3. Retrieved October 29, 2003, from <http://www.edweek.org/ew/ewstory.cfm?slup=10wilms.h19>
- Wright, S.P.; Horn, S.P.; and Sanders, W.L. (1997). Teacher and classroom context effects on student achievement: Implications for teacher evaluation. *Journal of Personnel Evaluation in Education*, 57-67.
- Zimmerman, J., (1998). Developing self-fulfilling cycle of academic regulation: An analysis of exemplary instructional models. In D.H. Schunk & B.J. Zimmerman (Eds.), *Self-regulated learning: From teaching to self-reflective practice* (pp. 1-19). New York: Guilford Press.

Appendices

Appendix A: Checklist for TBVP (2001-2002)

Reader _____

District _____

Building _____

Assessment System:

- #1 (0 = no evidence; 3 = reading or math; 5= both reading and math)
- #2 (0 = no evidence; 3 = some evidence; 5= adequate evidence)
- #3 (0 = no evidence; 1 = evidence)
- #4 (0 = no evidence there will be data; 1 = data forthcoming; 3 = data included that appears to be valid and reliable)
- #5a/b (0 = no evidence; 3 = some evidence; 5 = adequate evidence)
- #6 (0 = no evidence; 3 = one measure; 5= two measures)

Score	Description
	1. At least one standardized assessment measure for at least reading and mathematics must provide pre and post assessment of student progress on a school year basis (e.g. fall and spring).
	2. Pre/post assessments must use the same assessment measure or an equivalent measure (an equivalent measure may be an alternate form or an assessment that is statistically equated).
	3. Approximate times that the pre/post assessment measure is administered.
	4. If data are already available from the pre-assessment for the participating attendance center, it should be submitted to the Department with this application.
	5a. Multiple measure (in addition to the ITBS/ITED) in reading must have been administered to all students at the attendance center for at least two years before application (i.e. 1999/00 and 2000/01 school years).
	5b. Multiple measures (in addition to the ITBS/ITED) in mathematics must have been administered to all students at the attendance center for at least two years before application (i.e. 1999/00 and 2000/01 school years).
	6. Inclusion of data that documents subgroup achievement and performance levels for the multiple measures used to determine progress on the attendance center's annual improvement goals.

Subtotal _____ (possible points 29)

Attendance Center Annual Improvement Goals

#7,8,19,14 (0 = no evidence; 3 = adequate evidence; 5 = exceptional evidence)

#9,12,13 (0 = no evidence, 1 = some evidence, 3 = adequate evidence)

#11 (include this item in #10 score)

Score	Description
	7. Academic goals in the areas of reading and mathematics and may have science (elementary buildings that do not have an 8 th grade need not establish a science goal).
	8. Goals must indicate expected gain (while neither long-range nor APR goals need to be stated in numerical terms, "expected gain" must be numeric).
	9. Mathematical procedure to be used to determine performance increases (may range from simple difference scores to complicated statistical equations).
	10. Evidence of the data for which goal(s) is established (what data did you use to establish your goals?).
	11. If a science goal is established, then evidence for the assessment system and data must be included in the application (while school districts must have an annual improvement goal in science, and report in 8 th and 11 th grade, elementary attendance centers that do not have an 8 th grade are exempt such as K-5 buildings).
	12. Building goals shall demonstrate alignment with the district-level goals included in the Comprehensive School Improvement Plan.
	13. Multiple assessment measures must be specified which will be used to document achievement of the goals.
	14. Validity and reliability information must be provided for the assessment measures that are used to determine progress on building goals.

Subtotal _____ (possible points 29)

Local Board Approval

#15 (0 = no evidence, 1 = some evidence, 3 = adequate evidence)

#16 (0 = no evidence; 1 = evidence)

Score	Description
	15. The local board approved a method for financial rewards at the attendance center level upon achievement of the goals.
	16. Board minutes included in application.

Subtotal _____ (possible points 4)

Demonstration of Readiness

#17,19,20 (0 = no evidence; 1 = evidence)

#18 (0 = no evidence; 3 = some evidence; 5 = adequate evidence)

Score	Description
	17. Willingness to participate.
	18. Professional development plans for the attendance center.
	19. Availability and use of data at the attendance center.
	20. Involvement of all attendance center staff in achieving attendance center goals.

Subtotal _____ (possible points 8)

Total score for application _____

Appendix B: Checklist for TBVP (2003-2004)

Reader: _____

District: _____

Building: _____

Assessment system:

Score	Description
	1. At least one standardized assessment measure for at least reading and mathematics must provide pre and post assessment of student progress on a school year basis (e.g. fall and spring). (0 = no evidence; 3 = reading or math or both subjects to only part of the student body; 5 = both reading and math assessed for all students)
	2. Pre/post assessments must use the same assessment measure or an equivalent measure (an equivalent measure may be an alternate form or an assessment that is statistically equated). (0 = no evidence; 3 = evidence)
	3. Approximate times that the pre/post assessment measures are administered. (0 = no evidence; 1 = evidence)
	4. If data are already available from the pre-assessment for the participating attendance center, it should be submitted to the Department with this application. (0 = no evidence; 1 = evidence of data or that data will be forthcoming)
	5a. Multiple measures (in addition to the ITBS/ITED) in reading must have been administered to all students at the attendance center for at least two years before application (i.e. 2001/02 and 2002/03 school years). 5b. Multiple measures (in addition to the ITBS/ITED) in mathematics must have been administered to all students at the attendance center for at least two years before application (i.e. 2001/02 and 2002/03 school years). (0 = no evidence; 3 = reading or math or both subjects to only part of the student body; 5 = both reading and math assessed for all students)
	6. Inclusion of data that documents subgroup achievement and performance levels for the measures used to determine progress on the attendance center's annual improvement goals. (0 = no evidence; 3 = one measure; 5 = two measures)

Possible points: 20 Points awarded: _____

Goals and Targeted Levels of Improvement:

Score	Description
	7. Academic goals in the areas of reading and mathematics (may have science). (0 = no evidence; 3 = adequate evidence; 5 = exceptional evidence)
	8. Goals must indicate expected gain (must be numeric). Goals must be improvement goals (gain must be greater than the year before). If goals are measured by ITBS/ITED must meet or exceed the Annual Measurable Objectives in reading and mathematics as required by NCLB. Effect size or

	similar measure should be given to illustrate the rigor of the goals. Explain how the amount of growth in the goal was chosen. (0 = no evidence; 3 = adequate evidence; 5 = exceptional evidence; 10 = exceptional evidence including evidence of rigor)
	9. Mathematical procedure to be used to determine performance increases. (0 = no evidence; 1 = some evidence; 3 = adequate evidence)
	10. Evidence of the data for which goal(s) is established. (0 = no evidence; 1 = some evidence; 3 = adequate evidence)
	11. Building goals shall demonstrate alignment with the district-level goals included in the Comprehensive School Improvement Plan and No Child Left Behind. (0 = no evidence; 1 = some evidence; 3 = adequate evidence)
	12. Assessment measures specified which will be used to document achievement of the goals. (0 = no evidence; 1 = some evidence; 3 = adequate evidence)

Possible points: 22 Points awarded: _____

Local Board Approval:

Score	Description
	15. The local board approved a method for financial rewards at the attendance center level upon attainment of the goals or evidence is provided that the proposal is on the local board agenda for September. (0 = no evidence; 1 = some evidence; 3 = adequate evidence)
	16. Board minutes included in application. (0 = no evidence; 1 = evidence)

Possible points: 4 Points awarded: _____

Demonstration of Readiness

Score	Description
	17. Willingness to participate documented. (0 = no evidence; 1 = evidence)
	18. Professional development plans for the attendance center. (0 = no evidence; 3 = adequate evidence; 5 = exceptional evidence)
	19. Availability and use of data at the attendance center. (0 = no evidence; 1 = some evidence; 3 = adequate evidence)
	20. Involvement of all attendance center staff in achieving attendance center goals. (0 = no evidence; 1 = evidence)

Possible points: 10 Points awarded: _____

Financial Award System

Score	Description
	21. The proposed financial award system is included in proposal. (0 = no evidence; 1 = evidence)

Possible points: 1 Points awarded: _____

Total points before addition for pilot schools:

Possible points: 57 Points awarded: _____

Previous participation:

Score	Description
	School was one of the 18 original pilot schools. (0 = no; 15 = yes)

Possible points: 15 Points awarded: _____

Total: Possible points: 72

Points awarded: _____

Appendix C: School District Permission

Date

Superintendent
School District
Address

Dear Superintendent:

I am writing my Ph.D. dissertation on the effectiveness of Team-Based Variable Pay (TBVP) to improve student achievement. Staff at Your Elementary applied to participate in TBVP at some point between 2001-2002 and 2004-2005. As a part of my study, I will collect grade level data to determine average growth by cohort groups for groups of schools that have participated in TBVP compared to groups of schools that applied, but were not selected to participate. I am seeking your permission to obtain ITBS/ITED data directly from Iowa Testing Program for the following grade levels in your district:

Years/Grade levels:

2002-2003: Grades 3 and 4

2003-2004: Grades 4 and 5

Random identification numbers will be assigned to all data for confidentiality purposes. Student, building, and district identities will be kept confidential. If you would allow me to obtain Iowa Testing data directly from Iowa Testing Program please indicate your permission by signing below. I appreciate your help with this effort.

Thanks for your assistance!

Sincerely,

Deborah B. Boring
School Improvement Consultant
Iowa Department of Education
debbie.boring@iowa.gov
515-281-3198

Superintendent's Signature: _____

Appendix D: Permission for Iowa Testing

Superintendent
District
Address

Dr. David Frisbie, Director
Iowa Testing Programs
The University of Iowa
Iowa City, Iowa 52242-1529

Dr. Frisbie,

I have spoken to Deborah Boring at the Iowa Department of Education. She is working on her dissertation: *Does Team-Based Variable Pay Work?* She intends to use grade level student achievement data (percentile ranks and standard scores) from one of the schools in my district. I am giving my permission for Iowa Testing Programs to release those data to her for the specified years/grade levels in that building. I understand that student identities will not be made known to her. In addition to National Percentile Ranks and National Standard Scores, only the building/grade levels/years of assessment will be identified. This release agreement extends through December 2006 when her study will be complete.

Consequently, I agree to the release of ITBS/ITED scores to Deborah B. Boring. The requested scores include those specified below.

Years/Grades:

2002-2003: Grades 3 and 4

2003-2004: Grades 4 and 5

District: Community School District

School: Elementary

Grade Level Achievement Scores: 1) National Percentile Rank, and 2) National Standard Score

Test and Subtests:

ITBS (Grades 2- 8)

- A. 1) Mathematics Total, 2) Math Concepts and Estimates, 3) Math Problem Solving and Data Interpretation, and 4) Math Computation
- B. 1) Reading Total, 2) Comprehension, and 3) Vocabulary

Sincerely,

Superintendent's Signature

Date

Appendix E: INFORMED CONSENT DOCUMENT

Title of Study: Does Team-Based Variable Pay Work?
Investigators: Deborah B. Boring

This is a research study. Please take your time in deciding if you would like to participate. Please feel free to ask questions at any time.

INTRODUCTION

The purpose of this study is to help determine if Iowa's Team-Based Variable Pay (TBVP) Pilot Project has had an impact on improved student achievement and teacher motivation. You are being invited to participate in this study because at some point between the school years 2001-02 and 2004-05, your school applied to participate in TBVP.

DESCRIPTION OF PROCEDURES

If you are a teacher or building principal and agree to take part in this study, your involvement will last for about 45 minutes for the purpose of participating an interview. If you are a superintendent, your participation will involve providing written permission for the researcher to access your Iowa Testing student assessment data directly from Iowa Testing Program.

During the study you may expect the following study procedures to be followed: The district will provide written permission for the researcher to obtain ITBS/ITED data directly from Iowa Testing Program for particular buildings/grade levels. The researcher will assign random identification numbers to student data to ensure student/building/district confidentiality.

RISKS

While participating in this study you may experience the following risks: None foreseeable at this time.

BENEFITS

If you decide to participate in this study there may be no direct benefit to you. It is hoped that the information gained in this study will benefit society by helping to determine the success of Team-Based Variable Pay in Iowa.

COSTS AND COMPENSATION

You will not have any costs from participating in this study. You will not be compensated for participating in this study.

PARTICIPANT RIGHTS

Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide to not participate in the study or leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled.

CONFIDENTIALITY

Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, the Institutional Review Board (a committee that reviews and approves human subject research studies) may inspect and/or copy your records for quality assurance and data analysis. These records may contain private information.

To ensure confidentiality to the extent permitted by law, the following measures will be taken: subjects will be assigned unique codes for the purpose of data analysis. The research will have sole access to the data gathered, which will be kept in a locked file cabinet at the Iowa Department of Education. Additionally, any computer records will be password protected. All data related to this study will be erased/destroyed at the conclusion of the study (projected to be December 2006). If the results are published, all participants' identities will remain confidential.

QUESTIONS OR PROBLEMS

You are encouraged to ask questions at any time during this study. For further information about the study contact Deborah B. Boring, 515-281-3198 or Dr. Joanne Marshall, 515-294-9995. If you have any questions about the rights of research subjects or research-related injury, please contact Ginny Austin Eason, IRB Administrator, (515) 294-4566, austingr@iastate.edu, or Diane Ament, Research Compliance Officer (515) 294-3115, dament@iastate.edu.

SUBJECT SIGNATURE

Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document and that your questions have been satisfactorily answered. You will receive a copy of the signed and dated written informed consent prior to your participation in the study.

Subject's Name (printed) _____

Subject's Position _____

(Subject's Signature)

(Date)

INVESTIGATOR STATEMENT

I certify that the participant has been given adequate time to read and learn about the study and all of their questions have been answered. It is my opinion that the participant understands the purpose, risks, benefits and the procedures that will be followed in this study and has voluntarily agreed to participate.

(Signature of Person Obtaining
Informed Consent)

(Date)

Appendix F: Definition of Terms

The following working definitions will be used for this study:

Career ladder: plans aimed at improving teacher performance through a three- or four-step order, including additional pay for each step progression (Luce, 1998).

Differential staffing: plans that provide for the assignment of additional staff responsibilities, as well as increased salary (Ellis, 1984).

Incentive pay: rewards provided to teachers for the *conditions* under which they teach (Clees & Nabors, 1992).

Merit pay: "a generic term for any device that adjusts salaries or provides compensation to reward higher levels of performance" (Ellis, 1984, p. 1).

Performance-based pay: teacher pay that is based upon meeting a set criterion/criteria (Wilms & Chapleau, 1999).

Proficient: meeting a satisfactory level of performance (Iowa Administrative Code 281 12.2[256], 2004).

School-Based Performance Award Program: a program that provides school staff with monetary bonuses for increased student achievement related to the attainment of specific academic goals (Kelley, Heneman, & Milanowski, 2002).

Team-Based Variable Pay: "pay in addition to the base salary rewarded to a group of teachers and often other staff as the result of meeting a desired outcome. Typically the desired outcome is an improved score on a test of some kind. TBVP differs from merit pay in that all teachers benefit when a schoolwide goal is reached, rather than individual teachers receiving a bonus based on an administrator's rating" (Chadwick, 2002, p.8).

Appendix G: Participant School Descriptions

The Research Participants

Norman Borlaug School.

Norman Borlaug School is part of large metropolitan area in Iowa. The district is home to approximately 205, 684 residents. The majority of the residents are between the ages of 20-44 years of age. The percentage of residents between the ages of 5 and 17 years is approximately 17 (SETA, 2005). More than 32,000 students were enrolled in the district during the 2004-05 school year (Iowa Department of Education, 2005).

Within the population of the school district, Whites account for approximately 83 percent, compared to approximately 94 percent statewide. According to the 2000 Census (as cited in SETA, 2005), approximately 3,322 of the households in the county in which the district is located have been identified as linguistically isolated. The majority of those households speak Spanish (1,341); however, as many as 966 speak another Indo-European language and 833 speak an Asian language. Additionally, as many as 32 percent of the children in the district under the age of 18 years resides in a family headed by a single parent (SETA, 2005).

Norman Borlaug School is one of 42 elementary buildings in the district. It serves approximately 331 students in grades K-5. Of the students enrolled during 2004-05, 63.1 percent qualified for free and/or reduced priced meals (Low Socioeconomic Status [SES]), compared to 52.5 district-wide and 30 percent statewide (Iowa Department of Education, 2005). The school applied to participate in TBVP during the 2003-04 school year and was selected to participate; consequently, it was included in the TBVP comparison group.

Simon Estes School.

Simon Estes School is part of a comparatively large district that serves approximately 5,000 students. The district is located in a large metropolitan area. Six buildings serve students in Kindergarten through grade 12, including one high school, two middle schools, and three elementary schools. The percentage of the district's students who have been identified as Low SES is 6.8 (Iowa Department of Education, 2005).

Approximately 11,000 persons populate the community served by the district. According to the 2000 Census (as cited in SETA, 2005), 22 percent are between the ages of 5 and 17. Seventy-two percent of the adults in the community have had some post-secondary training, compared to 50 percent statewide (SETA, 2005).

The White population served by the district comprises 96 percent of the district's residents. The county in which the district is located includes households of which the total number identified as linguistically isolated equals approximately 3,322. The district is home to approximately 2,954 under the age of 18 years. Two-parent families account for approximately 89 percent of the households in the district (SETA, 2005).

According to the 2000 Census (as cited in SETA, 2005), the district's enrollment has increased steadily over the past few years and is projected to continue to increase in the next three years by as much as 19.4 percent. Projections for enrollment indicated that by the school year 2008-2009, the district might serve as many as 5,569 students (SETA, 2005). The district is comprised of six buildings: one high school, serving students in grades 10-12; two middle schools, serving students in grades 6-9; and three elementary buildings, serving students in grades Kindergarten through 5 (Iowa Department of Education, 2005).

Simon Estes School had approximately 458 students enrolled during the 2004-05 school year. Of those students enrolled, approximately 14.1 percent were identified as Low SES. The school is one of four elementary buildings within the district, serving students in grades K through 5 (Iowa Department of Education, 2005). The school applied to participate in TBVP during the 2003-04 school year and was selected to participate; thus, it was included in the TBVP comparison group.

Bill Cody School.

Bill Cody School is part of a district serving approximately 25,877 residents. The district is located close to a large metropolitan area in Eastern Iowa. Twenty-one percent of the district's residents are between the ages of 5 and 17 years. The number of households in the county in which the district is located that have been identified as linguistically isolated is approximately 500. The majority of those families speak Spanish or some other Indo-European language (SETA, 2004).

The district of which Bill Cody School is a part consists of nine buildings, including 5 elementary buildings (K-5). It has one middle school that serves students in grades 6-8, as well as one building that serves students in grades K-8. It has one high school, serving students in grades 9-12. Approximately 5,000 students are enrolled in the district.

Of the students served by Bill Cody School, 14 percent have been identified as Low SES, compared to 12.5 district-wide. During the 2004-05 school year, 435 students were enrolled in the school (Iowa Department of Education, 2005). Bill Cody School applied to participate in TBVP during both the 2001-02 and 2003-04 school years. It was selected to participate during the 2001-02 school years, but not during the 2003-04 school year. It was included in both the TBVP and Non-TBVP comparison groups (two different years' data).

Donna Reed School.

Donna Reed School is part of a small school district with an enrollment of approximately 740 students. District-wide, the percentage of students identified as Low SES is 37. The district consists of two elementary buildings and one secondary building that serves students in grades 7-12 (Iowa Department of Education, 2005).

Approximately 4,000 individuals reside in the area served by the school district of which Donna Reed School is a part. Five percent of those residents are under the age of 5 years. Seventeen percent of those students are between the ages of 5 and 17, 28 percent are between the ages of 20 and 44, and 20 percent of the population is 65 years of age or older (SETA, 2005).

Whites account for 99 percent of the district's population. Only 20 households countywide have been identified as linguistically isolated, speaking primarily another Indo-European language. The majority of the district's children under the age of 18 reside in two-parent households (80%). Thirty-seven percent of the district's households have children present, while 57 percent have no children present (SETA, 2005). It serves students in grades K-6. During the 2004-05 school year, the school had an enrollment of approximately 203 students. The percentage of students identified as Low SES during the 2004-05 school year was 40.4. Donna Reed School applied to participate in TBVP during the 2003-2004 school year and was not selected to participate. Donna Reed School was included in the Non-TBVP comparison group.

George Gallup School.

George Gallup School is part of a school district that only serves students in Kindergarten through grade 6. It is the only building in the district. Middle and high school

students residing in the area served by the district attend another school district due to a whole-grade sharing agreement. The total population in the geographic area served by the district is 1,300. The district is in a rural setting; however, it is only 60 miles from a major metropolitan area.

According to the census of 2000 (as cited in SETA, 2005), the community in which the district is located is home to approximately 1,300 people, 5 percent of whom are under the age of 5 years. Nineteen percent of the residents are between 5 and 17 years of age. Ninety-nine percent of the district's residents are White. Forty percent of the adults 25 years of age or older have completed some post-secondary education. The majority of the district's children under the age of 18 reside in two-parent households (89%). Only 22 families in the county have been identified as linguistically isolated (SETA, 2005).

George Gallup School serves approximately 99 students. The percentage of students in the school that have been identified as Low SES is 27.5 percent (Iowa Department of Education, 2005). George Gallup School applied to participate in TBVP during the 2001-2002 school year, and was selected; therefore, for the purpose of this study, it was included in the TBVP comparison group.

Johnny Carson School.

Johnny Carson School is part of a district with an enrollment of approximately 1,700 students. The district is home to approximately 14,600 residents. Twenty-one percent of the residents are between the ages of 5 and 17 years of age. A total of 41 households residing in the county in which the district is located have been identified as linguistically isolated.

Twenty-two of those families speak Spanish, 13 percent speak another Indo-European language, and 6 speak an Asian language.

Ninety-nine percent of the district's population is White. The remaining one percent are comprised of African American, American Indian, Asian/Pacific Islander, and other or multiple races. Forty-six percent of the district's adults (ages 25 years or older) have attained at least some post-secondary education, compared to a statewide average of 50 percent.

The district is comprised of two elementary buildings, one middle school, and one high school. Additionally, the district has an alternative high school, serving students in grades 9-12. Of those students enrolled, approximately 25.2 qualify for free and/or reduced priced meals.

Johnny Carson School serves students in grades 4-5. During the 2004-05 school year, approximately 301 students were enrolled. Of those students, 29.6 were identified as Low SES, compared to 25.2 district-wide (Iowa Department of Education, 2005). Johnny Carson School applied to participate in TBVP during the 2003-04 school year and was selected; consequently, it was included in the TBVP comparison group.

Harriet Nelson School.

Harriet Nelson School is part of a comparatively small school district serving approximately 575 students. The district is comprised of two elementary buildings and one secondary building. The district is in close proximity to a large metropolitan area. The percentage of the students in the district that have been identified as Low SES is 24 (Iowa Department of Education, 2005).

Approximately 2,900 people reside in the district of which Harriet Nelson School is a part. Twenty-one percent of the district's residents are between the ages of 5 and 17. Whites comprise 99 percent of the population of the district. A total of 35 families, countywide, have been identified as linguistically isolated (SETA, 2005).

The majority of the district's children under the age of 18 reside in two-parent households (86 percent). Approximately 40 percent of the adults 25 years of age or older have completed some post-secondary training. Forty-five of the families residing in the district have children present, while 52% have no children present. Only 3% of the families residing in the district are non-family households (SETA, 2005).

Harriet Nelson School (two different buildings within the same district) serves students in grades K-3 and 4-5. During the 2004-05 school year, it had approximately 147/119 students enrolled. Of those students, 24.4/30.3 percent were identified as Low SES. Harriet Nelson School applied to participate in TBVP during the 2001-02 school year and was not selected; consequently, it was included in the Non-TBVP comparison group.

Glenn Miller School.

Glenn Miller School is part of a school district located in a rural area of the state. Currently, the district serves approximately 1100 students. The district has two school buildings. One building houses the high school, and the other houses the elementary and middle schools. The percentage of the district's students that have been identified as Low SES is 28 (Iowa Department of Education, 2005).

The district of which Glenn Miller School is a part is home to approximately 5,816 people. Whites account for roughly 98 percent of the district's population according to the Census of 2000 (as cited in SETA, 2005). Twenty percent of those residents are between the ages of 5 and 17. Thirty-eight percent of the residents 25 years of age or older have achieved some postsecondary training, compared to the state average of 50 percent (SETA, 2005).

Eighty-five households in the county in which the district is located are considered to be linguistically isolated. Of those households, 42 speak Spanish, 27 speak another Indo-European language, and 16 percent speak an Asian language. The majority of the 1,714 households residing in the county are considered *family households* (i.e., they have two or more persons in the home related by blood) (SETA, 2005).

Glenn Miller School serves students in Kindergarten through grade five. Approximately 460 students are enrolled in the school. During the 2001-2002 school year, Glenn Miller School applied, but was not selected to participate in TBVP; hence, for the purpose of this study, it was included in the Non-TBVP comparison group.

Ann Landers School.

Ann Landers School is part of a rural district with an enrollment of approximately 1270 students. The district has one building at each level (elementary, middle, and high school). The percentage of students identified as Low SES in the district is 35.5 percent (Iowa Department of Education, 2005).

Approximately 8,200 people reside in the community served by the district of which Ann Landers School is a part. Seven percent of these residents are under the age of 5 years.

Twenty percent are between the ages of 5 and 17. Thirty-eight percent of the adults 25 years of age or older have completed some post-secondary education (SETA, 2005).

Ninety-eight percent of the district's residents are White. A total of 79 families, according to the Census of 2000 (as cited in SETA, 2005), have been identified as linguistically isolated. Four of those families speak Spanish, and 75 speak another Indo-European language (SETA, 2005).

A majority of the children living in the district reside in two-parent households (86%). Among all households in the district, 43 percent have children under the age of 18 present. Five percent of the households in the district have been identified as *non-family*, households with 2 or more non-related persons. Fifty-two households in the district had no children present (SETA, 2005).

Ann Landers School serves students in grades five through eight. The school's student enrollment is approximately 400. The percentage of students in the school that have been identified as Low SES is 36.1 (Iowa Department of Education, 2005). The school applied to participate in TBVP during the 2003-2004 school year and was selected; as a result, the school was included in the TBVP comparison group.

John Wayne School.

John Wayne School is part of a small school district that serves approximately 550 students in Kindergarten through grade 12. The district is comprised of three buildings, including one elementary, one middle school, and one high school. The percentage of students in the district that have been identified as Low SES is 33.3. The number of people residing in the area served by the district is approximately 2700 (Iowa Department of Education, 2005).

According to the Census of 2000 (as cited in SETA, 2005), 2,758 reside in the district. Six percent of those residents are under the age of 5, 19 percent are between the ages of 5 and 17. Ninety percent of those residents are White. Only 23 households in the county in which the district is located have been identified as linguistically isolated; 11 of those families are Spanish speaking and 12 speak another Indo-European language. Eighty percent of the children in the district reside in two-parent families (SETA, 2005).

John Wayne School serves students in grades 7 and 8. The enrollment of the school is approximately 104 students. Roughly 33 percent of those students have been identified as Low SES (Iowa Department of Education, 2005). John Wayne School applied to participate in TBVP during the 2003-2004 school year. It was not selected; as a result, for the purpose of this study, it was included in the Non-TBVP comparison group.

Andy Williams School.

Andy Williams School is part of a small, rural school district that serves approximately 118 students, K-8. A neighboring district serves students in the district in grades 9-12 as part of whole-grade sharing agreement. The percentage of students in the district that has been identified as Low SES is 49.2. (Iowa Department of Education, 2005).

Approximately 678 individuals populate the district. Five percent of those individuals are under the age of 5 years; 18 percent are between the ages of 5 and 17. Whites account for approximately 99 percent of the district's population, compared to 94 percent statewide. A total of 13 households in the county in which the district is located are considered linguistically isolated (SETA, 2005).

A majority of the 151 students under the age of 18 reside in two-parent families (69%). Thirty-one percent of those students under the age of 18 reside in households headed

by a single parent. The district expects to experience a decline in enrollment over the next few years (SETA, 2005).

Andy Williams School is part of a building serving grades Kindergarten through 8 (approximately 118). In grades 7 and 8, approximately 52 students are enrolled. For the purpose of this study, Andy Williams School was included in the Non-TBVP comparison group due to applying to participate in TBVP during the 2003-2004 school year and not being selected.

Bess Aldrich School.

Bess Aldrich School is part of a comparatively small school district with an enrollment of approximately 450 students, K-12. The district has two buildings: one elementary building and one 7-12 secondary building. Sixteen percent of the students district-wide have been identified as Low SES (Iowa Department of Education, 2005).

The number of people residing in the area served by the school district is approximately 2,500. Of those residents, 21 percent are between the ages of 5 and 17. The vast majority (95%) of the families residing in the district are family households (i.e., 2 or more persons related by blood, marriage, or adoption) (SETA, 2005).

A total of 35 households in the county in which the school district is located have been identified as linguistically isolated. These 35 households include families speaking both Spanish or another Indo-European language. The majority of the 650 children under the age of 18 reside in two-parent families (87 percent). Forty-nine percent of the adults above the age of 25 years have completed some post-secondary education, compared to the state average of 50 percent (SETA, 2005).

Bess Aldrich School has an enrollment of 235, in grades 7-12. At the building level, 14.3 percent of the students have been identified as Low SES (Iowa Department of Education, 2005). In 2003, Bess Aldrich School applied to participate in TBVP. It was not selected; consequently, for the purpose of this study, it was included in the Non-TBVP comparison group.

Cloris Leachman School.

Cloris Leachman School is part of the same school district as Simon Estes School. It serves students in grades 10-12. The number of students enrolled in that building was approximately 1000 during 2004-05 (Iowa Department of Education, 2005). Less than 6% of the students enrolled in Cloris Leachman School have been identified as Low SES (Iowa Department of Education, 2005). During 2001, Cloris Leachman School applied to participate in TBVP. It was selected and participated; therefore, for the purpose of this study, it was included in the TBVP comparison group.

Susan Glaspell School.

Susan Glaspell School is part of a small school district that serves approximately 450 students, K-12. Sixteen percent of those students have been identified as Low SES. The district has two buildings: one elementary (grades Kindergarten through 6) and one secondary building (grades 7 through 12). In grades 7 and 8, 79 students were enrolled during the 2004-05 school year (Iowa Department of Education, 2005).

The district is home to approximately 2,300 people. According to the census of 2000 (as cited in SETA, 2005), of those residents, 7 percent are under the age of 5 years, compared to the state average of 6 percent. Twenty percent are between the ages of 5 and 17, compared to the state average of 19 (SETA, 2005).

Only 39 percent of the adults residing in the district have completed some post-secondary education, compared to the state average of 50 percent. Whites in the district account for approximately 99 percent of the residents. A total of 41 households have been identified as linguistically isolated countywide. Of those households, the majority speak an Asian language (SETA, 2005).

Susan Glaspell School has approximately 225 students enrolled (grades 7-12). Fourteen percent of the district's secondary students have been identified as Low SES (Iowa Department of Education, 2005). Susan Glaspell School applied to participate in TBVP in 2001. It was not selected; thus, for the purpose of this study, it was included in the Non-TBVP comparison group.

Alex Karras School.

Alex Karras School is part of the same school district as Harriet Nelson School. It serves students in grades 7-12. The enrollment of Alex Karras School is roughly 287, 7-12, while in grades 9-12 approximately 195 students are enrolled. The percentage of students at the building level identified as Low SES is 21 (Iowa Department of Education, 2005). Alex Karras School applied to participate in TBVP during the 2001-2002 school, however it was not selected. Therefore, it was included in the Non-TBVP comparison group.

Harry Reasoner School.

Harry Reasoner School is part of the same school district as Donna Reed School. It serves about 380 students in grades 7-12. In grades 9-12, the enrollment is approximately 265. Roughly 32 percent of the students in the secondary building have been identified as Low SES (Iowa Department of Education, 2005). Harry Reasoner School applied to

participate in TBVP during the 2001-2002 school year. It was not selected, therefore, for the purpose of this study, it was included in the Non-TBVP comparison group.

Appendix H: IRB Materials

IOWA STATE UNIVERSITY
 OF SCIENCE AND TECHNOLOGY

 Institutional Review Board
 Office of Research Compliance
 Vice Provost for Research
 1138 Pearson Hall
 Ames, Iowa 50011-2207
 515 294-4566
 FAX 515 294-4267

TO: Deborah Boring

FROM: Human Subject Research Compliance Office

PROJECT TITLE: Does Team-Based Variable Pay Work?

RE: IRB ID No.: 05-365

APPROVAL DATE: August 26, 2005

REVIEW DATE: August 23, 2005

LENGTH OF APPROVAL: One year

CONTINUING REVIEW DATE: August 25, 2006

TYPE OF APPLICATION: ☒ New Project ☐ Continuing Review

Your human subjects research project application, as indicated above, has been approved by the Iowa State University IRB #1 for recruitment of subjects not to exceed the number indicated on the application form. All research for this study must be conducted according to the proposal that was approved by the IRB. If written informed consent is required, the IRB-stamped and dated Informed Consent Document(s), approved by the IRB for this project only are attached. Please make copies from the attached "masters" for subjects to sign upon agreeing to participate. The original signed Informed Consent Document should be placed in your study files. A copy of the Informed Consent Document should be given to the subject.

The IRB must conduct **continuing review** of research at intervals appropriate to the degree of risk, but not less than once per year. Renewal is the PI's responsibility, but as a reminder, you will receive notices at least 60 days and 30 days prior to the next review. **Please note the continuing review date for your study.**

Any **modification** of this research project must be submitted to the IRB for review and approval, prior to implementation. Modifications include but are not limited to: changing the protocol or study procedures, changing investigators or sponsors (funding sources), including additional key personnel, changing the Informed Consent Document, an increase in the total number of subjects anticipated, or adding new materials (e.g., letters, advertisements, questionnaires). Any future correspondence should include the IRB identification number provided and the study title.

Approval letter
Page 2
Boring

You must promptly report any of the following to the IRB: (1) **all serious and/or unexpected adverse experiences** involving risks to subjects or others; and (2) **any other unanticipated problems involving risks** to subjects or others.

Your research records may be audited at any time during or after the implementation of your study. Federal and University policy require that all research records be maintained for a period of three (3) years following the close of the research protocol. If the principal investigator terminates association with the University before that time, the signed informed consent documents should be given to the Departmental Executive Officer to be maintained.

Research investigators are expected to comply with the University's Federal Wide Assurance, the Belmont Report, 45 CFR 46 and other applicable regulations prior to conducting the research. These documents are on the Human Subjects Research Office website or are available by calling (515) 294-4566.

Upon completion of the project, a Project Closure Form will need to be submitted to the Human Subjects Research Office to officially close the project.

C: ELPS
JoAnne Marshall

ISU IRB #1	05-365
Approved Date:	August 26, 2005
Expiration Date:	August 25, 2006
Initial by	gc

INFORMED CONSENT DOCUMENT

Title of Study: Does Team-Based Variable Pay Work?
Investigators: Deborah B. Boring

This is a research study. Please take your time in deciding if you would like to participate. Please feel free to ask questions at any time.

INTRODUCTION

The purpose of this study is to help determine if Iowa's Team-Based Variable Pay (TBVP) Pilot Project has had an impact on improved student achievement and teacher motivation. You are being invited to participate in this study because at some point between the school years 2001-02 and 2004-05, your school applied to participate in TBVP.

DESCRIPTION OF PROCEDURES

If you are a teacher or building principal and agree to take part in this study, your involvement will last for about 45 minutes for the purpose of participating an interview. If you are a superintendent, your participation will involve providing written permission for the researcher to access your Iowa Testing student assessment data directly from Iowa Testing Program.

During the study you may expect the following study procedures to be followed: The district will provide written permission for the researcher to obtain ITBS/ITED data directly from Iowa Testing Program for particular buildings/grade levels. The researcher will assign random identification numbers to student data to ensure student/building/district confidentiality. Additionally, the researcher will conduct face-to-face interviews with randomly selected administrators and teachers (with their prior written permission) who were employed in those buildings during the year the school participated in TBVP. The researcher will schedule and conduct one-hour interviews with three teachers from one of each of the three study groups (one at each of the elementary, middle, and high school levels). Interviews will be audio recorded to allow the researcher to transcribe the interviews, after which the recordings will be erased (within approximately one month of the interview). Interviewees' identities will also be kept confidential.

RISKS

While participating in this study you may experience the following risks: None foreseeable at this time.

BENEFITS

If you decide to participate in this study there may be no direct benefit to you. It is hoped that the information gained in this study will benefit society by helping to determine the success of Team-Based Variable Pay in Iowa.

(SU IRB #1	05-365
Approved Date:	August 26, 2005
Expiration Date:	August 25, 2006
Initial by	ge

COSTS AND COMPENSATION

You will not have any costs from participating in this study. You will not be compensated for participating in this study.

PARTICIPANT RIGHTS

Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide to not participate in the study or leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled.

CONFIDENTIALITY

Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, the Institutional Review Board (a committee that reviews and approves human subject research studies) may inspect and/or copy your records for quality assurance and data analysis. These records may contain private information.

To ensure confidentiality to the extent permitted by law, the following measures will be taken: subjects will be assigned unique codes for the purpose of data analysis. The research will have sole access to the data gathered, which will be kept in a locked file cabinet at the Iowa Department of Education. Additionally, any computer records will be password protected. All data related to this study will be erased/destroyed at the conclusion of the study (projected to be December 2006). If the results are published, all participants' identities will remain confidential.

QUESTIONS OR PROBLEMS

You are encouraged to ask questions at any time during this study. For further information about the study contact Deborah B. Boring, 515-281-3198 or Dr. Joanne Marshall, 515-294-9995. If you have any questions about the rights of research subjects or research-related injury, please contact Ginny Austin Eason, IRB Administrator, (515) 294-4566, austingr@iastate.edu, or Diane Ament, Research Compliance Officer (515) 294-3115, dament@iastate.edu.

SUBJECT SIGNATURE

Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document and that your questions have been satisfactorily answered. You will receive a copy of the signed and dated written informed consent prior to your participation in the study.

ISU IRB #1	04-365
Approved Date:	August 26, 2005
Expiration Date:	August 25, 2006
Initial by	gc

Subject's Name (printed) _____

Subject's Position _____

(Subject's Signature)

(Date)

INVESTIGATOR STATEMENT

I certify that the participant has been given adequate time to read and learn about the study and all of their questions have been answered. It is my opinion that the participant understands the purpose, risks, benefits and the procedures that will be followed in this study and has voluntarily agreed to participate.

(Signature of Person Obtaining
Informed Consent)

(Date)

ISU IRB #1	05-365
Approved Date:	August 26, 2005
Expiration Date:	August 25, 2006
Initial by	gc

Date

Superintendent
District
Address

Dear Superintendent:

I am writing my Ph.D. dissertation on the effectiveness of Team-Based Variable Pay to improve student achievement. I am seeking your permission to obtain ITBS/ITED data directly from Iowa Testing Program for the following:

School:

Years:

Grade levels:

Staff at that building either participated or applied to participate in TBVP at some point between 2001-2002 and 2004-2005. I will collect grade level data to determine average growth by cohort groups.

Random identification numbers will be assigned to student data for confidentiality purposes. Student, building, and district identities will be kept confidential. If you would allow me to obtain Iowa Testing data directly from Iowa Testing Program please indicate your permission by signing below. I appreciate your help with this effort.

Thanks for your assistance!

Sincerely,

Deborah B. Boring
School Improvement Consultant
Iowa Department of Education
debbie.boring@iowa.gov
515-281-3198

Superintendent's Signature: _____

Review Date: <u>8/23/05</u> Approval Date: <u>8/26/05</u> Approval Expiration Date: <u>8/25/06</u> EXEMPT per 45 CFR 46.101(b): <u>Date:</u> EXPEDITED per 45 CFR 46.110(b): <u>6-7</u> Category: _____, Letter: _____	IRB ID: <u>05-365</u> Length of Approval: <u>1yr</u> FULL Committee Review: _____ Minimal Risk: <u>/</u> More than Minimal Risk: _____ Project Closed Date: _____
---	--

ISU NEW HUMAN SUBJECTS RESEARCH FORM

IRB

SECTION I: GENERAL INFORMATION

AUG 19 2005

Principal Investigator (PI): Deborah B. Boring	Phone: 515-984-1787	Fax: 515-281-7700
Degrees: B.S., M.Ed., Ed.,S.	Correspondence Address: 710 NE Pinnacle Ct., Ankeny, IA 50021	
Department: ELPS	Email Address: debbie.boring@iowa.gov	
Center/Institute:	College: Education	
PI Level: <input type="checkbox"/> Faculty <input type="checkbox"/> Staff <input type="checkbox"/> Postdoctoral <input checked="" type="checkbox"/> Graduate Student <input type="checkbox"/> Undergraduate Student		

Title of Project: Does Team-Based Variable Pay Work?
Project Period (Include Start and End Date): [mm/dd/yy][07-01-05] to [mm/yy/dd][12-01-06]

FOR STUDENT PROJECTS	
Name of Major Professor/Supervising Faculty: JoAnne Marshall	Signature of Major Professor/Supervising Faculty: <i>JoAnne Marshall</i>
Phone: 515-294-9995	Campus Address: N229D L/MARCINO
Department: ELPS	Email Address: jmars@iastate.edu
Type of Project: (check all that apply)	
<input type="checkbox"/> Research <input type="checkbox"/> Thesis <input checked="" type="checkbox"/> Dissertation <input type="checkbox"/> Class project <input type="checkbox"/> Independent Study (490, 590, Honors project) <input type="checkbox"/> Other: Please specify:	

KEY PERSONNEL

List all members and relevant experience of the project personnel. This information is intended to inform the committee of the training and background related to the specific procedures that the each person will perform on the project.

NAME & DEGREE(S)	SPECIFIC DUTIES ON PROJECT	TRAINING & EXPERIENCE RELATED TO PROCEDURES PERFORMED, DATE OF TRAINING
Deborah B. Boring	Researcher	Human Subjects Training/Fall 2002

Add New Row

FUNDING INFORMATION

Internally funded, please provide account number: N/A
Externally funded, please provide funding source and account number: N/A
Funding is pending please provide OSPA Record ID on GoldSheet: N/A
Title on GoldSheet if Different Than Above: N/A
Other: e.g., funding will be applied for later. N/A

August 26, 2005

IRB
AUG 26 2005

To Whom it May Concern:

Reviewers have requested additional information/revision(s) for the project "Does Team-Based Variable Pay Work?", IRB ID # 05-365. The following information is intended to address these questions:

- 1) Please clarify the nature of the testing data obtained from the Iowa Testing Program.

Testing data obtained from the Iowa Testing Program will be grade level (group) data, *not* individual student data. National Percentile Ranks and Standard Scores will be obtained for each building participating in the program. Buildings (as well as individual students) will *not* be identified in the study. The researcher will *not* be provided with any individual student's personally identifiable information (including individual student achievement data).

- 2) Please supply assurance that only group data will be received from the Iowa Testing Program or provide Informed Consent Document for the students.

For the purposes of this study, only group data will be received from the Iowa Testing Program. Informed Consent will not be obtained for any individual student. Informed Consent will be obtained from each superintendent for the schools participating in the study.

- 3) If the data obtained are not aggregate or grouped data of the performance of each class or group, and if individually identifiable information (names, etc.) is associated with individual data children assent and parental permission will have to be obtained for each student.

Only aggregated (group) data will be used in this study. No individually identifiable information (including student names) will be obtained or used in this study.



Deborah B. Boring

SCIENTIFIC REVIEW

Although the compliance committees are not intended to conduct peer review of research proposals, the federal regulations include language such as "consistent with sound research design," "rationale for involving animals or humans" and "scientifically valuable research," which requires that the committees consider in their review the general scientific relevance of a research study. Proposals that do not meet these basic tests are not justifiable and cannot be approved. If a compliance review committee(s) has concerns about the scientific merit of a project and the project was not competitively funded by peer review or was funded by corporate sponsors, the project may be referred to a scientific review committee. The scientific review committee will be ad hoc and will consist of your ISU peers and outside experts as needed. If this situation arises, the PI will be contacted and given the option of agreeing that a consultant may be contacted or withdrawing the proposal from consideration.

☐ Yes ☒ No Has or will this project receive peer review?

If the answer is "yes," please indicate who did or will conduct the review:

If a review was conducted, please indicate the outcome of the review:

NOTE: RESPONSE CELLS WILL EXPAND AS YOU TYPE AND PROVIDE SUFFICIENT SPACE FOR YOUR RESPONSE.

COLLECTION OR RECEIPT OF SAMPLES

Will you be: (Please check all the apply.)

☐ Yes ☒ No Receiving samples from outside of ISU? See examples below.
☐ Yes ☒ No Sending samples outside of ISU? See examples below.

Examples include: genetically modified organisms, body fluids, tissue samples, blood samples, pathogens.

If you will be receiving samples from or sending samples outside of ISU, please identify the name of the outside organization(s) and the identity of the samples you will be sending or receiving outside of ISU:

--

Please note that some samples may require a USDA Animal Plant Health Inspection Service (APHIS) permit, a USPHS Centers for Disease Control and Prevention (CDC) Import Permit for Etiologic Agents, a Registration for Select Agents, High Consequence Livestock Pathogens and Toxins or Listed Plant Pathogens, or a Material Transfer Agreement (MTA) (<http://www.ehs.iastate.edu/bs/shipping.htm>).

SECTION II: APPLICATION FOR INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL

☒ Yes ☐ No Does this project involve human research participants? If the answer "no" is checked, you will automatically moves to a question regarding the involvement of radiation producing devices in your project.

SECTION III: ENVIRONMENTAL HEALTH AND SAFETY INFORMATION (EH&S)

☐ Yes ☒ No Does this project involve laboratory chemicals, human cell lines or tissue culture (primary OR immortalized), or human blood components, body fluid or tissues? If the answer is "no" is checked you will automatically move to a question regarding the involvement of human research participants in your project.

ASSURANCE

- I certify that the information provided in this application is complete and accurate and consistent with any proposal(s) submitted to external funding agencies.
- I agree to provide proper surveillance of this project to ensure that the rights and welfare of the human subject or welfare of animal subjects are protected. I will report any problems to the appropriate compliance review committee(s).
- I agree that I will not begin this project until receipt of official approval from all appropriate committee(s).
- I agree that modifications to the originally approved project will not take place without prior review and approval by the appropriate committee(s), and that all activities will be performed in accordance with all applicable federal, state, local and Iowa State University policies.

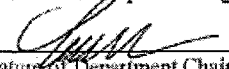
CONFLICT OF INTEREST

A conflict of interest can be defined as a set of conditions in which an investigator's or key personnel's judgment regarding a project (including human or animal subject welfare, integrity of the research) may be influenced by a secondary interest (e.g., the proposed project and/or a relationship with the sponsor). ISU's Conflict of Interest Policy requires that investigators and key personnel disclose any significant financial interests or relationships that may present an actual or potential conflict of interest. By signing this form below, you are certifying that all members of the research team, including yourself, have read and understand ISU's Conflict of Interest policy as addressed by the ISU Faculty Handbook (<http://www.provost.iastate.edu/faculty>) and have made all required disclosures.

- ☐ Yes ☒ No Do you or any member of your research team have an actual or potential conflict of interest?
☐ Yes ☐ No If yes, have the appropriate disclosure form(s) been completed?

SIGNATURES

 7-19-05
 Signature of Principal Investigator Date

 8-19-05
 Signature of Department Chair Date

PLEASE NOTE: Any changes to an approved protocol must be submitted to the appropriate committee(s) before the changes may be implemented.

Please proceed to SECTION II.

SECTION II: IRB SECTION - STUDY SPECIFIC INFORMATION**STUDY OBJECTIVES**

Briefly explain in language understandable to a layperson the specific aim(s) of the study.

This study is intended to determine the relationship between Team-Based Variable Pay (TBVP) and student academic performance across pilot schools in Iowa.

BENEFIT

Explain in language understandable to a layperson how the information gained in this study will benefit participants or the advancement of knowledge, and/or serve the good of society.

The information gained in this study will assist the Iowa Legislature in determining the future of such projects in Iowa. If evidence shows a positive relationship between TBVP is proven and increased and sustained student achievement, that evidence may have some impact on future funding decisions.

PART A: PROJECT INVOLVEMENT

- 1) ☐ Yes ☒ No Is this project part of a Training, Center, Program Project Grant?
 Director Name: Overall IRB ID:
- 2) ☐ Yes ☒ No Is the purpose of this project to develop survey instruments?
- 3) ☐ Yes ☒ No Does this project involve an investigational new drug (IND)? Number:
- 4) ☐ Yes ☒ No Does this project involve an investigational device exemption (IDE)? Number:
- 5) ☒ Yes ☐ No Does this project involve existing data or records?
- 6) ☒ Yes ☐ No Does this project involve secondary analysis?
- 7) ☐ Yes ☒ No Does this project involve pathology or diagnostic specimens?
- 8) ☐ Yes ☒ No Does this project require approval from another institution? Please attach letters of approval
- 9) ☐ Yes ☒ No Does this project involve DEXA/CT scans or X-rays?

PART B: MEDICAL HEALTH INFORMATION OR RECORDS

- 1) ☐ Yes ☒ No Does your project require the use of a health care provider's records concerning past, present, or future physical, dental, or mental health information about a subject? The Health Insurance Portability and Accountability Act established the conditions under which protected health information may be used or disclosed for research purposes. If your project will involve the use of any past or present clinical information about someone, or if you will add clinical information to someone's treatment record (electronic or paper) during the study you must complete and submit the Application for Use of Protected Health Information.

PART C: ANTICIPATED ENROLLMENT

Estimated number of subjects contacted to reach required enrollment: 60	
Number of subjects to be enrolled in the study Total: 2491 Males: ? Females: ?	
Check if any enrolled subjects are: <input checked="" type="checkbox"/> Minors (Under 18) Age Range of Minors: 10-17 -- test scores only	Check below if this project involves either: <input checked="" type="checkbox"/> Adults, non-students <input type="checkbox"/> Minor ISU students

<input type="checkbox"/> Pregnant Women/Fetuses	<input type="checkbox"/> ISU students 18 and older
<input type="checkbox"/> Cognitively Impaired	<input type="checkbox"/> Other (explain)
<input type="checkbox"/> Prisoners	
List estimated percent of the anticipated enrollment that will be minorities if known:	
American Indian:	Alaskan Native:
Asian or Pacific Islander:	Black or African American:
Latino or Hispanic:	

PART D: SUBJECT SELECTION

Please use additional space as necessary to adequately answer each question.

11. Explain the procedures for selecting subjects including any inclusion/exclusion criteria (*i.e., Where will the names come from? Will a sample be purchased, will ads, fliers, word of mouth, email list, etc. be used?*)

Samples of schools that have participated in TBVP, matched with schools that applied but were not accepted to participate in TBVP will take part in this study. Student achievement data will be collected directly from Iowa Testing Program. No student, teacher, administrator, or school identities will be revealed. Random identification numbers will be assigned to all data in order to ensure privacy. A random sampling of teachers and administrators from buildings that participated in TBVP will be interviewed (face to face). Teacher and administrator identities will also be kept confidential. Permission from superintendents will be obtained prior to the collection of any student data. Teacher and administrator permission will be obtained prior to any interviews. Phone contacts, letters, and e-mail will be utilized for communication purposes.

12. Attach a copy of any recruitment telephone scripts or materials such as ad, fliers, e-mail messages, etc. Recruitment material must include a statement of the voluntary and confidential nature of the research. Do not include the amount of compensation, (e.g., compensation available).

Note: Please answer each question. If the question does not pertain to this study, please type not applicable (N/A)

PART E: RESEARCH PLAN

Include sufficient detail for IRB review of this project independent of the grant, protocol, or other documents

13. Describe the flow of events used in this research protocol. Include information from the first contact with the volunteers to the end of the study. Use a diagram or flow chart if appropriate. Also, include a description of the study procedures or tasks that participants will be exposed to or asked to complete. This information is intended to inform the committee of the procedures used in the study and their potential risk. Please do not respond with "see attached" or "not applicable."

Superintendents will be contacted for the purpose of obtaining permission to use data from each school chosen to participate in the study. These will be obtained directly from Iowa Testing Program. Randomly selected teachers and administrators will participate in face-to-face interviews. Student achievement data, aggregated by grade levels, will be analyzed to determine average gains for cohort groups of students. Comparisons will be made between the schools that participated and the schools that applied to participate in TBVP but were not accepted. Teacher interview information will be used to determine the impact of goal setting and teamwork on changed teacher behaviors.

14. For studies involving pathology/diagnostic specimens, indicate whether specimens will be collected prospectively and/or already exist "on the shelf" at the time of submission of this review form. If prospective, describe specimen procurement procedures; indicate whether any additional medical information about the subject is being gathered, and whether specimens are linked at any time by code number to the subject's identity. If this question is not applicable, please type N/A in the response cell.

N/A

15. For studies involving deception, please justify the deception and indicate the debriefing procedure, including the timing and information to be presented to subjects. If this question is not applicable, please type N/A in the response cell.

N/A

PART F: CONSENT PROCESS

16. Describe the consent process for participants who are age 18 and older. *If the consent process does not include documented consent, a waiver of documentation of consent must be requested.*

The researcher will provide participants with an informed consent form, which is attached.

17. If your study involves minors, please explain how parental consent will be obtained prior to enrollment of the minor(s).

The researcher will have no direct contact with any participants under the age of 18.

18. Please explain how assent will be obtained from minors (younger than 18 years of age), prior to their enrollment. Also, please explain if the assent process will be documented (e.g., a simplified version of the consent form, combined with the parental informed consent document). According to the federal regulations assent "...means a child's affirmative agreement to participate in research. Mere failure to object should not, absent affirmative agreement, be construed as assent."

N/A

PART G: DATA ANALYSIS

19. Describe how the data will be analyzed (e.g. statistical methodology, statistical evaluation, statistical measures used to evaluate results)

SPSS (or comparable software) will be used to analyze the student achievement data. Qualitative measures will be utilized to analyze interview data.

20. If applicable, please indicate the anticipated date that identifiers will be removed from completed survey instruments and/or audio or visual tapes will be erased:

12/31/06 Month/Day/Year

PART H: BENEFITS

21. Describe the benefit to the volunteer from participating in this study, *if any*, and the benefit to society that will be gained from the study. Please note that monetary compensation is not considered a benefit.

The benefit to any participant and to society is in helping to determine whether incentives such as additional teacher pay gained from participating in TBVP make a difference in increased student achievement. As the Iowa Legislature pursues future funding for such projects, this study will have an impact on the perceived benefit of such funding.

PART I: RISKS

The concept of risk goes beyond physical risk and includes risks to subjects' dignity and self-respect as well as psychological, emotional, legal, social or financial risk.

22. ☐ Yes ☒ No Is the **probability** of the harm or discomfort anticipated in the proposed research greater than that encountered ordinarily in daily life or during the performance of routine physical or psychological examinations or tests?
23. ☐ Yes ☒ No Is the **magnitude** of the harm or discomfort greater than that encountered ordinarily in daily life, or during the performance of routine physical or psychological examinations or tests?
24. Describe any risks or discomforts to the subjects and how they will be minimized and precautions taken. Do **not** respond with N/A. If you believe that there will not be risk or discomfort to subjects you must explain why.

No risks or discomforts will be present for subjects. Student achievement data will not involve direct contact with any students. Teachers and administrators that participate in interviews will be assured that their feedback will be kept strictly confidential. All interviews will be scheduled at the convenience of the interviewees.

25. If this study involves vulnerable populations, including minors, pregnant women, prisoners, educationally or economically disadvantaged, what additional protections will be provided to minimize risks?

N/A

PART J: COMPENSATION

26. ☐ Yes ☒ No Will subjects receive compensation for their participation? If yes, please explain.

Do not make the payment an inducement, only a compensation for expenses and inconvenience. If a person is to receive money or another token of appreciation for their participation, explain when it will be given and any conditions of full or partial payment. (E.g., volunteers will receive \$5.00 for each of the five visits in the study or a total of \$25.00 if he/she completes the study. If a participant withdraws from participation, they will receive \$5.00 for each of the visits completed.) It is considered undue influence to make completion of the study the basis for compensation.

N/A

PART K: CONFIDENTIALITY

27. Describe below the methods that will be used to ensure the confidentiality of data obtained. For example, who has access to the data, where the data will be stored, security measures for web-based surveys and computer storage, how long data (specimens) will be retained, etc.)

The data used in this study will be kept in a locked file cabinet at the Iowa Department of Education. All electronic data will be password protected. Identification numbers will be assigned to student achievement data and interview data. All records will be destroyed following the conclusion of the study, projected to be 12-01-06.

PART L: REGISTRY PROJECTS

To be considered a registry: (1) the individuals must have a common condition or demonstrate common responses to questions; (2) the individuals in the registry might be contacted in the future; and (3) the names/data of the individuals in the registry might be used by investigators other than the one maintaining the registry.

☐ Yes ☒ No Does this project establish a registry?

If "yes," please provide the registry name below:

Checklist for Attachments

The following are attached (please check ones that are applicable):

- ☒ A copy of the informed consent document OR ☐ Letter of introduction to subjects containing the elements of consent
☐ A copy of the assent form if minors will be enrolled
☐ Letter of approval from cooperating organizations or institutions allowing you to conduct research at their facility
☒ Data-gathering instruments (including surveys)
☒ Recruitment fliers, phone scripts, or any other documents or materials the subjects will see

Two sets of materials should be submitted for each project — the original signed copy of the application form and one copy and two sets of accompanying materials. Federal regulations require that one copy of the grant application or proposal be submitted for comparison with the application for approval.

FOR IRB USE ONLY:

Initial action by the Institutional Review Board (IRB):

- ☒ Project approved Date: 8-26-05 #05-365
☐ Pending further review Date: _____
☐ Project not approved Date: _____

Follow-up action by the IRB:

IRB Approval Signature

Paul J. Hall

Date

8-26-05

SECTION III: ENVIRONMENTAL HEALTH AND SAFETY INFORMATION

- ☐ Yes ☒ No Does this project involve human cell or tissue cultures (primary OR immortalized), or human blood components, body fluids or tissues? If the answer is "no", please proceed to SECTION III: APPLICATION FOR IRB APPROVAL. If the answer is "yes," please proceed to Part A: Human Cell Lines.

PART A: HUMAN CELL LINES

- ☐ Yes ☒ No Does this project involve human cell or tissue cultures (primary OR immortalized cell lines/strains) that have been documented to be free of bloodborne pathogens? If the answer is "yes," please attach copies of the documentation. If the answer is "no," please answer question 1 below.

- 1) Please list the specific cell lines/strains to be used, their source and description of use.

CELL LINE	SOURCE	DESCRIPTION OF USE

Add New Row

- 2) Please refer to the ISU "Bloodborne Pathogens Manual," which contains the requirements of the OSHA Bloodborne Pathogens Standard. Please list the specific precautions to be followed for this project below (e.g., retractable needles used for blood draws):

--

Anyone working with human cell lines/strains that have not been documented to be free of bloodborne pathogens is required to have Bloodborne Pathogen Training annually. Current Bloodborne Pathogen Training dates must be listed in Section I for all Key Personnel. Please contact Environmental Health and Safety (294-5359) if you need to sign up for training and/or to get a copy of the Bloodborne Pathogens Manual (<http://www.ehs.iastate.edu/bs/bbp.htm>).

PART B: HUMAN BLOOD COMPONENTS, BODY FLUIDS OR TISSUES

- ☐ Yes ☒ No Does this project involve human blood components, body fluids or tissues? If "yes", please answer all of the questions in the "Human Blood Components, Body Fluids or Tissues" section.

- 1) Please list the specific human substances used, their source, amount and description of use.

SUBSTANCE	SOURCE	AMOUNT	DESCRIPTION OF USE
<i>E.g., Blood</i>	<i>Normal healthy volunteers</i>	<i>2 ml</i>	<i>Approximate quantity, assays to be done.</i>

Add New Row

- 2) Please refer to the ISU "Bloodborne Pathogens Manual," which contains the requirements of the OSHA Bloodborne Pathogens Standard. Specific sections to be followed for this project are:

--

Anyone working with human blood components, body fluids or tissues is required to have Bloodborne Pathogen Training annually. Current Bloodborne Pathogen Training dates must be listed in Section I for all Key Personnel. Please contact Environmental Health and Safety (294-5359) if you need to sign up for training and/or to get a copy of the Bloodborne Pathogens Manual (<http://www.ehs.iastate.edu/bs/bbp.htm>).

Signature of Biological Safety Officer

Date

Budget

Postage	40.00
Telephone (long distance)	50.00
Travel Expenses (gasoline)	200.00
Transcribing	300.00
Copying	<u>80.00</u>
Total	\$670.00