

AN ANALYSIS OF THE PERFORMANCE AND SUBJECT INTEREST OF 9TH  
GRADE STUDENTS TAKING THE ADVANCED PLACEMENT COURSE IN  
HUMAN GEOGRAPHY

by

Michael Scholz

A dissertation submitted to the Graduate Council of  
Texas State University in partial fulfillment  
of the requirements for the degree of  
Doctor of Philosophy  
with a Major in Geographic Education  
August 2014

Committee Members:

Richard G. Boehm, Chair

Denise Blanchard

Fred Day

Jennifer Jacobs

**COPYRIGHT**

by

Michael Scholz

2014

## **FAIR USE AND AUTHOR'S PERMISSION STATEMENT**

### **Fair Use**

This work is protected by the Copyright Laws of the United States (Public Law 94-553, section 107). Consistent with fair use as defined in the Copyright Laws, brief quotations from this material are allowed with proper acknowledgment. Use of this material for financial gain without the author's express written permission is not allowed.

### **Duplication Permission**

As the copyright holder of this work I, Michael Scholz, authorize duplication of this work, in whole or in part, for educational or scholarly purposes only.

## **DEDICATION**

I dedicate this dissertation to two significant people in my life who are no longer a part of this world. To my German born grandmother Margarite Scholz for stressing education as the most important thing in life. She would always give me a dollar and say, "Save this money to go to college and make something of yourself." In the last year of her life (98th year), she inspired a worker in her nursing home kitchen to go back to college by saying, "Go back to college, you don't want to pick up this slop the rest of your life. You are too intelligent for this work." She was very blunt, but at the same time very loving. I would also like to dedicate this dissertation to Lee Wallace for teaching me to appreciate the outdoors, be courageous, and always have a good attitude. Thank you Lee for being the grandfather I never had.

## **ACKNOWLEDGEMENTS**

If it were not for the help of the following people mentioned here specifically and countless family members and friends who provided support through the years, there is absolutely no way I could have completed this dissertation. First and foremost, I would like to acknowledge the unwavering support of my committee advisor Dr. Richard G. Boehm. Dr. Boehm was willing to guide a student who came into geographic education with a limited amount of background in the field since I had limited teaching experience in geography. I applied for the PhD program in geography at Texas State University late in the spring semester prior to admission and Dr. Boehm ensured I had a spot in the department the following fall despite any opposition to my late entry that may have existed within the department. I am thankful that he had that much faith in my abilities.

In his Ph.D. level seminar class on geographic education, Dr. Boehm introduced the topic of the increasing numbers of 9th students taking AP Human Geography which inspired me to pursue this topic for my dissertation. In addition to the guidance he provided on this important project, Dr. Boehm has taught me the foundational principals in geographic education and the direction to take in becoming an advocate for geographic education at all levels (Pre-Kindergarten-PhD Geography). I have been truly fortunate to learn from not only the most prominent figure in geographic education of our time, but also one of the most prolific professionals in the discipline of geography as a whole in the last forty years.

I would also like to thank all my committee members for their time and effort in

this study. I would like to thank Dr. Blanchard for her input on structuring the mixed methods for this project and guidance on the use of theory. Dr. Day for all the time he put in on editing the manuscript and suggestions for the writing structure. I would like to thank Dr. Jacobs for being my representative from the field of education and the expertise she provided on the qualitative methods and qualitative analysis of the study. I would also like to mention the help that was provided by my loving wife Ruoqing (PhD student in Geography) for giving me helpful suggestion on my research design and editing help.

I would also like to mention the important contributions to my career by Dr. Susan Hardwick. The first time I stopped by her office, she gave me a tour of the geography department at the University of Oregon which essentially began my career in geographic education. She took a chance on someone with a limited background in geographic education and encouraged me to apply for the summer program in geographic education. I was the first and only person in that program to date who was not a school teacher. Her endless encouragement inspired me to move forward to greater heights than I could imagine in geographic education. I would not be where I am at today without her encouragement, mentoring, and the opportunity she provided me at the University of Oregon.

I would also like to acknowledge the guidance that was given to me by Dr. Lawrence Becker at Oregon State University. Like a good undergraduate coordinator, Dr. Becker gave me great career advice that led me to geographic education and gave helpful insights in the preparation of my application letter to the masters program at the

University of Oregon, which is the program he suggested I apply to. I would also like to thank Dr. Jane White of Drury University for teaching me the most important theories in education and encouraging me in the application process of Ph.D. programs in geography, including the application to Texas State University. I would also like to thank the Missouri State University “University College” department for allowing me to study abroad in Australia as an undergraduate in 1996. That experience had the most impact in my decision to change my career path to geography later in life. Otherwise, I might still be in the commercial flooring industry as a project manager.

I would like to acknowledge the support of my uncle Paul for encouraging me in the beginning when I made the decision to leave a lucrative job in business to become a teacher and researcher. Thank you for supporting a decision that did not make sense to a lot of other people at the time. I would also like to acknowledge the influence and help of my mom and dad. I would like to thank my mom for the financial support she provided me that allowed me to visit Texas State University, and for letting me borrow her car to do that. I would also like to thank my dad for taking me on float trips in the Ozarks during my youth. Those experiences fishing and exploring the rivers peaked an interest in the world around me. That was truly the start of my interest in the subject of geography. If I had not had that experience, I may still be working at Zickel Flooring selling carpet and tile.

## TABLE OF CONTENTS

	<b>Page</b>
ACKNOWLEDGEMENTS.....	v
LIST OF TABLES.....	xi
LIST OF FIGURES.....	xiii
ABSTRACT.....	xiv
CHAPTER	
1. INTRODUCTION.....	1
Participation in the AP Human (APHG) Exam.....	1
Performance on the APHG Exam.....	5
Background of the AP Program.....	13
Creation of an AP Geography Course.....	15
Human Geography vs. Physical Geography/World Regional Geography/General Geography.....	18
Purpose, Goals, and Outline of the APHG Course.....	19
Development of the APHG Exam.....	20
2. NATURE AND SCOPE.....	23
3. LITERATURE REVIEW.....	26
Theoretical Framework.....	26
Cognitive Development Theory.....	26
Career Decision Making Theories.....	26
Opportunities and Challenges in APHG.....	28
Increased Participation in APHG.....	31
AP Exam Performance and College Outcomes.....	32
AP Course Grades and AP Exam Scores.....	38
Factors Impacting AP Teaching, Learning, and Exam Performance.....	39
APHG Teaching Materials and Methods.....	46
Challenges in Teaching and Learning in AP Courses.....	47
APHG Course Participation and Recruitment in Geography.....	52
APHG Course Participation and Subject Interest.....	53

4. RESEARCH QUESTIONS .....	55
Research Question One.....	55
Research Question Two .....	56
Foundation of Research Question One .....	56
Foundation of Research Question Two.....	58
5. RESEARCH DESIGN.....	60
Data Collection Site: Texas .....	63
Research Question One.....	63
Phase One: Quantitative Data Collection Method (for Sub-questions One and Two).....	63
Phase One: Quantitative Data Analysis Method (for Sub-question One and Two) .....	64
Connecting Quantitative and Qualitative Phases .....	64
Phase Two: Qualitative Data Collection Methods.....	65
Phase Two: Qualitative Data Analysis Method .....	70
Integration of the Quantitative and Qualitative Results.....	70
Research Question Two .....	71
Phase One: Quantitative Data Collection Method .....	71
Phase One: Quantitative Data Analysis Method.....	76
Connecting Quantitative and Qualitative Phases .....	77
Phase Two: Qualitative Data Collection Method .....	78
Phase Two: Qualitative Data Analysis Method .....	79
Integration of the Quantitative and Qualitative Results.....	79
Role of the Researcher .....	80
Ethical Considerations .....	81
6. ANALYSIS.....	83
Research Question One.....	83
Sub-question One: APHG Exam Performance .....	83
Sub-question Two: Correlation between APHG Course Grades and Exam Scores.....	85
Sub-question Three: Challenges Teaching the APHG Course to 9th Grade Students.....	90
Sub-question Four: Challenges in Learning the APHG Course in the 9th Grade.....	100
Sub-question Five: APHG Placement in the 9th Grade.....	111
Research Question Two .....	114

Sub-question One: APHG and Majoring in Geography .....	114
Sub-question Two: APHG and Interest Level in Geography .....	122
Sub-question Three: APHG and Career Interest in Geography.....	127
7. CONCLUSIONS.....	131
Research Question One.....	131
Sub-question One: APHG Exam Performance .....	131
Sub-question Two: Correlation between APHG Course Grades and Exam Scores.....	132
Sub-question Three: Challenges in Teaching the APHG Course to 9th Grade Students.....	132
Sub-question Four: Challenges in Learning the APHG Course in the 9th Grade.....	133
Sub-question Five: APHG Placement in the 9th Grade.....	134
Research Question Two .....	134
Sub-question One: APHG and Majoring in Geography .....	134
Sub-question Two: APHG and Interest Level in Geography .....	135
Sub-question Three: APHG and Career Interest in Geography.....	136
Recommendations.....	136
APHG Should Not be Taught in the 9th Grade .....	136
World Geography Should be a Required Prerequisite for APHG.....	137
Schools Should Use the AP Potential Tool to Determine if Students are Ready to Take the APHG Course .....	137
Future Research .....	138
APPENDIX SECTION.....	141
LITERATURE CITED .....	143

## LIST OF TABLES

<b>Table</b>	<b>Page</b>
1. Number of Students Taking AP Exams in 2013.....	4
2. Percentage of 9th Grade Students in AP exams between 2001 and 2013 .....	5
3. Participation by 9th Grade Students and Overall Performance in the APHG Exam between 2001 and 2013 .....	6
4. Performance on All AP Exams in 2013.....	8
5. Participation and Performance of the APHG exam in Texas Public Schools in 2011 by Grade Level and Score.....	11
6. APHG Exam Performance in Houston ISD in 2011.....	12
7. Goals of the APHG Course.....	20
8. APHG Course Objectives .....	30
9. Research Question One Visual Model.....	61
10. Research Question Two Visual Model .....	62
11. Focus Group Protocol .....	65
12. Social Science Administrator Interview Protocol.....	68
13. Student Interview Protocol Part One .....	69
14. Survey Questions .....	73
15. Survey Email.....	75
16. Student Interview Protocol Part Two.....	77
17. Student Interview Participants .....	78

<b>18. APHG Exam Participation and Performance in the School Year 2010-2011 by Grade Level .....</b>	<b>83</b>
<b>19. Results of Chi-square Test of Homogeneity .....</b>	<b>84</b>
<b>20. APHG Course Grades and Exam Scores of 9<sup>th</sup> Grade Students .....</b>	<b>86</b>
<b>21. APHG Course Grades and Exam Scores of 10-12th Grade Students .....</b>	<b>86</b>
<b>22. Geography Majors and Minors among Students who Completed Different Sets of Geography Courses in High School.....</b>	<b>114</b>
<b>23. Geography Majors and Minors among Students who took the APHG Course in Different Grade Levels in High School .....</b>	<b>116</b>
<b>24. Interest Level in Geography and Taking Geography Courses among Students who Completed Different Sets of Geography Courses in High School .....</b>	<b>123</b>
<b>25. Interest Level in Geography and Taking Geography Courses among Students who took the APHG Course in Different Grade Levels in High School .....</b>	<b>124</b>
<b>26. Career Interest in Geography among Students who Completed Different Sets of Geography Courses in High School.....</b>	<b>128</b>
<b>27. Career Interest in Geography among Students who took the APHG Course in Different Grade Levels in High School .....</b>	<b>129</b>

## LIST OF FIGURES

<b>Figure</b>	<b>Page</b>
1. Number of Students Taking the APHG Exam since 2001 .....	2
2. Participation and Performance on the APHG Exam in Broward County School District, Florida .....	9
3. APHG Exam Performance by School in Broward County School District, Florida ....	10
4. Sequential Explanatory Method.....	60

## **ABSTRACT**

The Advanced Placement (AP) Program was created to provide gifted high school students a transition between the last two years of high school and the first two years of college. AP courses are college level courses that are taught in high school settings by high school teachers at a reduced cost to students. Students who pass AP exams in high school are given college credits for those courses prior to enrolling in college. The AP Human Geography (APHG) course was implemented with the intent of raising the status of geography in the United States and to be used as a tool for recruiting high school students for geography majors in college and career paths in geography.

Since the implementation of APHG in 2001, the enrollment of the course has experienced dramatic growth which exceeded the growth of enrollment in virtually all other AP courses. The cause of this growth was due to the encouragement of the placement of the APHG course in the 9th grade in high school social studies curriculums. This placement also resulted in a higher percentage of students from the 9th grade taking the course each year since 2001. The APHG exam scores have been going down since participation by 9th graders surpassed 40%. The placement of the APHG course in the 9th grade has created a significant problem for the discipline of geography: the increase in the participation of the course is accompanied by the increase in the percentage of students failing the APHG exam. The purpose of this study is to examine the impacts of increased participation by 9th grade students in the APHG course on APHG teaching, APHG learning, and the recruitment for the discipline of geography.

In the first part of the study, APHG exam scores were collected from the Texas Education Agency (TEA) and aggregated by grade level to determine whether the scores of 9th grade students were significantly different from those of students in 10-12th grades. Teacher focus groups, administrators' interviews, and students' interviews were conducted to explore the challenges in teaching and learning the APHG course in the 9th grade. In the second part of the study, an on-line survey was conducted to students enrolled at Texas State University. The survey results were used to examine the impact of students taking the APHG course at different grade levels in high school on their choice of major/minor, interest level in geography and taking geography courses, and likelihood of pursuing a career in geography. Follow-up interviews were conducted to survey participants to explain the survey results.

The results of the study demonstrated that 9th grade students scored lower on the APHG exam than students in other grades. The reasons behind the low scores of 9th grade students on the APHG exam cited were lack of writing skills, lack of knowledge of the world, lack of maturity, large vocabulary in the course, and lack of study skills. The on-line survey demonstrated that students who took the APHG course in the 9th grade were less likely to major/minor in geography, had a lower level of interest in geography and taking geography courses, and were less likely to pursue a career in geography than students who took the APHG course in 10-12th grades. The results of this study provide valuable information on the appropriate grade level to place the APHG course in the high school curriculum for students, teachers, parents, high school counselors and

administrators, university geography instructors, geography organizations such as the National Council on Geographic Education (NCGE), and geography departments.

# CHAPTER 1

## INTRODUCTION

The Advanced Placement (AP) Program was created by the College Board in 1955 to provide a transition for students between the last two years of high school and the first two years of college: high school students have the opportunity to take college level courses and earn college credits while they are still in high school (Ellwell 1967; NRC 2001; Lacy 2010). The AP Program offers students a shorter path to a college degree at less cost. Many education researchers believe that high school students' participation in the AP Program increases the likelihood that these students will go on to receive a college degree (Bailey and Karp 2003; Hoffman 2003; WICHE).

The purpose of the AP Program is to “help high school students make a successful transition to higher education” and to “simplify the college application process for students and for colleges admission offices” (Lagemann 1983, 99). The National Research Council stated that the AP Program provides “motivated high school students with the opportunity to take college level courses in a high school setting” (NRC 2001, 246). The AP Program was initially promoted as a program for the most elite students, but it has expanded later to include a wider pool of students (Lacy 2010).

### **Participation in the AP Human Geography (APHG) Exam**

Since the administration of the first APHG exams in 2001, the number of students who have taken the exam has increased dramatically (Figure 1). The number of exam takers in 2011 was six times as many as in 2005 and 26 times as many as in 2001. The average increase rate was 36.8% each year.

Year	Test Takers	Percent Change
2001	3,272	
2002	5,286	62%
2003	7,320	39%
2004	10,471	43%
2005	14,139	35%
2006	21,003	49%
2007	29,005	30%
2008	39,878	37%
2009	50,730	27%
2010	66,354	24%
2011*	85,000	22%

\* preliminary estimate

**Figure 1.** Number of Students Taking the APHG Exam since 2001 (Source: Lanegran 2011).

In fact, the percentage increase in the participation in the APHG exam between the school year 2012 and 2013 was substantially higher (16%) than that of all other AP exams with the exception of Computer Science A (Table 1). Twenty-five out of thirty-four AP exams had an increase in participation of less than 10% and two AP exams had no increase at all (Table 1). In 2013, 59% of the students taking the APHG exam were 9th grade students, while in all other AP exams combined, 9th grade students only accounted for 1% (Table 1). No other AP courses has such a high percentage of 9th grade students taking the exam (Table 1). For example, the percentage of 9th grade students taking the AP exam in Calculus AB, English Language, English Literature, and US History (the top four AP courses in participation) in 2013 was 0.011%, 0.007%, 0.001%, and 0.048% respectively (Table 1). The number of 9th grade students in APHG exam (67,070) exceeded the number of 9th grade students in all other AP exams combined (40,542) in 2013 (Table 1). Apparently, the APHG exam is the only AP exam with

substantial participation by 9th grade students. It seems that participation by 9th grade students in the APHG course and exam is highly encouraged compared to all other AP courses.

**Table 1.** Number of Students Taking AP Exams in 2013. (Source: College Board Program Summary Report 2013).

AP Course	9th Grade Students in 2013	Total in 2013	Increase (%) 2012-2013
Art History	230	22723	0
Biology	2373	203189	6
Calculus AB	423	282814	6
Calculus BC	365	104483	11
Chemistry	219	140006	6
Chinese Language and Culture	907	10121	8
Computer Science A	738	31117	19
English Language	258	476277	7
English Literature	54	385576	1
Environmental Science	3525	118288	9
European History	1040	109878	1
French Language and Culture	240	20725	5
German Language and Culture	81	4966	4
Government and Politics Comp	110	20317	10
Government and Politics U.S.	8193	255758	7
Human Geography	67070	114361	16
Italian Language and Culture	8	1980	10
Japanese Language and Culture	93	2234	3
Latin Vergil	14	6667	4
Macroeconomics	531	108219	8
Microeconomics	193	67505	8
Music Theory	215	18192	0
Physics B	317	89263	11
Physics C E&M	27	19380	12
Physics C MECH	48	42858	11
Psychology	538	238962	8
Spanish Language	5072	135259	4
Spanish Literature	322	18785	5
Statistics	428	169508	10
Studio Art Drawing	23	16597	3
Studio Art 2-D Design	46	24928	6
Studio Art 3-D Design	2	4167	9
US History	1899	442890	4
World History	15397	230107	9
Total Exams	107612	3938100	6

The increase in the participation in the APHG exam was influenced by the increased participation by 9th grade students, which was the result of schools placing the APHG course in the 9th grade curriculum (Table 2). From 2001 to 2013, the percentage of 9th grade students taking the exam has increased by 4.2% on average each year. By the year 2013, nearly 60% of APHG exam takers were 9th grade students. The percentage of 9th grade students taking APHG exams was between 36 times (in 2001) and 59 times (in 2013) as much as the percentage of 9th grade students taking all other AP exams combined (Table 2) between the year 2001 and 2013.

**Table 2.** Percentage of 9th Grade Students in AP exams between 2001 and 2013. (Source: College Board Program Summary Reports 2001-2013).

Year	Percentage of 9th Grade Students in the APHG Exam	Percentage of 9th Grade Students in All Other AP Exams
2013	59%	1%
2012	58%	1%
2011	54.8%	0.8%
2010	51.7%	0.77%
2009	48%	0.66%
2008	46.2%	0.56%
2007	43.3%	0.52%
2006	37.8%	0.46%
2005	30%	0.42%
2004	23.2%	0.40%
2003	18.7%	0.35%
2002	17%	0.32%
2001	9.1%	0.25%

### Performance on the APHG Exam

In order to pass the AP exam and for the AP exams to count as college credit for most universities, a score of 3 or higher must be obtained in the exam. A few universities

require a score of four or five on an AP exam to qualify for college credit. For this study, a score of three or higher on an AP exam was considered a passing exam.

In the first four years of administering the APHG exam, the percentage of students passing the exam was above 60%, while the percentage of 9th grade students taking the exam was below 25% (Table 3). Since the percentage of 9th grade students taking the APHG exam has exceeded 40% in 2007, the percentage of students passing it has fallen to an average of 51% (Table 3).

**Table 3.** Participation by 9th Grade Students and Overall Performance in the APHG Exam between 2001 and 2013 (Source: College Board Program Summary Reports 2001-2013).

Year	Percentage of 9th Grade Students in the APHG Exam	Percentage of Students Pass the APHG Exam
2013	59%	53%
2012	58%	52%
2011	55%	51%
2010	52%	47%
2009	48%	50%
2008	46%	52%
2007	43%	51%
2006	38%	58%
2005	30%	59%
2004	23%	62%
2003	19%	65%
2002	17%	62%
2001	9%	64%

While enrollment in the APHG course and exam has increased, it is of great concern to notice that the overall pass rate of the exam is one of the lowest of any AP exams. APHG ranked 31 out of 34 AP courses in exam pass rate in 2013: only three other AP exams had a lower pass rate and many other AP exams have a much higher pass rate (Table 4). Physics, chemistry, and calculus, which are often considered the most challenging courses in high school, had a much higher pass rate than APHG (Table 4).

Only 2.1% of these students take AP exams in the 9th grade (Table 1). APHG has ranked near the bottom in the exam pass rate since 2007, the same time when 9th grade participation in the APHG exam exceeded 40% (Table 3). The AP program is supposed to provide a transition between high school and college (Ellwell 1967; NRC 2001; Lacy 2010), but a problem exists when more 9th grade students are taking the APHG exam and fewer are passing it.

**Table 4.** Performance on All AP Exams in 2013 (Source: College Board Student Score Distributions by Subject 2013).

AP Course	Percentage of Pass
Chinese Language and Culture	95%
Calculus BC	80%
Studio Art Drawing	79%
Studio Art 2-D Design	79%
German Language and Culture	78%
French Language and Culture	78%
Spanish Literature	77%
Japanese Language and Culture	77%
Physics C MECH	75%
Spanish Language and Culture	71%
Italian Language and Culture	70%
Physics C E&M	70%
Studio Art 3-D Design	68%
Microeconomics	67%
Psychology	67%
Computer Science	67%
Latin	67%
European History	64%
Biology	63%
Physics B	63%
Art History	61%
Music Theory	61%
Government and Politics Comp	60%
Calculus AB	59%
Chemistry	59%
English Literature	58%
Statistics	58%
English Language	55%
Macroeconomics	54%
United States History	54%
Human Geography	53%
Government and Politics US	52%
World History	49%
Environmental Science	48%

In 2013, Florida had the highest number of participants (33,117) in the APHG exam; however, only 41.8% of students passed the exam (College Board State Level Data

2013). In the Broward County School District, Florida, participation in the APHG exam nearly tripled from 2008 to 2010, but the percentage of scores 3 or above had dropped steadily in these years (Figure 2). Only 35.2% of the students scored 3 or higher in the exam in 2010 (Figure 2). Over one third of the schools (11) in this school district had less than 10% of students passing the exam and four of them had a pass rate below 2% in 2010 (Figure 3). Particularly, 229 students from the high schools Blanche Ely, Hallandale, and Boyd Anderson took the exam but only 3 students from these schools scored 3 or higher (Figure 3). In Dillard High School, all 27 students failed the exam (Figure 3).

Examination Area	Year	AP Exams	AP Scores 3 or Above	% AP Scores 3 or Above
Human Geography	2007-08	1,107	464	41.9
	2008-09	1,522	575	37.8
	2009-10	2,920	1,027	35.2

**Figure 2.** Participation and Performance on the APHG Exam in Broward County School District, Florida (Source: Broward County School District Report on AP 2010).

AP 2010 Exam Results by Subtest by School (continued)					
SubTest	Area	School	% AP Scores 3 or Above 2010	Total # of AP Exams	District % AP Scores 3 or Above 2010
Human Geography	Central	Cypress Bay High	84.1	132	35.2
Human Geography	North	Taravella J P High	74.8	115	35.2
Human Geography	North	Stoneman Douglas High	71.6	236	35.2
Human Geography	Central	Fort Lauderdale High	68.3	60	35.2
Human Geography	South	McArthur High	67.0	88	35.2
Human Geography	North	Coral Glades High	55.8	52	35.2
Human Geography	North	Pompano Beach High	55.0	109	35.2
Human Geography	North	Coral Springs High	54.5	22	35.2
Human Geography	South	Nova High	51.0	100	35.2
Human Geography	North	Northeast High	50.7	69	35.2
Human Geography	South	Everglades High	49.2	130	35.2
Human Geography	South	West Broward High	45.6	136	35.2
Human Geography	South	Cooper City High	42.4	198	35.2
Human Geography	Central	Western High	42.0	50	35.2
Human Geography	Central	South Plantation High	35.7	115	35.2
Human Geography	North	Coconut Creek High	23.2	56	35.2
Human Geography	North	Monarch High	18.6	43	35.2
Human Geography	Charter	Somerset Academy Charter	16.3	43	35.2
Human Geography	South	Charles W. Flanagan	12.6	135	35.2
Human Geography	South	South Broward High	8.1	74	35.2
Human Geography	Central	Stranahan High	8.1	246	35.2
Human Geography	South	Miramar High	7.2	167	35.2
Human Geography	South	Hollywood Hills High	6.2	48	35.2
Human Geography	Central	Piper High	5.8	137	35.2
Human Geography	North	Deerfield Beach High	5.4	37	35.2
Human Geography	Central	Plantation High	4.8	62	35.2
Human Geography	North	Blanche Ely High	1.9	53	35.2
Human Geography	South	Hallandale High	1.3	77	35.2
Human Geography	Central	Boyd Anderson High	1.0	99	35.2
Human Geography	Central	Dillard High	0.0	27	35.2
Human Geography	Charter	Somerset Conservatory Charter	*	--	35.2

**Figure 3.** APHG Exam Performance by School in Broward County School District, Florida (Source: Broward County School District Report on AP 2010).

Texas has the second highest number of participants in the APHG exam. The majority of the students taking the exam are freshman (Table 5). The most recently released Texas data revealed that 9th grade students performed poorly in the exam compared to students in other grade levels: the pass rate of 9th grade students was nearly 20% below 10th grade students and nearly 30% below 11th and 12th grade students (Table 5). Among 9th grade students, over 60% failed the exam (Table 5).

**Table 5.** Participation and Performance of the APHG exam in Texas Public Schools in 2011 by Grade Level and Score. (Source: Texas Education Agency data).

Grade Level	Scores	Number of Exam Takers	Total	Pass Rate
09	1	3580	8376	39.6
	2	1475		
	3	1504		
	4	1153		
	5	658		
10	1	143	646	59.1
	2	121		
	3	131		
	4	121		
	5	130		
11	1	142	974	69.0
	2	160		
	3	230		
	4	245		
	5	197		
12	1	122	761	67.9
	2	122		
	3	172		
	4	186		
	5	159		

In the Houston Independent School District (HISD), of the 1,521 exams administered in 2011, 989 students (65%) scored a 1 and only 20% of students scored a 3 or higher (Jump 2011) (Table 6). There were five schools in this school district where every single student (75 in total) who took the exam scored a 1 (Jump 2011) (Table 6). Another six schools in this school district had 87% or more of students scored a 1; most of the rest students in these six schools scored a 2; and only 6 out of 289 students in these six schools who took the exam scored a 3 or higher on the exam (Jump 2011) (Table 6). The APHG exam performance in HISD did not get any better in 2012. One thousand five hundred and ninety-four (1594) students participated in the exam and only 19% of them

passed. The pass rate dropped 1% lower than the year before (HISD Advanced Placement Report 2012).

**Table 6. APHG Exam Performance in Houston ISD in 2011 (Source: Jump 2011).**

High School	Percentage Scored a 1	5	4	3	2	1	Total
Austin	100%	0	0	0	0	19	19
Bellaire	16%	12	7	6	1	5	31
Carnegie	24%	28	22	32	30	35	147
Challenge	68%	1	2	10	24	77	114
Eastwood	21%	0	0	8	7	4	19
Energized	100%	0	0	0	0	32	32
Furr	89%	0	0	1	6	55	62
HAIS	87%	0	0	2	11	87	100
Hope	100%	0	0	0	0	1	1
Kashmere	100%	0	0	0	0	11	11
Lamar	63%	8	34	53	88	314	497
Milby	40%	1	1	4	0	4	10
North Early	49%	2	4	14	23	42	85
Reagan	78%	0	2	0	4	21	27
Scarborough	92%	0	0	0	1	12	13
Shapstown(Int.)	94%	0	0	3	1	64	68
Sharpstown	95%	0	0	0	1	19	20
South Early	100%	0	0	0	0	12	12
Westbury	67%	0	1	1	3	10	15
Westside	66%	3	13	27	29	140	212
Wheatley	96%	0	0	0	1	25	26
<b>Total</b>	<b>65%</b>	<b>55</b>	<b>86</b>	<b>161</b>	<b>230</b>	<b>989</b>	<b>1521</b>

It seems that low scores in the APHG exam are associated with 9th grade students' participation. It must be recognized that in many school districts across the country, the APHG course is offered to 9th grade students. However, AP courses are college level, so it is more appropriate for students to take them in the 11th/12th grade (Ellwell 1967; Lacy 2010). According to College Board research reports, one of the best predictors of students' success on AP exams is their performance on the Preliminary SAT (PSAT) or National Merit Scholarship Qualifying Test (NMSQT) exam (Ewing, Camara,

and Millsap 2006; Camara and Millsap 1998). AP Potential, a tool that is suggested by the College Board for identifying students who are ready for an AP course, relies heavily on PSAT and NMSQT exam results. These exams, however, are usually taken by 10th/11th grade students. Students taking the APHG course in the 9th grade most likely have not been evaluated by this tool.

The trend of the increased participation by 9th grade students in the APHG exam and the decreased exam scores is a great concern to students, parents, high school administrators, high school geography teachers, and geography departments. This trend is contrary to the explicit purpose of the AP program and expresses the need for research to investigate the difficulties of high school 9th grade students (ages 14-15) who are taking a rigorous course designed for college students.

### **Background of the AP Program**

After the civil war, the early days of American education, students of exceptional talent were granted “flexible promotion” or their studies were accelerated (Elwell 1967). Both ideas provided the most talented students with the opportunity to learn the required content in less time. At the turn of the twentieth century, educators began placing high school students on different tracks based on their talents with directions in either vocational studies or college preparation (Elwell 1967). This trend led to the creation of gifted schools which was another avenue for the most talented students to take college preparation courses in an accelerated manner (Elwell 1967). From the 1920’s to the 1940’s, the progressive era of education, gifted students were encouraged to take classes with all other students, but they were given more advanced materials (Bergesen, 1966). In the Post World War II era, ideas about college education that is accessible to all students

began to be accepted as a part of the American society and was encouraged by programs created by the United States government such as the GI bill (1942) and the Veterans Readjustment Act of 1952 (Cremin, 1988; Smith and Bender 2008; Kerr 1982). The shift of making higher education more available to all the students fueled interests in programs that help students make a successful transition from high school to college. Through funding from private foundations such as the Ford Foundation's Advancement of Education Fund and the Carnegie Corporation, five education experiments were implemented and determined the creation of the AP program (Lacy 2010).

In one experiment, called the "Early Admissions Group," 1350 students in 1951 went to college two years earlier than regular students. They successfully completed college degrees, but there were problems in adjusting to college life at an early age for the male students (FAE 1957). Another experiment initiated in 1952 called the "Portland Project," involved college faculty from Reed College and Portland high school teachers collaborating to create advanced curriculum for gifted students (FAE 1957). Most of the 2000 students in this experiment completed college successfully. The "Atlanta Experiment in Articulation and Enrichment in School and College" began in 1953 and added rigor to learning materials in the last two years of high school and the first two years of college in Atlanta high schools and four Atlanta universities (FAE, 1957). Although these three experiments were deemed to be successful, they had limited influence on today's AP Program.

The committee report "General Education by School and College," written by members of the faculties of Andover, Exeter, Lawrenceville, Harvard, Princeton, and Yale, had some influence on today's AP Program (GESC 1952). This report's main focus

was that the College Board should promote general education devoted to teaching traditional courses such as courses on the great books (GESC 1952). The committee asserted three things that should be included in the AP program: 1) things that all students must know; 2) variety of courses that cater to an individual student's strength; 3) a logical sequence of courses (Lacy 2010, 28). The second component offers students the opportunity to advance in a specific area. The emphasis on this component and somewhat dismissal of the other components by the AP Program goes against the primary focus of the report which does not promote specialization and subject specific courses (GESC 1952; Lacy 2010).

The experimental Kenyon plan provided the framework for today's AP program. The plan was predicated on the assumptions that gifted students can do college level work while they are still in high school, appropriately trained high school teachers can teach college level courses, and the high school setting is the best place for high school students to take college level courses (Lacy 2010). The plan was also attractive because it offered subject specific courses to high school students which corresponded to the trend of specialization in higher education at the time (1950-1960). The College Board adopted the Kenyon plan and started the AP Program in the school year 1955-1956 (Lacy 2010). Since then, the participation in the AP exams has increased from 2,199 in 1956 to 3,938,100 in 2013. The AP Program has also expanded its course offerings to 34 courses, including the APHG course which was added to the program in 2001.

### **Creation of an AP Geography Course**

James Marran, former National Council for Geographic Education (NCGE) president and former chair of the Social Studies Department at New Trier High School in

suburban Chicago recognized that AP courses in Government and US History helped raise the profile of these subjects and their perceived level of importance in his high school (Sublett 2007). He felt strongly that there should be an AP course in geography. He became the leader in the push for an AP geography course (Murphy 1998). Marran began contacting Harlen Hansen, the director of the AP Program and a well-known historian, by writing letters to him in 1985 and every year thereafter (Sublett 2007). A few years later, Marran was able to set up a meeting with Hansen. In the meeting, Hansen expressed that he was very resistant to the idea of AP Geography because he felt that geography had an identity problem since people could not determine whether it is a physical science subject or a human subject (Sublett 2007). He said that once geography sorted out its identity problem, it could be considered as a candidate for the AP Program (Sublett 2007). Since Hansen did not rule geography out of the AP Program entirely, it was all the motivation Marran needed to continue working on establishing an AP geography course (Sublett 2007).

A couple of years later, Marran got help from the Director of Publications for NCGE, Salvatore (Sam) Natoli, who set up a meeting with Hansen (Sublett 2007). Natoli was a prominent figure in geography whose influence expanded beyond the discipline of geography. Despite Natoli's help, Hansen was still resistant to the idea of an AP geography course because he did not believe that the course would have enough participants to be viable in the school market at the time (Sublett 2007).

After Hansen retired, several landmark events paved the way for the development of an AP geography course. State geographic alliances were established by the National Geographic Society in the 1980's reviving geography in the United States (Boehm 1997).

After the establishment of the state alliances, the National Assessment of Education Progress (NAEP) identified geography as one of the main subjects that should be assessed in American education (NAEP 1990). The Educational Reform Act, America 2000, recognized geography as one of the five core subjects in education (US Department of Education 1991). Following this act, the National Geography Standards were written to guide what geography should be taught in schools. (Geography for Life 1994).

These developments created a better atmosphere for the development of an AP course in geography. With the help of Gil Grosvenor (Chairman), Robert Dulli and other leaders of National Geographic Society (NGS), Marran set up a meeting with Robert Orrill, the new director of AP Program (Sublett 2007). The meeting had positive results. Orrill and his assistant Elizabeth Downy later visited NGS headquarters to discuss further the possibility of an AP geography course (Sublett 2007). After meeting all day with Marran, NGS leaders, and Fred Walk who was a leader of the teaching consultants for many of the state geographic alliances, Orrill decided to get in touch with the Educational Testing Service (ETS). ETS is the assessment branch of the College Board that is in charge of administering the AP exams (Sublett 2007). This step began the process of establishing an AP geography course (Sublett 2007).

After geography was approved for the AP Program, a task force was created and many meetings were held to discuss the nature of the course. A survey was sent out to 200 high schools with the most students taking AP exams and 200 colleges to determine the interest level in an AP geography course (Murphy 1998; Sublett 2007). The survey responses demonstrated that there was a strong interest in an AP geography course (Bailey 2003). The College Board then helped organize a special session at the Annual

Meeting of the Association of American Geographers (AAG) in San Francisco in 1994 on the subject of creating an AP geography course. After that session, 16 geographers (from high school and college) were invited to New York City to discuss the creation of the course with ETS and College Board representatives.

The most important topic in the meeting was which geography course should become the AP course (Murphy 1998; Bailey 2003; Sublett 2007). It needed to be offered in many colleges and universities (Murphy 1998). The geography courses that met this criteria were Introduction to Human Geography, Introduction to Physical Geography, and World Regional Geography (Murphy 1998; Lanegran 2011). After many discussions, the task force and the College Board finally decided to go with an AP course in human geography (Murphy 1998; Bailey 2003; Sublett 2007; Lanegran 2011).

### **Human Geography vs. Physical Geography/World Regional Geography/General Geography**

There were many reasons why introductory human geography was selected as the AP course. One important reason was that an AP physical geography course would be too close to the recently created AP environmental science course, which would make it very susceptible to rejection (Lanegran 2011). Another reason cited was that most high school geography teachers who were trained in social studies did not have the physical science background for teaching an introductory physical geography course (Murphy 1998; Bailey 2003). A world regional geography course was not selected because the College Board requires AP courses to be analytical and world regional geography is thought to be encyclopedic in nature (Murphy 1998). In addition, in many states, world regional geography was already offered in middle schools and the task force

wanted the AP geography course to be different from the geography course offered in middle schools (Sublett 2007; Lanegran 2011). A general geography course was not considered either because it was not offered widely in colleges and universities (Lanegran 2011).

### **Purpose, Goals, and Outline of the APHG Course**

A subcommittee of eight members from the task force was formed and led by Alexander Murphy of the University of Oregon (Murphy 1998; Bailey 2003; Sublett 2007; Lanegran 2011). The committee first drafted a purpose statement for the APHG course that reads:

To introduce students to the systematic study of patterns and processes that have shaped human understanding, use, and alteration of the earth's surface. Students employ spatial concepts and landscape analysis to analyze human social organization and its environmental consequences. They also learn about the methods and tools geographers use in their science and practice.

Along with the purpose statement, five university level goals (Table 7) were drafted for the course which Murphy calls analytical understandings and skills (College Board 2002, 3-5). These analytical skills were developed based on the National Geography Standards, but went beyond it to match the proficiencies of a college introductory human geography course (Murphy 1998).

**Table 7. Goals of the APHG Course.**

Goal 1	Use and Think about maps and spatial data sets
Goal 2	Understand and interpret the implications of associations among phenomena in places
Goal 3	Recognize and interpret at different scales the relationships among phenomena in places
Goal 4	Define regions and evaluate the regionalization process
Goal 5	Characterize and analyze the changing interconnections among places

The subcommittee decided on six major topics to be included in the course outline, which were population, cultural patterns and processes, political organization of space, agricultural and land use, industrialization and economic development, and cities and urban land use (College Board 2002). Lanegran (2011) listed the specific materials to be covered under each of the six topics in a tabular form. The College Board requires all topics in the course outline to be covered in the course and on the AP exam (Murphy 1998). The subcommittee also recommended that the course should be taught for one school year (Murphy 1998).

### **Development of the APHG Exam**

After the course purpose, goals, and outline were provided to the College Board, the APHG course was approved in the spring of 1996 (Sublett 2007). A test development committee was formed and decided that the APHG exam contains two parts: 75 multiple choice questions and three free response questions (Bailey 2006; Sublett 2007). The multiple choice questions cover each of the six topics in the course outline (Murphy 1998; Sublett 2007; Lanegran 2011). Fifteen of these questions come from the previous year's exam for the comparison of students' performance on the exam over different years (Bailey 2006). Each multiple choice question should synthesize two or three course

topics (Lanegran 2011). Overall, these questions must have a balanced distribution in terms of difficulty (Bailey 2006).

The free response questions are designed to determine the knowledge a student has on the topics covered in the APHG course and how they use that knowledge to analyze a problem presented in the question (Lanegran (2011). In general, these questions require students to analyze cause and effect relationships using geographic knowledge and skills learned from the course (Bailey 2006). Free response questions are weighted equally to the multiple choice questions to avoid classifying student exam scores on an exam that only or mainly contains multiple choice questions (Bailey 2006) since some research suggests that males do better than females on multiple choice questions (Breland et al 1994). The free response questions are graded each summer at a designated location by knowledgeable and experienced high school geography teachers and college geography instructors from around the country (Murphy 1998; Bailey 2006; Lanegran 2007). A grading rubric is decided by all the exam readers and approved by the chief reader (Bailey 2006). Teams of seven to eight exam readers sit around a table and grade selected scripts from students (Bailey 2006). Team leaders reread selected scripts from each exam reader and their scores are compared to the reader's (Bailey 2006). The team leaders can override the exam readers' scores (Bailey 2006).

Once the test format and grading strategy were approved by ETS, the course and exam were ready to be implemented. Originally the first APHG exam was to be given in 1999, but the process was delayed because a hold was placed on new initiatives (i.e. new courses) by the College Board (Murphy 1998). Once the hold was released, it was decided that the first APHG course would be offered in the school year 2000-2001. NGS,

under the leadership of Gil Grosvenor, provided a \$500,000 loan to help launch the course (Murphy 1998). The first APHG exam was administered in May 2001 with 3,272 exam takers from across the country (Murphy 1998; Sublett 2007; Lanegran 2011).

## CHAPTER 2

### NATURE AND SCOPE

The APHG course has been administered for 14 years, but there is a lack of empirical research on the course. Other AP courses have been investigated extensively by the College Board and researchers outside the College Board on subjects including AP exam performance, AP students' academic performance in college, and the recruitment of students for college majors in science and liberal arts. Existing research on the APHG course has mainly commented on teaching methods (Murphy 2000; Sublett 2007; Garner 2012), the increase in participation (Bednarz and Bednarz 2004; Gray, Hildebrant, and Straus 2006; Murphy 2007; Lanegran 2011), and opportunities and challenges for the discipline of geography (Murphy 1998; Murphy 2000; Sharma 2002; Bailey 2003; Lanegran 2011). There is a need for empirical research on the APHG course (Stoltman et al. 2005). This two-phase sequential explanatory study aims to examine the impacts of increased participation in APHG by 9th grade students on APHG teaching, APHG learning, and recruitment in geography.

The first goal of this study is to reveal how well 9th grade students perform in the APHG exam and the reasons behind it. APHG exam scores of 9th grade students were compared to their course grades and to the exam scores of students in other grades. The comparison between APHG exam scores and course grades would reveal whether the students' performance in the exam correlates to what grade they receive in the course. The result could be used to determine whether the APHG course was successful in preparing students for the APHG exam. The comparison in the APHG exam performance between 9th grade students and students in other grades should add insights to the current

problem of low pass rate in the APHG exam. Focus groups and interviews have been conducted to explain the reasons behind this problem by discussing the challenges in teaching and learning the APHG course in the 9th grade.

College Board's research has indicated that students who took an AP course had more interest in that subject and they were more likely to major in a related subject in college (Mattern et al. 2011). This positive correlation was reinforced by a study conducted by Tai et al. (2010) which revealed that students who completed AP math and science courses in high school had a higher chance of majoring in science, technology, engineering, and math (STEM) in college. Some academic geographers have suggested that the APHG course would be a recruiting opportunity for college geography departments to increase geography majors (Murphy 1998; Bailey 2003). However, when the course is taught in the 9th grade, most of the students have not developed a major/career interest yet. The second goal of this study is to investigate how the APHG course influences students' choice of major and minor in college, level of interest in taking university-level geography courses, and career choice after college when the course was taken in the 9th grade.

Since empirical research on the APHG course is lacking, there are many other aspects on this topic that need to be investigated, including: 1) the impact of the encouragement of the APHG course in underrepresented schools on students' APHG exam performance; 2) the comparison in college geography course performance between APHG students and students who did not take the APHG course in high school; 3) the comparison among the APHG course, the Honors World Geography course, the International Baccalaureate (IB) Geography course, and Dual Enrollment in Geography

in preparing students for success in college; 4) the impact of teaching methods and professional development of APHG teachers on the success of APHG course. These aspects have been studied for other AP courses (Dodd, Fitzpatrick, and Jennings 2002; Klopfenstein 2004; Watt 2004; Paek et al. 2007; Sadler and Tai 2007; Duffy 2010; Klopfenstein and Thomas 2010; Paek et al. 2010; Sadler 2010; Sadler and Sonnert 2010), but were not examined in this study.

For students, teachers, parents, school counselors, education administrators, academic geographers, and professional organizations (such as NCGE), this study: 1) informs 9th grade students' performance in the APHG exam and raises attention to the current low pass rate problem; 2) provides insights on the challenges in teaching and learning APHG when the course is taught in the 9th grade; 3) demonstrates the impact on the recruitment for college geography majors when the course is primarily taught in the 9th grade. The results of this study allow high school administrators to make a more informed decision on whether to offer the APHG course to 9th grade students. Academic geographers and professional organizations, such as NCGE, presently involved in the promotion of APHG can use the information from this study to determine whether to promote or discourage the course being taught in the 9th grade. This study can help parents and students make the decision on whether it is a good idea to take the APHG course in the 9th grade. It can also help administrators, counselors, and teachers determine whether the course should be offered in 9th grade..

## CHAPTER 3

### LITERATURE REVIEW

#### **Theoretical Framework**

##### ***Cognitive Development Theory***

Experiments by Piaget and Inhelder (1954) demonstrated that children developed in different stages in their life by testing their reaction to various tasks including sense of touch and perception, drawing and recognizing different shapes, ability to recognize the configuration of objects, proximity to objects, and perception of space in three dimensions. Children who are the same age may be in different developmental stages (Piaget and Inhelder 1954). This theory implies that some students in the 9th grade are not developmentally ready to succeed in a college-level course. Geography looks at the world from a spatial perspective, and that spatial perspective is developed at different stages in a child's life (Liben and Downs 1993; Liben and Downs 1997). Ninth grade students may not have developed the spatial perspective yet. Increased participation in the APHG course by 9th grade students may be a significant problem. The Cognitive Development Theory is a guiding theory in this study which concerns the teaching and learning problems in the APHG course.

##### ***Career Decision Making Theories***

The Social Learning Theory of Career Decision Making and the Social Cognitive Career Theory (SCCT) can be used to relate the APHG course to the recruitment of geography majors and careers in geography.

Most people choose careers in which they have a high level of interest (Hansen 1984; Foad and Smith 1996). Super (1957) created five life stages for his vocational

development theory concerning career choice. In stage 2, termed as “exploration”, adolescents (13-18) and young adults (19-24) learn what careers would be the best fit for them through educational and leisure experiences. The Social Learning Theory of Career Development posits that people’s instrumental and associative learning experiences inside and outside of school have a direct impact on their career choices (Krumboltz, Mitchell, and Jones 1976). This implies that courses like APHG can have a direct impact on students’ career decision making.

Social Cognitive Career Theory (SCCT) further explained how learning experiences (direct and in-direct) shape people’s career interests (Brown et al 2002). The most important variable in SCCT is self-efficacy, which has been proved to be responsible for cultivating an interest in a particular career path (Bandura 1986; Lent, Larkin, and Brown 1989; Brown et al. 2002). According to Brown et al. (2002), “people are likely to fail to develop an interest in, or may form aversions to, activities in which their self-efficacy is weak or when they anticipate receiving neutral or negative outcomes.” If a student enrolls in a course for which they were not prepared, then he/she is very likely to perform poorly in that course, which will in turn hurt his/her self-efficacy in that subject and he/she is less likely to be interested in the subject in the future. For the APHG course, students in the 9th grade are likely to be less prepared than students in higher grades. Thus, they may not perform as well as students in higher grades in the course, which makes them less likely to choose geography as a major or have an interest in the subject of geography. This could have serious consequences for the future of the geography discipline, quite a contrary situation from what some of the early advocates for APHG anticipated.

## **Opportunities and Challenges in APHG**

Almost all of the research in APHG is based on viewpoints and is not empirical (no data). These viewpoints of the research are broken down into major themes. One of the themes of research on the APHG course is the opportunities and challenges the course presented on the discipline of geography and geographic education. Many of the geographic education researchers suggested that the course would produce more geographically informed students who were ready to take on more complex geographical subject matter in college (Murphy 1998; Sharma 2002; Bailey 2003). Murphy (1998) believed that the APHG course would attract some of the top students in high school and these students usually perform very well in college. He stated that this would provide geography teachers the opportunity to teach the brightest students which would help strengthen geography programs at high schools and universities (Murphy 1998). He reiterated these statements in a College Board report that was reprinted in a newsletter of the Association of American Geographers (AAG) in 2000. Murphy also strongly believed that the course would help raise the status of geography by stating, “The initiative will help raise both the profile and quality of instruction in geography in high schools, with ripple effects above and below that level: To expand on this the profile of geography will be bigger.” Sharma (2002) stated that the course would save a prominent place for geography in American high schools. Others said that APHG would raise the prestige of geography (Bednarz and Bednarz 2004; Gray, Hildebrandt, and Strauss 2005).

Many researchers also believed that the APHG course would lead to improvements in both introductory and advanced college geography courses because the more geographically literate students (after taking APHG in high school) would demand

more rigor in introductory geography courses and more variety in advanced geography courses (Murphy 1998; Sharma 2002; Bailey 2003). Bailey (2003) suggested that the program would create collaborations between university introductory human geography instructors and high school APHG teachers and help students gain confidence in their future college coursework even if their APHG grade is average. More recently, Lanegran (2011) stated that the annual reading of free response questions in the APHG exam by high school geography teachers and academic geographers provided a unique opportunity for geographers of all specialties to share research and teaching experiences. In addition, he believed that the feedback from the responses gives instructors information on what students have learned from the course (Lanegran 2011).

Much of the literature also discussed the challenges presented by the APHG course. Murphy (1998) believed that one of the challenges in the APHG course was a lack of properly trained teachers. Many high school geography teachers do not have a degree in geography. Instead, most of them have a social studies certificate with the completion of very few or no geography courses (Boehm, Brierley, and Sharma 1994; Bednarz, Stoltman, and Lee 2004). Only a very small number of them have an advanced degree in geography which is necessary for teaching the complex concepts and analytical skills of the course (Sharma 2002; Bailey 2003; Gray, Hildebrandt, and Strauss 2005; Lanegran 2011). This became the major concern for the APHG course. Murphy (1998) felt that this concern was even more daunting when the objectives of the course were considered (Table 8).

<b>Table 8. APHG Course Objectives (Murphy 1998).</b>	
Objective 1	The course should be global in scope. It should be concerned with basic human geographical patterns and processes that operate at different scales and that are fundamental to understanding the nature and complexity of the planet.
Objective 2	The course should take a problem oriented approach emphasizing “how” and “why” questions and not just “what” and “where.”
Objective 3	The course should encourage field observations. Although organized field trips are not necessary for this to occur, some combination of exercises, visual aids, and field work should be pursued to provide students with a sense of how the material world embodies information and ideas about culture, society, and human-environment interactions.
Objective 4	The course should, whenever possible develop links with the ideas and understandings of physical geography.
Objective 5	The growing use of computers should be acknowledged in the course. Such a course cannot be expected to provide students with the tools and skills necessary to display and analyze geographic data using computers, but the expanding importance of geographic information systems should be recognized and evaluated.

Other concerns have also been discussed since the course was first implemented. Bailey (2003) and Lanegran (2011) stated that there is a lack of supplemental instructional materials such as lesson plans, off the shelf test banks, and teaching manuals for high school APHG teachers. It was also discussed that there could be a major articulation problem if elite colleges only accept exams scores of five which are considered extremely well qualified, or some universities that are not familiar with the APHG course do not offer credits to students who have scored three or higher on the exam (Bailey 2003).

The last concern discussed in the literature on the APHG course, also the most relevant concern to this study, is the politics of fitting the APHG course into an already tight high school curriculum. The APHG course must compete with many other AP

courses and fit into the high school curriculum of many states where geography is not a graduation requirement (Sharma 2002; Bailey 2003; Gray, Hildebrandt and Strauss 2005). This competition can be fierce since math, science, and other social science subjects (United States (US) History and United States (US) Government) have dominated the high school curriculum which made the situation be referred to as “turf wars” (Bailey 2003; Gray, Hildebrandt, and Strauss 2005). Due to these politics, it was predicted that the APHG course might be increasingly placed in the 9th grade and served as the beginning/warm-up AP course in high schools (Gray, Hildebrandt, and Strauss 2005). Gray, Hildebrandt, and Strauss (2005) recognized the challenge of teaching a college-level course to 9th grade students by stating:

Many school districts where geography is normally offered in the 9th grade are considering developing APHG at that level, in part as an introduction to the AP program overall. This may further affect the percentage of freshman taking APHG relative to other AP classes. This growth in the number of students taking human geography is encouraging, but it does present challenges for the teachers who must develop resources and strategies to successfully deliver a college-level course to younger students.

### **Increased Participation in APHG**

Another theme of research on the APHG course is the success of increased participation. Bednarz and Bednarz (2004) believed that geography’s prestige was raised by the APHG course because of the dramatic increase in participation from 3,272 students in 2001 to 7,329 in 2003. In 2005, Gray, Hildebrandt, and Strauss wanted to

celebrate the success of the APHG program by touting its growth rate of at least 35% every year and participation of over 40,000 students since the implementation of the program. More recently, an increase in undergraduate students' awareness of geography has been attributed to the dramatic increase in students' participation in the APHG program (Murphy 2007). Participation in the program in high schools has been described as low the first year it was introduced, then increasing dramatically in the third and fourth year before classes got saturated (Gray, Hildebrandt, and Strauss 2005). The growth of the APHG program has been demonstrated by the growth in the number of schools offering the APHG course per state, the total number of APHG exams taken per state, and the number of APHG exams taken per school within states (Gray, Hildebrandt, and Strauss 2005). Trends were also reported such as the most populated states in the US were the ones administering the APHG exams and states like Florida and Texas, which had the most initial test takers, were seeing the most dramatic growth (Gray, Hildebrandt, and Strauss 2005). Gray, Hildebrandt, and Strauss (2005) also predicted that the APHG participation growth center would shift to the Southeastern United States and predicted those states would be the ones that administer the most exams today.

### **AP Exam Performance and College Outcomes**

There have been many studies that examine the relationship between students' performance on the AP exams and their college outcomes. Simply taking an AP course has been shown to increase the odds a student will attend college by at least 171 percent and this was demonstrated by students who took only one AP course, students taking two or three AP courses, and students taking four or more AP courses. (Chajewski, Mattern, and Shaw 2011). Another study showed that students who scored 3 or higher on at least

one AP exam were more likely to graduate from college than students who scored below 3 in all their AP exams, students who took AP courses without taking AP exams, and students who did not take any AP course or AP exam (Dougherty, Mellor, and Jian 2006a).

One study by the College Board demonstrated that just taking the AP exam leads to better outcomes in college regardless of the results on the exam (Hargrove, Godin, and Dodd 2008). The study compared the college performance of four groups of students, including students who took one or more AP exams in high school, students who took only one AP course without taking the exam, students who enrolled in Dual Enrollment courses, and students who took regular high school courses. Their college performance was measured by first year and fourth year Grade Point Average (GPA), first year and fourth year credit hours earned, and time to graduation. The results demonstrated that students who took one or more AP exams had higher GPAs, earned more college credit hours, and had a shorter time to graduation than students who had not taken any AP exams.

Two other studies by the College Board investigated the impact of AP exam scores on college outcomes. One study examined first year college GPA, acceptance at more selective universities, and second year college retention among students who completed AP courses in English Language, Biology, Calculus AB, and US History in high school (Mattern, Shaw, and Xiong 2009). For each AP course, three groups of students were compared. The first group includes students who scored 3 or higher on the AP exam; the second group includes students who scored 1 or 2 on the AP exam; the third group includes students who did not take the AP exam. This study found that the

first group of students had a higher GPA in the first year of college, went to more selective universities, and had better retention in college compared to the second and third group of students.

Another study compared GPA and the number of credit hours earned in college between students who took AP courses and students who did not (Murphy and Dodd 2009). Students who took AP courses were further broken into two groups. The first group includes students who received college credits (usually a score of 3 or higher) on at least one AP course and the second group includes students who took AP courses in high school but did not receive any college credit (Murphy and Dodd 2009). Students who did not take an AP course were also divided into two groups: one group includes students who took Dual Enrollment courses in high school and another group includes students who took regular courses in high school (Murphy and Dodd 2009). Students who took AP courses out performed students who did not on GPA and the number of credit hours earned in college. Of all the students who took AP courses, students who received college credits on AP exams had a higher college GPA and more college credit hours than students who took AP courses but did not receive any college credit. This work was an extension of the previous work by Dodd, Fitzpatrick and Jennings (2002) and Keng and Dodd (2008).

The above studies from the College Board indicated that AP course participation and exam performance had a positive impact on college outcomes. However, Some independent studies showed that there was no correlation between taking AP courses in high school and college overall performance (GPA) and persistence (the reenrolling rate in the sophomore year and the graduation rate) (Bergeson 1968; Geiser and Santlices

2004; Klopfenstein and Thomas 2005). Independent researchers pointed out that the College Board studies were flawed because they did not control for attributes that are generally associated with a student's academic achievements when they compare students in different groups for college outcomes (Willingham and Morris 1986; Chatman and Smith 1998; Morgan and Ramist 1998; and Santoli 2002). Those attributes include class rank, high school GPA, SAT and ACT scores, parents' education, and other factors that may also contribute to college outcomes (Willingham and Morris 1986; Chatman and Smith 1998; Morgan and Ramist 1998; and Santoli 2002).

More recent studies have controlled for these attributes. Morgan and Klaric (2007) examined students' performance in college courses that are related to AP courses. They compared AP Students (students who had taken at least one AP course) and non-AP students (students who had not taken an AP course). After controlling for SAT scores, students who scored 3 or higher on an AP exam had better grades than non-AP students in the related college courses, including US History, Biology, English, US Government, Calculus AB and BC, Psychology, and Spanish Language. There were only a few exceptions where non-AP students performed better. In Chemistry, non-AP students had slightly better grades than AP students with a score of 3. In Macroeconomics, non-AP students had substantially higher grades than AP students with a score of 4. This study conducted for the College Board only controlled for one attribute (SAT scores). Other studies which controlled for more than one attribute did not make such a compelling case that students who scored higher in AP exams have better outcomes in college.

One study examined AP students (students who scored 3, 4, or 5 on the exam) and non-AP students' (students who did not take an AP course) performance on Introductory

Biology, Introductory Chemistry, and Introductory Physics in college (Sadler and Tai 2007). After taking the same AP courses in high school, many students retake these courses as a refresher in college when they are planning to enter into a competitive program such as medicine and engineering (Sadler and Tai 2007). The findings from this study demonstrated that when demographics and prior academic achievements are statistically controlled, students who scored 3 or higher on AP exams only performed minimally higher than non-AP students in the same course, which was not the same outcome of other College Board studies that did not control for these attributes. Another study found no difference between AP students (students who took an AP course) and non-AP students (students who did not take an AP course) in their first semester grades and second year college retention after controlling for students prior non-AP coursework (coursework that was not an AP course) (Klopfenstien and Thomas 2009). The study also demonstrated that results would be biased if researchers did not statistically control for those attributes when they compare AP students with non-AP students in their college outcomes (Klopfenstien and Thomas 2009).

A recent study conducted by Duffy (2010) extended previous research by Bailey and Karp (2003). In this study, AP students (students taking AP courses), Dual Credit Program students (high school students attending college courses), and regular students (students taking standard high school courses) were compared in their college performance. The result showed no significant difference among the three groups of students in their first year GPA, completion GPA, first year persistence, and degree attainment. Variables such as high school GPA, SAT scores, and parents' education were controlled in this study. The study also demonstrated that the main predictor of college

success is the composite high school achievement scale consisting of ACT scores, high school GPA, and high school rank. The high school achievement scale in the study does not include AP course participation.

One recent study showed that students who participated in advanced courses including AP in high school had better performances in related college courses including Introductory Biology, Introductory Chemistry, and Introductory Physics after controlling for academic achievement attributes (Sadler and Sonnert 2010). For each of the college courses, six groups of students were compared, including students who passed the related AP exam (scored 3 or higher), students who did not pass the related AP exam (scored below 3), students who enrolled in a related AP course, but did not take the related AP exam, students who took a related honors course in high school, students who took a related standard course in high school, and students who did not take a related course in high school. In all three college courses, students who passed the related AP exam performed better than students who failed the AP exam, they performed better than students who completed an AP course without taking an AP exam, they performed better than students who took a related standard course, and they performed better than students who did not take a related course. Students who passed the related AP exam only performed better than honors course students in Introductory Biology. In the other two college courses, these two groups of students performed at a comparable level. This study demonstrated that taking advanced courses in high school had positive impacts on performance in college courses and advanced courses in high school do not have to be an AP course in order for students to have positive results in related introductory college courses.

Students' AP exam participation and performance were connected with their college outcomes in the previous studies. This study examines APHG exam participation and performances in a different perspective. The APHG exam scores of students from 9th grade were compared to the exam scores of students from other grade levels to examine the impact of grade level on APHG exam performances.

### **AP Course Grades and AP Exam Scores**

Research has shown that the course grade earned in advanced high school courses (such as AP courses) is not a good indicator of success in college course work (Geiser and Santilices 2004). Instead, the score on qualifying exams (such as AP exams) taken at the end of the course have been shown to be a better indicator of college readiness (Geiser and Santilices 2004; Dougherty, Mellor, and Jian 2006a). This pointed to a fact that there may be a mismatch between AP course grades and AP exam scores. In schools where students are not as well prepared, the standards for college credit courses (including AP courses) have been lowered to help students receive passing grades even though the rigor of these course were supposed to be at the college level (Dougherty, Mellor, and Jian 2006b).

According to Bailey (2006), AP exam scores are meant to correlate directly with college course grades. Therefore, a score of five is an A, four is a B, three is a C, two is a D and one is an F (Bailey 2006). More specifically, the College Board breaks down the exam scores as 5 equal to an A; 4 equal to A-, B+, and B; and 3 equal to B-, C+, and C (College Board Course Descriptions 2013). Most universities use this standard to determine which AP exams scores receive college credit (the ones equal to a college-level C or above) (Hyser 1999).

No study has examined the correlation between AP course grades and AP exam scores. How closely an AP course grade a student receives correlates with his/her AP exam score can be helpful in determining how well the AP course prepares students to pass the AP exam. This information could inform high school administrators, academic researchers involved in AP research and professional development, the AP Program committees, and the College Board of the success or failure of AP courses in preparing students to take AP exams.

### **Factors Impacting AP Teaching, Learning, and Exam Performance**

Research has shown that income level, student's PSAT/SAT scores, teacher's quality and background, student's achievement, and AP course duration are associated with students' AP exam scores. The amount of training a teacher obtains as well as the number of years of teaching experience have been shown to have a direct impact on student learning (Murane and Phillips 1991; Ferguson and Wommack 1993; Greenwald, Hedges, and Laine 1996; Darling-Hammond 2000; Goldhaber and Brewer 2000; Darling-Hammond 2001; Floden 2001; Swinton et al 2010). In a survey of 7,491 high school students from various backgrounds, students reported that AP science teachers' subject knowledge and teaching ability was much higher than teachers from honors and regular science courses (Sadler 2010).

Another survey of over 32,000 AP teachers in 2002 revealed the amount of professional training and teaching experience of AP teachers (Milewski and Gillie 2002). Most AP teachers in social science, life science, or physical science had a bachelors or master's degree in the subject they were teaching. Close to three quarters had attended an AP workshop (1 day) and a little less than half had attended an AP summer institute

(multiple days) in the last 5 years when the survey was taken. Close to a third took a related college course for professional development prior to teaching an AP class. Most of the AP teachers also reviewed all the materials provided by the College Board (teacher manuals, course descriptions, released AP exams). Another survey over 1171 AP Biology and 1219 AP US History teachers revealed that 85% of AP Biology teachers and 63% of AP US History teachers had a master's degree (Paek et al. 2005). The majority of the respondents of each group had a bachelor's degree in Biology (84%) or US History (61%) (Paek et al. 2005). About 70% of teachers in each group have 10 or more years of teaching experience compared to the national average of 61% in public schools and 52% in private schools according to the National Center for Education Statistics (NCES) data in 2000 (Paek et al. 2005).

Professional Development (PD) has been considered as a way to improve teaching ability in education research (Darling-Hammond 1993; Borko and Putnam 1995). This could help AP teachers improve their teaching efficacy and gain more positive perceptions on AP courses, which would in turn impact students' performance in AP exams. One study examined students' performance on AP exams among schools with different levels of PD for AP teachers (Laitusis 2012). In schools with a high level of PD (attended more than 3 events) for AP teachers, students had a mean AP exam score of 2.33 and 41% scored 3 or higher on AP exams. In schools with a low level PD (attended 3 events or less) or no PD for AP teachers, students' mean scores on the AP exams were 1.98 and 1.82 respectively; and only about 19% of students in these schools scored 3 or higher on AP exams. Another recent study examined the impact of a four-day College Board PD program called APA I on student participation and performance on AP exams

(Bausmith and Laitusis 2012). APA I was created to help teachers develop innovative teaching strategies for teaching AP courses. The participants in this study were a sample of AP English and AP Social Studies teachers (including APHG teachers). The study concluded that teacher's participation in APA I caused an increase in participation in AP exams by minority students and students who had lower prior achievement. However, AP exam scores remained the same.

Teaching practices such as class size, prerequisite courses, and course duration, could also have an impact on students' learning and performance on AP exams. Paek et al. (2005) reported some characteristics in AP Biology and AP US History teachers' teaching practices. In the study survey, 67% of AP Biology teachers emphasized “learning key concepts” as the most important learning goal in the AP Biology course, while 90% of AP US History teachers believed “understanding themes” to be the most important (Paek et al. 2005). Both groups of teachers used lecture as the primary teaching method, but AP US History teachers also used group discussions at a high rate (Paek et al. 2005). More than half of the teachers in both groups centered their class activities on practice for the AP exam (Paek et al. 2005). The most used assessment method by both groups of teachers was multiple choice questions (Paek et al. 2005). Student presentations and class projects were used as well for assessments at a low rate (Paek et al. 2005). In Paek et al.'s (2005) study, 72% of AP Biology courses required prerequisite courses, but there was no prerequisite in 59% of AP US History courses. In another study conducted by Milewski and Gillie (2002), most AP teachers require prerequisite courses to take their class. Regarding class preparation, 41% of AP Biology teachers and 71% of AP US History teachers reported spending at least 10 hours each week preparing for class (Paek

et al. 2005). Teachers in both groups asked their students to spend 5-10 hours a week on class work after school (Paek et al. 2005). Paek et al.'s (2005) survey also revealed that 76% of the AP courses taught by the surveyed AP Biology and AP US History teachers were scheduled every day over an entire school year. Ninety-four percent of AP US History teachers compared to 75% of AP Biology teachers said they had adequate supplies and facilities (Paek et al. 2005). The majority of teachers in both groups felt they had control over what they taught in the courses (Paek et al. 2005). Besides the above teaching practices, Milewski and Gillie (2002) showed that most AP teachers teach in small classes with about 17 students.

Expanding on their previous research reporting on the characteristics in teaching practices, Paek et al. (2010) examined the impact of particular teaching practices on students' performance in AP exams. They used a sample from their AP Biology data in 2005 and matched the teaching practices with the AP exam scores of students (Paek et al. 2010). It should be mentioned that all students in this study had taken the PSAT exam prior to the AP exam which can sometimes be an indicator of a high achieving student (Paek et al. 2010). Students who met every day for the entire year performed better than students who met every other day for the entire year and students who met every day for only one semester (Paek et al. 2010). Classes with 50% or more students taking the exam scored higher on the exam than classes with less than 50% of students participating (Paek et al. 2010). Also, classes with 15 or fewer students performed better on AP exams than classes with more than 15 students (Paek et al. 2010). This finding corresponded to some previous studies which showed that smaller class size improves students' performances (Glass and Smith 1979; Finn and Achilles 1990; Angrist and Lavy 1999; Hanushek 1999;

Krueger 1999; Nye, Hedges, and Konstantopoulos 1999; Lee and Loeb 2000; Nye, Hedges, and Konstantopoulos 2000; Pong and Pallas 2001; Konstantopoulos 2008; Allen et al 2013). However, other studies have shown that class size was insignificant or could even have negative impacts on students achievements (Hoxby 2000; Milesi and Gamoran 2006; Konstantopoulos 2011; Chingos 2012; Cho, Glewwe, and Whitler 2012).

AP Biology Teachers had reported that they strongly emphasized learning key concepts and the majority of the AP Biology teachers used multiple choice tests as their main form of assessment (Paek et al 2005). However, when examining student performance on the AP Biology exam, the teachers who emphasized the scientific method and had more lengthy writing assignments as the preferred form of assessment had students that performed better on the AP Biology exam (Paek et al 2010). Lastly, the students who spent the most time working outside of class performed the best on the AP Biology exam (Paek et al 2010). Another study by Sadler (2010) reported that students spent more time working on AP courses than honors or regular courses after class.

Students who enroll in AP courses and are successful in AP exams tend to be from higher-income families in higher income school districts (Klopfenstein and Thomas 2005). According to a longitudinal study which tracked students from eighth grade to college graduation in Texas, students from low-income families had a much lower pass rate on AP exams compared to students from non-low-income families (Dougherty and Mellor 2010). In low-income school districts in Texas in the school years 2000-2003, students with the highest level of math and reading proficiency had a pass rate of about a third on AP exams; students with the next lower level of math and reading proficiency had a 7% pass rate on AP exams; students with the lowest levels of math and reading

proficiency had a pass rate of only 2% or even lower on AP exams (Dougherty and Mellor 2010). The pass rates are low even for the students who were most proficient in reading and math since the pass rate for all AP exam takers in Texas in the school years 2000-2003 was just over 50%.

The reason why students in low income schools do not perform well on AP exams is because these students are not properly prepared to take AP courses (Dougherty and Mellor 2010). Research has shown that the prior knowledge learned from classes or other experiences is very influential in allowing a student's brain to learn more advanced content (Bransford, Brown, and Cocking 2000; Willingham 2006). In order to properly prepare students for AP courses, prior knowledge learning needs to start all the way from kindergarten and continue into middle school (Dougherty and Mellor 2010). Children raised in low income families have been shown to have only half of the vocabulary of children brought up in non-low income families (Hart and Risley 1995). Many students from low income schools have been shown to be insufficiently prepared upon entering high school (Balfanz, McPartland and Shaw 2002; Dougherty and Mellor 2009). However, AP courses have been increasingly placed in low-income schools in recent years and these students have failed AP exams at an alarming rate (Pfankuch 1997; Lichten and Wainer 2000; Lichten 2010; Jump 2011). This points to how critical prior preparation can be for students' success in AP courses (Dougherty and Mellor 2010). Placing AP courses in low income schools has been shown to be not working since students did not receive the proper preparation for them to be successful in a college-level course (Dougherty and Mellor 2009).

PSAT scores are important indicators that the College Board suggests to use for determining whether students are ready for AP courses (Camara and Millsap 1998; Ewing, Camara, and Millsap 2006). Research has shown that students who do well on PSAT or NMSQT exams perform well on AP exams (Camara and Millsap 1998; Lichten and Wainer 2000; Ewing, Camara, and Millsap 2006). However, AP courses are increasingly placed in school districts where students have low PSAT scores (Lichten 2010) or in the 9th or 10th grade when students have not taken PSAT/NMSQT exams yet (Ewing, Camara, and Millsap 2006).

Another factor that can have an impact on students' AP exam performance is the quality and background of AP course teachers. Research has shown that AP course teachers tend to use more advanced teaching methods and they tend to have more teaching experience compared to teachers of other courses (Finley 1984; Burdman 2000). Besides the quality and background of teachers, student's prior achievement also impact his/her performance on AP exams (Dougherty, Mellor, and Jian 2006a). Another potential problem that may have a big impact on AP exam scores is AP course duration. Some high schools offer AP courses as a semester course in the fall. However, AP exams are always administered in the spring semester. Many researchers have stated their concerns that this would have a negative effect on the exam scores because of the semester-long gap between the course and the exam during which the students may have already forgotten what they have learned in the course (Cocking 1990; Mendels 1999; Hansen, Gutman, and Smith 2000; Santoli 2002).

## **APHG Teaching Materials and Methods**

Even though it has been stated that APHG supplemental teaching materials are lacking (Bailey 2003; Lanegran 2011), a few resources are available to high school APHG teachers. The College Board has created an APHG website with links to resources helpful for teaching APHG. APHG Teachers registered with NCGE can get daily warm-up questions via email during the school year which can be used for class discussions in their APHG course. NCGE has produced various webinars on APHG that can be used as part of the professional development for APHG teachers. There are even various top ten lists that give advice for teaching APHG to 9th grade students on the NCGE website. A resource book which is titled “A Teachers Guide to Advanced Placement Human Geography: Essays, Strategies, and Resources” and published in a joint publication by NCGE and the Geographic Education National Implementation Project (GENIP) in 2004 is a guidebook on APHG for teachers (Bednarz 2004). Most recently a book called "AP Human Geography" by Jody Smothers Marcello (2011) provides lesson plans for each of the topics in the APHG outline.

There is a special issue of the Journal of Geography regarding teaching methods in APHG. This has been the only research publication on teaching methods for APHG to date. This publication was produced in response to the challenge of high school APHG teachers' lack of training in geography content in their own coursework (Murphy 2000b). The special issue contains six articles on the six topics in the APHG course outline and a concluding article on the challenges of teaching APHG. Each article identifies key areas of study on one of the six topics, gives examples of each area, and provides strategies for teaching each area (Murphy 2000b). The six topics and articles are population geography

and movement (Sharma 2000), cultural patterns and process (Domosh 2000), industrialization and economic development (Bailey 2000), political organization of space (Murphy 2000c), modern agriculture (Lanegran 2000), and cities and urban land use (Ford 2000). The special issue was not meant to cover all material and be used as a checklist by teachers, but it intended to cover critical issues on each topic which the authors considered were the most important (Murphy 2000b).

### **Challenges in Teaching and Learning in AP Courses**

There are a number of challenges in teaching and learning of AP courses (Porter and Brophy 1998; Darling-Hammond 2000; Wenglinsky 2002; Falk and Darling-Hammond 2010).

Researchers have shown that teaching experience has a direct impact on student learning (Murane and Phillips 1991; Darling-Hammond 2001). Many AP courses including APHG have experienced exponential growth in recent years (Lanegran 2011). Milewski and Gillie's (2002) study revealed that one quarter of the 32,000 surveyed AP teachers were going to retire between 2006 and 2011. These two facts led to the current situation of many new teachers with little experience teaching AP courses. Lack of teaching experience can create a big challenge for these new teachers in teaching AP courses.

Professional Development (PD) has been considered as a way to improve teaching ability in education research (Darling-Hammond 1993; Borko and Putnam 1995). This could help AP teachers improve their teaching efficacy and gain more positive perceptions on AP courses, which could in turn impact students' performance in AP

exams. Therefore, teachers with low level, or no professional development, presents a challenge for teachers.

Herr (1992) interviewed AP and honors course teachers for their perceptions on teaching these two kinds of courses. Teachers believed that honors courses were better at developing students' thinking skills. Teachers of honors courses reported more personal intellectual stimulation than teachers of AP courses. They also stated that AP courses were more stressful to teach than honors or regular courses. The stress might come from the goal of their students performing the best on AP exams since teachers' performance is often linked to their students' performance on AP exams (NRC 2002, 186). These negative perceptions on AP courses might present a challenge for teachers when teaching AP courses.

In addition to the challenges present in teaching AP courses, some challenges AP teachers face come from the students taking the class. Students' lack of prior knowledge creates a challenge for AP teachers. The level of achievement students have in the eighth grade has been cited as the most significant indicator of how college ready a student will be by the 12 grade and how well they will perform in college preparatory classes (ACT 2008). In a study conducted in Texas and Arkansas, a cohort of students deemed the least prepared in 8th grade had only two to three percent of students in the cohort achieve college readiness standards by 11th/12th grade (Dougherty and Mellor 2009). In some inner city districts, students have been tested as only having a 6th grade reading and math level upon entering high school (Balfanz, McPartland, and Shaw 2002). When AP courses are being encouraged in many diverse school districts from suburban to inner-city, a lack of preparedness by incoming high school students creates a significant

challenge for teachers especially when teaching a college level course like APHG to 9th grade students.

Another challenge is that some students have an artificial interest in AP courses. Some of the students enrolled in AP courses are more interested in compiling a competitive resume for college than in learning a particular AP subject (Pope 2001). This makes it hard for AP teachers to stimulate and keep the students' interest in the content they are teaching when some of their students are not interested in the subject in the first place.

Another factor creating students' artificial interest in AP courses are financial incentives. In Texas, financial incentives are offered to students of low income and minority schools to help raise college readiness in those schools (Jackson 2008). In some cases, students were given cash incentives anywhere from \$100 to \$500 for each exam with a score of 3 or higher (Jackson 2008). In these schools, the only reason why some students enroll in an AP course is to get financial incentives (Jackson 2008). The Advanced Placement Initiative Program (APIP) now awards \$100 cash to each score of 3 or higher on AP exams for schools and additional bonuses for AP teachers (TEA 2011). Although research shows that APIP (including financial incentives, intensive teacher professional development, additional tutoring of students, and curriculum changes such as prerequisite courses) raise AP exam scores in Texas (Jackson 2012), financial incentives alone do not cause improved AP scores (Jeong 2009). Students who enrolled in an AP course only for the money added to the number of non-interested students that the AP teachers have to face when they were teaching.

Besides the challenges in AP courses in general, there are several challenges in particular in the APHG course. The biggest challenges in the APHG course were recruiting students, fitting APHG in schools where it does not meet the prescribed state curriculum, covering the material in one semester, geography background of APHG teachers, geography and academic background of APHG students, and teaching all the topics required on the APHG exam (Trites and Lange 2000). Trites and Lang (2000) offered suggestions to these challenges based on their own APHG involvement and teaching experience at the high school level, but no empirical research was conducted.

They suggested that the key for recruiting students is to inform them of the opportunities to receive college credit from area universities, and explain how the course will prepare them for other university courses (Trites and Lange 2000). In schools where the course does not fit well into the prescribed state curriculum, they suggested that the course could include materials that is prescribed in the state curriculum, or it could be offered as an elective course (Trites and Lange 2000). Since the College Board did not require the course to be a semester course, Trites and Lange (2000) suggested that teachers should not design the course as a semester course so that they would not have to cover all the materials in one semester. Trites and Lange (2000) felt that teachers' background in geography does not matter because teachers with little or no experience can take supplemental courses and attend AP summer institutes. For students' geography and education background, they admitted that restricting the APHG enrollment to only the most prepared students leads to better scores on APHG exams. However, they said that students from all backgrounds should be encouraged to take the course even if they might fail the APHG exam or do not plan to take it at all because they believed that the

course helps prepare them for college coursework (Trites and Lange 2000). The only suggestion they had for teachers regarding covering all the topics required on the APHG exam in one year is to be efficient (Trites and Lange 2000). However, little explanation was provided on how a teacher could accomplish this (Trites and Lange 2000).

A more recent article gives more specific suggestions on how to help 9th grade students be successful on the APHG course (Garner 2012). These suggestions are based on personal viewpoints by the author instead of research. The author suggested that APHG teachers give a summer assignment to the students, teach the students how to take notes and read textbooks, have a strategy for organizing student notebooks, vary classroom activities, do not focus on the AP exam at the beginning of the year, get students to read current events, hold study sessions often, teach place geography, and channel the nervous energy of freshman into enthusiasm. Many of these suggestions listed sound like prescriptions for students who are ill prepared and lack the maturity to take the course in the first place.

There are many challenges to teaching and learning in general, teaching and learning in AP courses, and teaching and learning in APHG specifically. Since there has not been any research identifying what the challenges are in teaching and learning in the APHG course, this study will examine those challenges and include a specific focus on what the challenges are in teaching a college level human geography course to 9th grade students. Also, what are the challenges in learning the APHG course as a 9th grader? These challenges are uncovered through the use of three teacher focus groups conducted at AP summer institutes in Texas, two administrator interviews, and student interviews of former APHG students at Texas State University.

## **APHG Course Participation and Recruitment in Geography**

The APHG course was initiated by James Marran in 1985 (Murphy 1998; Sublett 2007). Many members of the original APHG development committee believed the course was a great opportunity for geography and would increase the enrollment of students majoring in geography (Sharma 2002; Sublett 2007). Murphy (2000a) remarked on some of the challenges posed by the development of the APHG course for colleges and universities by stating “they will have to adjust for not only incoming students who have taken APHG, but also for APHG students who will be declaring themselves as geography majors.” Bailey (2003) suggested that the APHG course would expose a record number of students to geography, and this would in turn cause more students to become curious about geography, which would result in an increasing number of geography majors in the US. More recently, similar statements have been echoed by Lanegran (2011). Although the early APHG advocates are highly positive and enthusiastic about the possible increase in geography majors caused by the APHG course, there has not been much research examining this relationship. Previous research has correlated taking AP social science (Psychology, Economics, Government, etc.) courses in general with majoring in any of the social science fields (Morgan and Maneckshana 2000; Mattern, Shaw and Ewing 2011). A survey conducted by Hildebrandt in 2001 was the only one examining the correlation between the APHG participation and majoring in geography (Bailey 2003). She surveyed 100 high school students who had taken the APHG exam and 20% of them said they would consider majoring in geography which is encouraging. However, the survey was conducted while the students were still in high school. It cannot count the number of students who actually become geography majors in college since high school

students' majoring interest may change before they actually pick a major in college. A survey conducted to college students would be more reliable for collecting information on majoring choice. The relationship between majoring choice and APHG participation can be examined by asking each surveyed college student what his/her major is and whether he/she has taken the APHG course in high school. Since there have been a large number of students taking the APHG exam each year since 2005 (College Board Program Summary Reports), a survey should be conducted to current college students who had the opportunity to take the APHG course in high school. A survey to current college students for examining the relationship between majoring in geography and APHG participation would be valid. Besides majoring choice in geography, information on minor choice in geography, interests in the subject of geography, interests in taking geography classes, and possible career paths in geography could also be collected in the survey.

### **AP Course Participation and Subject Interest**

Studies conducted by the College Board and independent researchers have shown that participation in a particular AP course can increase the likelihood a student will major in a subject related to that AP course (Morgan and Maneckshana 2000; Robinson 2003; Tai et al 2010; Mattern, Shaw, and Ewing 2011). Studies on AP science, technology, engineering, and mathematics (STEM) courses have shown a strong correlation between AP participation in those courses and college major (Robinson 2003; Tai et al 2010). In a 2003 study, over 50% of students who participated in AP Science courses (Chemistry, Biology, and Physics) and AP Calculus courses majored in science, engineering, math, or the medical field in college (Robinson 2003). Tai et al (2010) found that students who completed AP Science exams and AP Calculus exams were more than

twice as likely as students who did not complete those exams to major in a STEM subject.

College Board research has also shown that former AP students tend to major in and enroll in more courses in college, which related to the AP courses they completed in high school. In a comparison between AP exam takers and non-exam takers, those who completed AP exams in 28 different subjects were more likely to continue to take related college courses and major in those subjects than students who took the standard high school courses in those subjects (Morgan and Maneckshana 2000). A recent College Board study also showed a strong correlation between AP exam participation and college major, but these correlations were much stronger for computer science and other technical fields than social sciences and the humanities field (Mattern, Shaw and Ewing 2011). The above studies controlled for factors like gender, ethnicity, and student ability, but one has to wonder if there are other factors besides these and AP participation that could lead a student to be interested in a subject.

## **CHAPTER 4**

### **RESEARCH QUESTIONS**

The following research questions guide the analysis of the impacts of increased participation in APHG by 9th grade students on APHG teaching, APHG learning, and recruitment in geography. These research questions were derived from the existing literature on the AP program and the APHG course in particular. The answers to these questions will fill in some of the gaps in the current APHG research. There are two main research questions each with several sub-questions to be answered in this study. The first research question examines the impacts on APHG teaching and APHG learning. The second research question investigates the impacts on recruitment in geography. The main research questions and sub-questions are listed below:

#### **Research Question One:**

What are the impacts on APHG teaching and APHG learning from increased participation in APHG by 9th grade students?

Sub-question 1) Are 9th grade students performing differently in the APHG exam from students in grades 10-12?

Sub-question 2) Are the course grades students receive in the APHG course the same as their grades on the APHG exam?

Sub-question 3) What challenges do teachers have when they teach the APHG course to 9th grade students?

Sub-question 4) What challenges do students have in learning when they take the APHG course in the 9th grade?

Sub-question 5) Why is APHG taught in the 9th grade at such a high rate compared to other AP courses?

**Research Question Two:**

Does APHG participation impact recruitment in the discipline of geography?

Sub-question 1) Does taking the APHG course encourage students' choice of geography majors and minors, and is the impact the same for those who take the course in the 9th grade and other grades?

Sub-question 2) Does taking the APHG course encourage students' interest in geography and taking geography courses in college, and is the level of interest different for those taking the course in the 9th grade and other grades?

Sub-question 3) Does taking the APHG course encourage students' career interest in geography, and is career interest different for those taking the course in the 9th grade and other grades?

**Foundation of Research Question One**

Sub-question One compares the APHG exam performance of 9th grade students with that of higher grade students. There has been no research examining AP exam performance of students in different grade levels. The reason is most of other AP exams were taken by higher grade students. However, the majority of students taking the APHG exam are in the 9th grade, and the APHG exam pass rate is much lower than other AP exams. The answer to this question can be used to evaluate whether the APHG course is suitable for students to take in the 9th grade.

Sub-question Two examines the correlation between APHG course grades with APHG exam scores. There has been no research examining the correlation between these two scores. However, the literature did show that the standards for college credit courses (such as AP courses) have been lowered in some schools to help students pass the course (Dougherty, Mellor, and Jian 2006b). This study aims to examine if this was true for the APHG course by correlating students' APHG course grades with their AP exam scores. Is passing the APHG course the same as passing the APHG exam? The answer to this question shows whether the content the students learned in the APHG course to get a particular grade is sufficient in preparing them to receive an equivalent grade on the APHG exam.

Sub-question Three examines what the challenges are in teaching APHG to 9th grade students. Literature has pointed out that lack of teaching experience, lack of professional development, negative perceptions on teaching AP courses, students' lack of prior knowledge, and students' artificial interest in AP courses were challenges in teaching AP courses in general. Previous studies also discussed challenges in teaching the APHG course and strategies for helping 9th grade students be successful on the APHG course. However, these studies were based on researchers' viewpoints with no data collected to form those viewpoints. Empirical research investigating problems in teaching the APHG course to 9th grade students can be used as a possible explanation of why the APHG exam scores are low, and to determine whether 9th grade students are ready to take the APHG course.

Sub-question Four examines the challenges in learning 9th grade students have in taking the APHG course. There have been many studies examining factors that impact

students' learning, including but is not limited to class size, teaching methods, teaching experience, and learning styles. However, most of these factors were discussed from the teachers' perspective. In addition to the APHG teachers' input on the challenges of teaching the course to 9th grade students, it is important to investigate the challenges in learning the course from the 9th grade APHG students' perspective.

Sub-question Five asks the reasons why the APHG course is taught in the 9th grade at such a high rate compared to other AP courses. Since the implementation of the AP Program in 1950s (Lacy 2010), there has never been any other AP course that was taken by 9th grade students at such a high rate. No research prior to this study exists about the problem of increased participation in the APHG course by 9th grade students. Thus, there is no answer to this question in the literature. Empirical research investigating how this unique situation was created adds to the understanding of the research problem.

### **Foundation of Research Question Two**

Research Question Two provides the framework for analyzing the impact of 9th grade students taking the APHG course on recruitment for the discipline of geography. Previous research in other AP courses had demonstrated that AP course participation increases the likelihood of a student majoring in a related field. These studies bolstered geographers' anticipations for the APHG course being a great opportunity for the recruitment of geography majors in college in the infancy of the APHG course. The difference between the practice of the APHG course and that of other AP courses is that most students do not take other AP courses in the 9th grade. Would the difference in grade level in which the AP course is taken have a different impact on students' majoring choice in college? Further, research on career decision making shows that students who

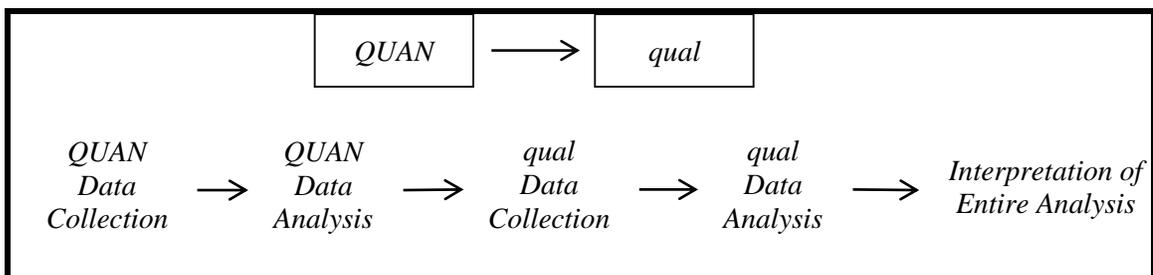
do not have a good experience in learning a subject have a low self-efficacy in that subject and are not likely to be interested in pursuing a career path in that subject (Bandura 1986; Lent, Larkin, and Brown 1989; Brown et al 2002). Statistics has shown that APHG exam scores have been decreasing while 9th grade students' participation has been increasing. This led to a reasonable doubt that 9th grade students did not have a successful experience in learning the course compared to higher grade students. If this was the case, then the recruitment of geography majors in college would be hurt because these students are less likely to major in geography when they already had an unsuccessful learning experience in the APHG course. An investigation on this matter relates to the future of the discipline of geography, thus it is among the most urgent and necessary research on the APHG topic.

Sub-question One examines the impact of taking the APHG course on the percentage of geography majors and minors in college; Sub-question Two examines the impact of taking the APHG course on the interest level in geography and taking geography classes in college; Sub-question Three examines the impact of taking the APHG course on the interest in geography careers of college students. The answers to the three sub-questions can be used as good indicators for determining the impact of 9th grade participation in APHG on the recruitment for the discipline of geography.

## CHAPTER 5

### RESEARCH DESIGN

A two-phased sequential explanatory mixed methods study (Ivankova, Creswell, and Stick 2006; Creswell 2009) was implemented to answer each main research question. (Figure 4). In the first phase of the design, quantitative data was collected and analyzed. The second phase included qualitative data collection and analysis. The result of the qualitative phase was then used to help explain the result of the quantitative phase (Ivankova, Creswell, and Stick 2006). The reason for using this approach was to reveal a relationship through the analysis of quantitative data in the first phase and then to explore the causes of the revealed relationship through the qualitative analysis in the second phase (Rossman and Wilson 1985; Tashakkori and Teddlie 1998; Creswell et al 2003; Creswell 2009). The quantitative analysis results were used in the intermediate stage to formulate interview questions that were to be used in the qualitative phase (Hanson et al 2005). The integration of the quantitative and qualitative results took place after the conclusion of the qualitative phase (Onwuegbuzie and Teddlie 2003; Creswell 2009). A visual model for data collection, analysis, and the expected results was created for each main research question (Tables 9 and 10). The following sections further explain the research design in the two visual models.



**Figure 4.** Sequential Explanatory Method (Source: Creswell 2009)

**Table 9.** Research Question One Visual Model (Adapted from Ivankova, Creswell, and Stick 2006)

<u>Phase</u>	<u>Procedure</u>	<u>Product</u>
<p>Quantitative Data Collection</p>	<ul style="list-style-type: none"> <li>• Collected APHG exam scores from Texas Education Agency (TEA)</li> <li>• Collected APHG course grades and exam scores from anonymous Texas APHG teachers</li> </ul>	<ul style="list-style-type: none"> <li>• Numeric data tables</li> <li>• Numeric data tables</li> </ul>
<p>Quantitative Data Analysis</p>	<ul style="list-style-type: none"> <li>• Summarized APHG exam scores by grade level</li> <li>• Chi-square Test of Homogeneity</li> <li>• Correlated APHG exam scores to course grades</li> </ul>	<ul style="list-style-type: none"> <li>• Tested for significant difference in APHG exam pass rates between 9th grade and other grades</li> <li>• Examined whether course grades and exam scores are associated</li> </ul>
<p>Connecting Quan and Qual</p>	<ul style="list-style-type: none"> <li>• Set up Focus Groups and prepared Focus Group questions</li> </ul>	<ul style="list-style-type: none"> <li>• Focus group protocol</li> </ul>
<p>Qualitative Data Collection</p>	<ul style="list-style-type: none"> <li>• Conducted Focus Groups with Texas teachers</li> </ul>	<ul style="list-style-type: none"> <li>• Focus group transcripts</li> </ul>
<p>Qualitative Data Analysis</p>	<ul style="list-style-type: none"> <li>• Coding and thematic analysis</li> <li>• Theme development</li> </ul>	<ul style="list-style-type: none"> <li>• Codes and themes</li> <li>• Documented themes with salient quotes</li> </ul>
<p>Integration of the Quan and Qual Results</p>	<ul style="list-style-type: none"> <li>• Interpreted and evaluated the quantitative and qualitative results</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion</li> <li>• Implications</li> <li>• Recommendations</li> <li>• Future Research</li> </ul>

**Table 10.** Research Question Two Visual Model (Adapted from Ivankova, Creswell, and Stick 2006)

<u>Phase</u>	<u>Procedure</u>	<u>Product</u>
<p>Quantitative Data Collection</p>	<ul style="list-style-type: none"> <li>• Conducted survey among college students at Texas State University</li> </ul>	<ul style="list-style-type: none"> <li>• Numeric data</li> </ul>
<p>Quantitative Data Analysis</p>	<ul style="list-style-type: none"> <li>• Generated a table for geography majors and interest in geography, geography classes, and geography careers by different combinations of geography courses taken in high school</li> </ul>	<ul style="list-style-type: none"> <li>• Calculated and compared percentages of each category and discussed</li> </ul>
<p>Connecting Quan and Qual</p>	<ul style="list-style-type: none"> <li>• Generated a table for geography majors and interest in geography, geography classes, and geography careers by grade level in which APHG was taken</li> </ul>	<ul style="list-style-type: none"> <li>• Calculated and compared percentages of each category and discussed</li> </ul>
<p>Connecting Quan and Qual</p>	<ul style="list-style-type: none"> <li>• Determined interview questions</li> </ul>	<ul style="list-style-type: none"> <li>• Interview protocol</li> </ul>
<p>Qualitative Data Collection</p>	<ul style="list-style-type: none"> <li>• Conducted Interviews with former APHG students</li> </ul>	<ul style="list-style-type: none"> <li>• Interview transcripts</li> </ul>
<p>Qualitative Data Analysis</p>	<ul style="list-style-type: none"> <li>• Coding and thematic analysis</li> <li>• Theme development</li> </ul>	<ul style="list-style-type: none"> <li>• Codes and themes</li> <li>• Documented themes with salient quotes</li> </ul>
<p>Qualitative Data Analysis</p>	<ul style="list-style-type: none"> <li>• Interpreted and evaluated of the quantitative and qualitative results</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion</li> <li>• Implications</li> <li>• Recommendations</li> <li>• Future Research</li> </ul>
<p>Integration of the Quan and Qual Results</p>		

## **Data Collection Site: Texas**

Texas was chosen as the data collection site because of its level of participation in APHG, the percentage of 9th grade students in the APHG exam, and the proximity of the researcher to the data collection site. Texas is the second only to Florida in the number of students participating in the APHG exam. Also, the vast majority (78%) of students who take the APHG exam in Texas are 9th grade students. Texas was also logistically feasible to collect data since the researcher was at Texas State University. The researcher's participation in the Texas Geographic Alliance, an organization of high school geography teachers and academic geographers who work together to enhance geographical education (K-16) in Texas, also provided an opportunity to get a sufficient pool of high school APHG teachers for the Focus Groups for Research Question One. The large population of students (over 34,000) at Texas State University also provided a sufficient pool of former APHG students for conducting the survey and interviews of this study. This research has received an exemption from the Institutional Review Board (IRB) at Texas State University for collecting quantitative and qualitative data from teachers, administrators, and students.

## **Research Question One**

### ***Phase One: Quantitative Data Collection Method (for Sub-questions One and Two)***

The data for the quantitative phase of Research Question One was collected from two sources. The APHG exam scores of the most recent school year available (the 2010-2011 school year) in Texas by grade levels were obtained from the Texas Education Agency (TEA). This dataset provided a breakdown of students in each grade level scoring a 1, 2, 3, 4, or 5 on the APHG exam. The second dataset came from three

anonymous Texas high school APHG teachers. Two of them provided a large sample of 9th grade students. The other provided a small sample of students from 10th grade and higher. Each student's grade level, the APHG exam score, and the APHG course grade in their classes for the school year 2011-2012 (AP exam in spring 2012) was provided and summarized in tables for further analysis.

***Phase One: Quantitative Data Analysis Method (for Sub-questions One and Two)***

Although, it would be apparent from the table the differences in APHG exam scores between 9th grade students and other grade students, a statistical analysis was needed to see whether these differences were significant or not. The Chi-square Test of Homogeneity was applied to the TEA dataset for examining whether the differences in APHG exam scores between 9th grade students and higher grade students were significant. Data obtained from three anonymous Texas high school APHG teachers was summarized in a table by course grades and exam scores. The correlation between APHG course grades and exam scores of high school students in Texas were analyzed from the table.

***Connecting Quantitative and Qualitative Phases***

Facilitators of Texas APHG summer workshops were contacted to set up Focus Groups with Texas high school APHG teachers. The purpose of the focus groups were to seek reasons for 9th grade students' performance in the APHG exam revealed from the quantitative analysis. Based on the results from the quantitative phase, a focus group protocol was developed and listed in Table 11.

**Table 11.** Focus Group Protocol.

1. Describe how you feel the students in your class are performing in the APHG exams?
2. Describe how you feel the students in your class are performing in your APHG courses. For instance, how well are they doing in the class including course grades?
3. How well do course grades correlate to exam scores?  
**Probe:** Does an A translate into a 5, B a 4, C a 3? Explain.
4. What do you think are some factors contributing to the exam scores?  
**Probe:** How do you feel prior coursework plays in the students' performance?
5. In your opinion, should Pre-APHG or World Geography be prerequisites?
6. What can be done to ensure that students are prepared for this course?
7. What are the challenges of teaching this course to 9th grade students?  
**Probe:** What are the challenges of teaching this course for the first time?
8. What do you feel is the best solution to improve exam scores in APHG?
9. How confident would you feel in teaching the course to 11th and 12th grade students compared to 9th grade students?
10. How does your prior educational background and professional development affect teaching APHG?
11. Why do you think in some schools, teachers are asked to teach APHG (a college-level course) to 9th grade students, when some teachers have no background in geography?
12. What problems are inherent when schools attempt to replace the required World Geography course with APHG? This question is especially appropriate for Texas where 9th grade students are asked to take the "End of Course" exam based on World Geography.

### ***Phase Two: Qualitative Data Collection Methods***

#### *Data Collected from Teachers (for Sub-questions Two, Three, and Five)*

Focus groups were conducted to answer Sub-question Two, Three, and Five of Research Question One. In the summer of 2012, three focus groups were set up during APHG summer workshops in Texas. These APHG summer workshops provided a sufficient pool of Texas high school APHG teachers for the focus groups. The first focus group was conducted at a university in Texas on June 21, 2012 with three participants.

The second focus group was conducted at a different university in Texas on July 10, 2012 with five participants. The last focus group was conducted at the same university in Texas as the first focus group on July 17, 2012 with four participants. All the focus group participants were Texas high school APHG teachers with experience of teaching the APHG course to 9th grade students.

The Focus Groups were scheduled during lunch sessions of the workshops in order to not interfere with the regular schedule of the workshops and to avoid extending the teachers' day time schedules. To encourage participation, a ten dollar Target gift card was given to each focus group participant. Prior to the beginning of each focus group, a consent form (Appendix A) was passed out to the participants informing them of the anonymity of the focus group and their right to end their participation at any time. Focus group participants were asked whether APHG course grades were correlated to APHG exams scores; the challenges in teaching the APHG course to 9th grade students, and the reasons why the APHG course was mainly taught in the 9th grade (see Table 11 for focus group questions). As the focus groups were proceeding, the questions and responses were videotaped for transcription. A tape recorder was also used as a backup in the case of any technical problem with the video equipment. After recording the Focus Groups, the videotape sessions were viewed and transcribed.

*Data Collected from Administrators (for Sub-questions One-Five)*

Two Texas social science administrators were also interviewed to obtain their opinions on how 9th grade students were performing on APHG exams, how closely APHG course grades correlated to exam scores, the challenges in teaching the APHG course to 9th grade students, the challenges 9th grade students have in taking the APHG

course, and why the APHG course was increasingly placed in the 9th grade. An interview protocol was developed based on the focus group protocol (Table 12). The first interview took place at an Applebee's restaurant in a suburb of a major city in Texas on August 2, 2012. The interview participant was a social studies specialist for a school district in Texas. The second interview took place at a Starbucks coffee shop in a major city in Texas. The participant was a social studies coordinator for a large high school in Texas. Like the Focus Groups, a consent form (Appendix B) was handed to both of the interview participants informing them the anonymity of the interview and their right to end the participation at any time; the questions and responses in the interviews were also videotaped and transcribed.

**Table 12.** Social Science Administrator Interview Protocol.

1. Describe how students are performing in the APHG exams?
2. How well do course grades correlate to exam scores?  
**Probe:** Does an A translate into a 5, B a 4, C a 3? Explain.
3. What do you think are some factors contributing to the exam scores?  
**Probe:** How do you feel prior coursework plays into the students' performance?
4. In your opinion, should Pre-APHG or World Geography be prerequisites?
5. What can be done to ensure that students are prepared for this course?
6. What do you think are the challenges of teaching this course to 9th grade students?  
**Probe:** What do you think are the challenges of teaching this course for the first time to 9th grade students?
7. What do you feel is the best solution to improve exam scores in APHG?
8. How confident do you think teachers feel in teaching APHG to 11th and 12th grade students compared to 9th grade students?
9. How does prior educational background and professional development affect teaching APHG (a college-level course) especially to 9th grade students?
10. Why do you think in some schools, teachers are asked to teach APHG (a college-level course) to 9th grade students, when some teachers have no background in geography?
11. What problems are inherent when schools attempt to replace the required World Geography course with APHG? This question is especially appropriate for Texas where 9th grade students are asked to take the "End of Course" exam based on World Geography.

*Data Collected from APHG Students (for Sub-question Four)*

Student interviews were conducted to identify challenges in taking the APHG course from the student's perspective, which provides additional information on factors impacting APHG exam scores other than those gained from the Focus Groups of APHG teachers and administrator interviews. The questions in the student interview protocol were guided by teachers' and administrators' responses (Table 13). The purpose of formulating student interview questions in this manner was to see if the students' responses corresponds to or are different from teachers' and administrators' responses.

The correspondence among the responses of teachers, administrators, and students would be a good verification for the factors identified in this study that cause low scores in the APHG exam. Those corresponded factors were used to form recommendations for the future development of the APHG course.

**Table 13. Student Interview Protocol Part One.**

1. Explain any challenges you had in taking the APHG course (a college-level course) in high school.
2. Describe any negative aspects in taking a college-level course like APHG in the 9th grade.
3. Describe your level of preparedness when you took the APHG course in high school.
4. Describe how prepared you were for the writing portion of the APHG course.
5. Describe how knowledgeable you were about where places are in the world prior to taking the APHG course.
6. Describe the level of maturity required for taking the APHG course.
7. From your own experience, explain whether or not you feel 9th grade students have the maturity level needed for the APHG course.

The participants of the interview were 13 students at Texas State University who have completed the APHG course in high school. These participants were solicited through a survey email that attempted to collect quantitative data for Research Question Two (See Phase One: Quantitative Data Collection Method of Research Question Two in this chapter). Each participant received a ten dollar Target gift card in reward for his/her participation. The interviews were conducted in the researcher's office on the third floor of the Evans Liberal Arts building on the campus of Texas State University in the spring semester of 2012. Again, a consent form (Appendix B) was given to students informing them of the anonymity of the interviews and their right to end the participation at any

time. Like the Focus Groups, the questions and responses were videotaped and transcribed for further analysis.

### ***Phase Two: Qualitative Data Analysis Method***

The transcriptions from teachers, administrators, and students interviews were coded into categories. Major themes were identified from these categories by grouping similar responses (Creswell 2009). Quotes from interview participants that exemplify the themes the most were documented for enriching the themes. Themes identified from teachers, administrators, and students were reported in Chapter 6, the analysis section of this dissertation.

### ***Integration of the Quantitative and Qualitative Results***

The quantitative and qualitative analysis results for Research Question One were separately presented in the first part of the analysis section of this dissertation. The integration of both types of results were presented in the first part of the conclusion section (Chapter 7). The integrated analysis first answers the questions of how students are performing in the APHG exam and whether or not their APHG exam scores were associated with their course grades using the quantitative analysis results. Then the qualitative results were used to confirm the quantitative findings and explain the challenges in teaching and learning the APHG course when it was taught in the 9th grade as well as the reasons for the course being placed in the 9th grade. The first two sub-questions of Research Question One were answered with the comprehensive results, while the last three sub-questions of Research Question One were answered with only the qualitative results.

## **Research Question Two**

### ***Phase One: Quantitative Data Collection Method***

#### *Setting and Participants*

Texas is the second to Florida in the United States in the number of students who participate in the APHG exam with 14, 289 participants in the 2012-2013 school year (College Board Texas State Summary Report 2013). Since geography was required for high school graduation in Texas (for students entering 9<sup>th</sup> grade prior to the 2012-2013 school year), all Texas high school students had to take at least one geography course (such as APHG, World Geography, Honors World Geography, etc.) to fulfill the geography requirement. Data on geography majoring choice, interest level, and career choice of college students was collected through an online survey and used to investigate the impact of the APHG course and other high school geography courses in the recruitment of geography. All the students enrolled at Texas State University in the spring semester of 2013 (over 34,000) were selected as the survey participants. The reasons why Texas State University was selected were: 1) it is the author's Ph.D. granting institution where the author was able to obtain the permission for the campus-wide online survey; 2) the student population comes from across the state of Texas.

Texas State University is located in the center of the state of Texas, about 30 miles southwest of Austin and 45 miles northeast of San Antonio. The majority of the students come from the metropolitan areas of Dallas, Austin, San Antonio, and Houston. The remainder of the students comes from small cities and rural areas in Texas. Texas State University has a diverse student body with 30% Hispanic, 8% African American,

and 4% other minority groups (Texas State University News Service 2013). The total enrollment for the fall semester of 2012 was 34,225.

### *The Survey Instrument*

The survey was created on the Qualtrics website ([www.qualtrics.com](http://www.qualtrics.com)) since Texas State University has a service agreement with the website and the survey research is free to students and faculty. Qualtrics surveys allow participants to skip questions that only pertain to certain populations. For instance, those who did not take the APHG course in high school could skip questions about the course. The survey instrument consisted of three binary and five multiple-choice questions. There was an option to write in an alternative answer to Question One on geography courses taken in high school other than the ones listed (Table 14).

Questions were formulated to compare the numbers of geography majors and minors, the mean levels of interest in geography and taking geography courses, and the mean level of likelihood of pursuing geography careers between college students who had completed the APHG course in high school and those who had completed other geography courses in high school. The mean level of interest in geography, taking geography courses, and the likelihood of pursuing geography careers were measured on a Likert Scale of 1 to 5 shown in Table 14. Students who had completed the APHG course were further broken down by grade levels in which the course was taken. The information that was collected is important to university geography departments regarding geography majors recruiting, geography course offerings, and careers in geography.

**Table 14. Survey Questions.**

<b>Question Number</b>	<b>Questions</b>	<b>Answers</b>
<b>1</b>	What geography classes have you taken in high school?	1=World Geography 2=AP Human Geography 3= Honors World Geography 4= IB Geography 5=Other
<b>2</b>	If you took AP Human Geography in high school, what grade did you take it in?	1=9th 2=10th 3=11th 4=12th 5=8th
<b>3</b>	Are you currently a geography major?	1=yes 2=no
<b>4</b>	If not, do you plan on majoring in geography?	1=yes 2=no
<b>5</b>	If not, do you plan to get a minor in geography	1=yes 2=no
<b>6</b>	On a scale of 1 to 5, what is your interest level in geography?	1=not at all interested 2=not very interested 3=neutral 4=somewhat interested 5=very interested
<b>7</b>	On a scale of 1 to 5, what is your interest level in taking geography classes?	1=not at all interested 2=not very interested 3=neutral 4=somewhat interested 5=very interested
<b>8</b>	On a scale of 1 to 5, what is the likelihood that you will pursue a career in geography?	1=not at all likely 2=not very likely 3=neutral 4=somewhat likely 5=very likely

*Data Collection*

An email containing the link to the online survey was sent out to students using the university email list serv. In order to send the email campus wide, a faculty sponsor- Dr. Richard G. Boehm’s email account was used. A Ph.D. student and a faculty member at Texas State University who had recently administered an online survey were consulted on policies and procedures of the implementation of online surveys (Lu 2013; Mathews 2013; Mathews et al. 2012).

The email was sent out three times in order to obtain a large sample. The first time was on Monday February 18th, 2013 at 11:33 AM, the second time was on Monday March 4th, 2013 at 11:39 AM, and the last time was on Wednesday March 20th, 2013 at 9:46 AM. Besides the link to the online survey, the email also contains a description of the research, the Institutional Review Board (IRB) approval number, and the contact information of the researchers (Table 15). A total of 33,043 undergraduate students' email accounts and 2,673 graduate students' email accounts were contacted by the survey email. It is important to note that the number of email accounts was larger than the number of students. This is because email accounts of a few former students were not deactivated in a timely manner for various reasons and the addition of new students who had enrolled for the spring semester which was not part of the enrollment count in the fall of 2012 (ITAC 2013).

**Table 15. Survey Email.**

This email message is an approved request for participation in research that has been approved or declared exempt by the Texas State Institutional Review Board (IRB).

Hi,

My name is Richard Boehm, a faculty member in the Department of Geography here at Texas State University-San Marcos. I would like to invite all students who went to high school in Texas to participate in my research project that explores the impact of high school geography classes on major choice and career paths.

As a participant, you will be asked to complete a 2 minute online survey consisting of 8 questions. You can find and complete the survey online using this link:

[https://txstatecla.qualtrics.com/SE/?SID=SV\\_eDmPyb6PFCUMS57](https://txstatecla.qualtrics.com/SE/?SID=SV_eDmPyb6PFCUMS57)

I also need 5 geography majors and 5 non-geography majors who completed the AP Human geography course to participate in a 15 minute interview. Interview participants will be provided with a \$10 target gift card. Please contact the research coordinator Michael Scholz at [ms1791@txstate.edu](mailto:ms1791@txstate.edu) if you would like to participate in the interviews.

This project EXP2012N5932 was approved by the Texas State IRB on July 17, 2012. Pertinent questions or concerns about the research, research participants' rights, and/or research-related injuries to participants should be directed to the IRB chair, Dr. Jon Lasser (512-245-3413 – [lasser@txstate.edu](mailto:lasser@txstate.edu)) and to Becky Northcut, Director, Research Integrity & Compliance (512-245-2314 – [bnorthcut@txstate.edu](mailto:bnorthcut@txstate.edu)).

Questions about this research should be addressed to Michael Scholz (research coordinator) at 512-245-0326 - [ms1791@txstate.edu](mailto:ms1791@txstate.edu)

Thank you for your time and consideration

Richard G. Boehm  
Professor and Jesse H. Jones Distinguished Chair of Geographic Education  
Director of the Grosvenor Center for Geographic Education  
Department of Geography  
Texas State University-San Marcos

The survey responses were collected by the Qualtrics website in real time. There were a total of 2,397 responses recorded. The data from all the responses were downloaded to SPSS spreadsheets on Monday April 1st, 2013 at 10:18 AM.

***Phase One: Quantitative Data Analysis Method***

The survey data was first classified into several groups based on the combination of geography courses that students had taken in high school. The combinations of geography courses examined in this study include: APHG; Honors World Geography (HWG); World Geography (WG); APHG and WG; APHG and HWG; WG and HWG; and APHG, WG, and HWG. For each group, the number of students who took that combination of geography courses in high school, number of geography majors, number of students who plan to major or minor in geography, the mean level of interest in geography (on a scale of one to five), the mean level of interest in taking geography courses (on a scale of one to five), and the mean level of likelihood of pursuing a career in geography (on a scale of one to five) were calculated. These numbers were compared between different groups of students.

All the students who had taken the APHG course in high school were further classified into groups based on the grade level in which the course was taken. The same variables (the number of students who took the APHG course in that grade level in high school, number of geography majors, number of students who plan to major or minor in geography, the mean level of interest in geography, the mean level of interest in taking geography courses, and the mean level of likelihood of pursuing a career in geography) were calculated for each group/grade level. These numbers were compared between different grade levels of APHG students.

### *Connecting Quantitative and Qualitative Phases*

In the email solicitation, students were also asked to volunteer for an on-campus interview. The purpose of the interview was to help explain the results of the survey. The interview questions were formulated based on the survey results (Table 16). The answers to these questions could help understand the aspects of the APHG course that positively or negatively impact students' majoring in geography, interest in geography and career choice in geography. The information collected from the interview could also help explain the differences in number of geography majors, interest level in geography and likelihood of geography careers between different groups of students. Besides these questions, volunteers were also asked in the email solicitation to provide their email address, the grade level in which they completed the APHG course, and whether or not they were a geography major at the time the interview was conducted.

**Table 16.** Student Interview Protocol Part Two.

1. Describe your interest level in geography?  
**Probe:** What factors make you interested or not interested in geography?
2. **For non-geography majors:** Explain why you did not major in geography.
3. **For non-geography majors:** Describe any aspects of the APHG course that decreased your interest in a career in geography.
4. Describe any factors regarding the APHG course that could make students less likely to major in geography.
5. Describe any factors regarding the APHG course that could make students more likely to major in geography.
6. **For geography majors:** Explain what factors helped you decide to major in geography.
7. **For geography majors:** Describe any aspects in your APHG course that may have contributed to your interest in geography.  
**Probe:** Was it the subject matter, the rigor of taking the course in the 9th grade, prior knowledge and geography classes, the textbook, the way it was taught?
8. From your experience of taking the APHG course, describe career possibilities in geography.

***Phase Two: Qualitative Data Collection Method***

As stated above, interview volunteers were also solicited in the survey email. Students who had completed the APHG course in high school especially in the 9th grade were potential interviewees (Table 15). To encourage participation, a ten dollar Target gift card was offered to each participant. From the responses of volunteers, a total of 13 interview participants were selected (Table 17). These participants consisted of geography majors and non-geography majors, and students who took the APHG course in the 9th grade and those who took it in a higher grade (Table 17). These participants were selected because they were representative of the student population surveyed in the quantitative phase. Unfortunately, none of the interview participants was a geography major and took the course in the 9th grade, because only one out of 2,397 students surveyed met this criteria and that student did not respond to the interview invitation.

**Table 17. Student Interview Participants.**

<b>Students</b>	<b>Geography Major</b>	<b>Non-Geography Major</b>	<b>Total</b>
9th Grade	0	4	4
10-12th Grade	5	4	9
Total	5	8	13

Once participants were selected, they were contacted to set up interview times. The interviews took place in Office 394 in Evans Liberal Arts Building in the spring semester of 2012. Evans Liberal Arts Building is located in the central area of the campus of Texas State University, close walking distance to the rest of the parts of campus. This location was a convenient place for the researcher and students to meet for interviews. Office 394 provided a quiet and semi-private atmosphere to conduct the student interviews. Prior to the beginning of each interview, a consent form (Appendix B) was

given to each student informing him/her of the anonymity of the interviews and his/her right to end the participation at any time during the interview. After the students signed the consent form, the interviews began. Students were first interviewed on questions in the Student Interview Protocol Part One as part of the qualitative data collection for Research Question One. Then they were interviewed on questions in Student Interview Protocol Part Two as the qualitative data collection for Research Question Two. Since both research questions need students' input on the APHG course, student interviews were conducted only once with interview questions for both research questions asked sequentially. As stated in Phase Two: Qualitative Data Collection Methods, Research Question One of this chapter, student interviews were videotaped and transcribed.

#### ***Phase Two: Qualitative Data Analysis Method***

Like the qualitative data analysis for Research Question One, the student interview transcriptions were coded into categories first. For each category, similar responses were grouped and themes were identified (Creswell 2009). To enrich the themes, quotes from participants that exemplify the themes the most were documented. These themes were reported in Chapter 6, the analysis section of this dissertation.

#### ***Integration of the Quantitative and Qualitative Results***

The quantitative and qualitative analysis results for Research Question Two were separately presented in the second part of the analysis section of this dissertation. The integration of both types of results were presented in the second part of the conclusion section (Chapter 7). The integrated analysis first answers the question of whether or not taking the APHG course encourage students majoring in geography, interest in geography, and career in geography using the quantitative analysis results. Then the

qualitative results were used to confirm the quantitative findings and explain why it was happening. Each sub-question of Research Question Two was answered with the comprehension of both types of results.

### **Role of the Researcher**

While growing up in Springfield, MO, the heart of Ozarks, the author was interested in physical landscapes and particularly rivers in the field of geography. Getting into graduate school shifted the author's research interest to geographic education and human geography. The author was first introduced to the research on the APHG course in one of his PhD seminar courses in geographic education. After consulting with his advisor, the author developed a research interest in the APHG course. This research interest expanded when the author attended the 2010 National Conference on Geographic Education hosted by NCGE in Savannah, GA. After he witnessed countless conversations on the increased participation by 9th graders in the APHG course and low scores on the APHG exam, the author decided to conduct his dissertation research on this topic, examining whether or not the increased participation by 9th graders has caused the low scores on the exam and the reasons behind it. From preliminary research, the author found out that the increased participation by 9th grade students in the APHG course has something to do with the low scores on the exam, so the author decided to focus his dissertation research on the impacts of placing the course in the 9th grade on APHG teaching, APHG learning and the recruitment for geography.

The author's experiences in geographic education are unique in comparison to many other researchers in the field. The author's entire graduate education is in the field of geographic education, however, he has no teaching background prior entering the

graduate school. This background and experience presented advantages and disadvantages in the author's research. The advantage was that the author had no prior personal connections with teachers in Texas since he has not taught in Texas and he is not from Texas. Therefore, the author was able to conduct research with Texas teachers as an independent researcher (Glesne and Peshkin 1992). The disadvantage was that the author did not have any personal experience to relate to the teachers' experiences, so it was hard for the author to analyze from the teachers' perspective. The author also struggled to decipher the jargon and acronyms that were used by the teachers in the analysis of their transcriptions.

The advantages and disadvantages in the student interviews at Texas State University were similar. The advantage was that the author had no prior experience with the students interviewed since he solicited the interview volunteers online. Therefore, the author was able to select the participants without being influenced by any prior associations with the students. The disadvantage was the difference between the author's background growing up in the Ozarks and the background of the many of the students growing up in Texas. It was hard for the author to be empathetic to the students' high school experiences.

### **Ethical Considerations**

This research has received an exemption from the Institutional Review Board (IRB) at Texas State University in 2012 for collecting quantitative and qualitative data from teachers, administrators, and students under IRB exemption number EXP2012N5932. All the data collection procedures in this research were carefully

planned and followed the ethical codes for researchers involving human subjects in their research.

Prior to conducting the Focus Groups, the researcher obtained permissions from two APHG workshop coordinators, to conduct Focus Groups during the lunch break of the APHG summer workshops. The focus group participants were volunteers from the workshop attendees. They were asked to sign a consent form (Appendix A) informing them of the anonymity of the interviews and their right to end the participation at any time during the interview. They were also rewarded with a ten-dollar Target gift card for their participation.

The two social studies coordinators were volunteered to participate in the administrator interviews. They were also asked to sign the consent form (Appendix B) and were rewarded with a ten-dollar Target gift card for their participation.

The student interview participants were volunteers from the students who took the on-line survey and met certain criterion at Texas State University. The student participants were also asked to sign the consent form (Appendix B) prior to the interviews and were rewarded with a ten-dollar Target gift card for their participation. Names of teachers, administrators, or students were not used in this research. Anything that would identify the school or school district where the teachers and administrators came from were not used in the research.

**CHAPTER 6**  
**ANALYSIS**

**Research Question One**

*Sub-question One: APHG Exam Performance*

*Quantitative Data Analysis*

Texas high school students’ participation and performance on the APHG exam in the school year 2010-2011 by grade level is shown in Table 18. Almost 78% of Texas students took the exam in the 9th grade in the school year 2010-2011 and the exam pass rate of all Texas students was 45.4% which is strongly impacted by 9th grade participation. The number of students in the 9th grade who scored a 3 or higher in the exam was almost 20% lower than students in the 10th grade and nearly 30% lower than students in the 11th/12th grades. Furthermore, the percentage of 9th grade students who scored a 4 or higher in the exam (some universities like Texas State University in Texas require a score of 4 to get college credit for the course) was only 21.6%, while in the higher grades, this number was almost 20 % higher for 10th grade and over 20% higher for 11th/12th grades.

**Table 18.** APHG Exam Participation and Performance in the School Year 2010-2011 by Grade Level (Source: TEA).

<b>Grade</b>	<b>Score ≥ 3</b>	<b>Score ≥ 4</b>	<b>Mean Score</b>	<b>Total Participation</b>
9th	3315 (39.6%)	1811(21.6%)	2.26	8370 (77.9%)
10th	382 (59.1%)	251 (38.9%)	2.96	646 (6%)
11th	672 (69%)	442 (45.4%)	3.20	974 (9.1%)
12th	517 (67.9%)	345 (45.3%)	3.18	761 (7%)

The Chi-square Test of Homogeneity was used to determine if there was a significant difference in the percentage of students passing the APHG exam between 9th grade and other grades. The test results are listed in Table 19. Based on the significance level, it can be concluded that 9th grade students' pass rate on the APHG exam was significantly lower than other grades.

**Table 19. Results of Chi-square Test of Homogeneity.**

<b>Comparison between Grade Levels</b>	<b>X<sup>2</sup></b>	<b>Significance</b>
Comparison between 9th and 10th Grade	94.53245457	P<.0001
Comparison between 9th and 11th Grade	308.0296556	P<.0001
Comparison between 9th and 12th Grade	292.999448	P<.0001

*Qualitative Data Analysis*

Since administrators have an overall view of students' performance in the APHG exam, they were asked to describe the students' performance in their school or school district. The theme that emerged from this question was that more students were failing the exam than passing it. One of the administrators stated, “Based on my knowledge on what teachers are telling me it is more low than high and fewer students are passing than are passing and again that is feedback I get visiting with teachers.” The other administrator had a similar response and provided extended details on reasons why students were performing poorly in the exam, “The 9th grade students in this area do not perform. There is one school teacher that is able to get some pretty decent scores, but for the most part the schools that are teaching this course in 9th grade and these kids do not come in with any analytical social studies background. They don’t know the continents and oceans and if you can’t get basic concepts of that how can they do these other

abstract concepts? Like they don't understand systems theory; they don't have a concept of how everything comes together. I don't know if their teachers do. I don't think some of them do and that's really sad. There are some teachers who have the want and desire and everything else and they try so hard and they try and try and try and it is so depressing. July 7<sup>th</sup> comes around and the scores come out and they have all these students who score ones. I work with several of these teachers and I see the pain and frustration. You know they get excited when they get a kid that has a three and there is some people who told their principals we got 2's this year and that is a huge improvement. No its not and a three is not an improvement either because as far as three's go many universities are going away from accepting 3's as AP credit.”

The administrators' answers confirmed the findings in the quantitative analysis. Both of them stated that students were not performing well in the exam. One of them particularly pointed out the poor performance of 9th grade students in the exam and suggested that lack of basic concepts in geography and knowledge about where places are in the world were the reasons for their poor performance. These reasons were mentioned again in teachers' and students' interviews and became major themes in the challenges of teaching and learning the course in the 9th grade.

### ***Sub-question Two: Correlation between APHG Course Grades and Exam Scores***

#### ***Quantitative Data Analysis***

Data from three anonymous Texas high school APHG teachers was summarized in Tables 20 and 21. Table 20 shows the correlation between APHG course grades and exam scores of 168 9th grade students. The performance of the 168 9th grade students on the APHG exam was a good sample of the performance of all 9th grade students in Texas

in 2011, since the percentage of students who scored a 3 or higher on the exam was 41.1% in the sample and 39.6% in the whole state of Texas.

**Table 20. APHG Course Grades and Exam Scores of 9th Grade Students**

Course Grades	Exam Scores					Total
	5	4	3	2	1	
A	7	13	12	7	3	42 (25.0%)
B	2	9	20	12	15	58 (34.5%)
C	0	0	1	8	14	23 (13.7%)
D	0	1	0	2	23	26 (15.5%)
F	0	0	4	3	12	19 (11.3%)
Total	9 (5.4%)	23 (13.7%)	37 (22%)	32 (19%)	67 (39.9%)	168

**Table 21. APHG Course Grades and Exam Scores of 10-12th Grade Students**

Course Grades	Exam Score 5	Exam Score 4	Total
A	3	1	4
B	1	2	3
Total	4	3	7

The percentage of students who received an "A" or "B" in the course grade was much higher than the percentage of students who scored a 5 or 4 on the exam (Table 20). And the percentage of students who received a "C", "D", or "F" in the course grade was much lower than the percentage of students who scored a 3, 2, or 1 on the exam. The majority of the students who received a course grade of "A" scored a 4 or a 3 on the exam (59.5%), and only 7 out of 42 (16.7%) "A" students received an exam score of 5 (Table 20). Most students who received a course grade of "B" had an exam score of less than 4 (81.0%) with over one quarter of them (25.9%) scoring a 1 on the exam. Most of the "C", "D" and "F" students failed the exam (scored a 2 or 1 in the exam) and the failure rate was 95.7% for the "C" students, 96.2% for the "D" students, and 78.9% for the "F"

students (Table 20). Interestingly, there were 4 students who received a 3 on the exam which enabled them to receive college credit for the course at most universities in Texas, while they failed the course at the same time. It was clear that students who passed the exam also received a higher course grade ("A" or "B"), and students who failed the exam had various course grades. It was not uncommon that students passed the course with a high grade ("A" or "B") and failed the exam at the same time.

While the correlation shown in Table 20 was complicated, Table 21 shows a good correlation between course grades and exam scores of 10-12th grade students. It can be concluded that the APHG course did not prepare students well for passing the APHG exam when it was taught in the 9th grade. One reason for this might be: knowing that 9th grade students were less prepared and less mature for this course, some APHG teachers intended to teach a less rigorous class in order to help their students learn basic concepts and knowledge in geography through scaffolding. This might help their students pass the course, but it insufficiently prepared students for the rigor of the college-level APHG exam.

### *Qualitative Data Analysis*

Teacher and administrator interviews also supported the quantitative findings on the correlations between APHG course grades and exam scores. Teachers and administrators generally agreed that students' APHG exam scores were not the same as their course grades. One administrator said, "I don't think there is a lateral comparison that if you get an A in the course you get a 5 on the exam because the exam is extremely high level and teacher's tests are notoriously not high level. Really that is pretty much the basic answer is that the exam score really does not correlate with what a teacher does in

the classroom.” The other administrator echoed this sentiment by stating, “There is no correlation. The superintendent in our school district has confronted many of the teachers whose students mostly score 1’s or 2’s and wants to know why these kids received mostly A’s, but they are only scoring one or two on the exam.” This administrator seemed to suggest that students generally receive higher course grades than exam scores. One teacher supported this idea by saying, “I am sure that all the students who passed the AP exam in my course were the “A” students. I have about 45 or so and I got about 30% percent pass rate this year on the APHG exam which is a big leap from the year before, but I am sure they were all “A” students.” Another teacher further compared the correlation of course grades and exam scores between 9th grade students and 10-12th grade students. In his opinion, only 9th grade students' course grades did not correlate with their exam scores; the scores of 10-12th grade students did correlate. He stated that, “For my upperclassmen, an A or B does translate into a 4 or 5, but for the freshman, the one freshman that did get an A scored a 3 on the exam in that particular case.” Of all the teachers that responded to this question, only one had a different opinion on the correlation. The teacher said, “I have a different point of view on course grades correlating with AP Human Geography scores because I think they do.” However, this teacher did not follow up with any information on why he held this view.

Two of the teachers interviewed attribute the no match between course grades and exam scores to their grading systems. One teacher said, “That is how mine is set up where 75% is your test grade and 25% is your daily grade and the tests are really hard.” Another teacher explained, “Sixty is what they need to pass the APHG exam. However, they usually don’t get a 60 in the class because their course average is really different

than their daily grade average because I make the tests and essays super challenging to match up with the AP test, but then half of their grade or daily grades are just class discussion which is did you come to class with notes or did you have questions for me, so class participation is very important, so that really bumps them up to “B”s.”

One teacher claimed that pressures from the administration and parents were a major reason why students have received higher course grades in APHG. He said, “You get pressure from the administrators and from their parents to make sure they make at least this grade and you can get called on the carpet by the parents if their grades fall below a certain point. A lot of the kids that take the Pre-AP are self-motivated, so for the most part the class average is in the B’s which is high, but it doesn’t necessarily translate into they are prepared for the AP exam.”

This teacher also pointed out that lack of maturity was a major disadvantage of 9th grade students that cause low scores on the APHG exam, “There are also just the ones who choke. They get scared and they are young and inexperienced and as they get older they improve on those tasks, but the exam can be very scary for kids in the 9th grade.” Lack of prior knowledge was another disadvantage of 9th grade students that cause low scores in the APHG exam. One teacher said, “For the exam purposes they just don’t bring enough prior knowledge to be able to answer the exam questions, but given time my freshman in a classroom setting can pick up and can study for one of my tests and I try to structure my tests as much as possible towards the AP exam, but again they have more time to prepare for it and they are not in a testing environment that kind of spooks my freshman. They do not have the background and they are not accustomed to taking those kind of exams.” These two disadvantages were brought up again later in the interviews

by all three types of participants when interviewing on the challenges of teaching and learning the course in the 9th grade.

One of the administrators seemed to have some different opinions on exam scores being lower than course grades in APHG. She said, “The reason this is happening is: 1) the teachers are not all that familiar with the exam; 2) they are trying to match up their course with the EOC (End of Course Exams); and 3) if they failed all their students it would be known that the students are not mastering this content and they would get in trouble that way also. You got in some situations teachers who don’t know the content material and teachers who will not listen at the training. Teachers have to teach to students who moderately qualify to be in their grade in school in the first place and are poor readers. They are teaching to kids who can’t handle these textbooks and will not read these textbooks.” The administrator felt teachers' unpreparedness and students' lack of study skills were responsible for the poor performance on the APHG exam.

***Sub-question Three: Challenges in Teaching the APHG Course to 9th Grade Students***

Five major challenges in teaching the APHG course to 9th grade students were identified from the teachers and administrators interviews, including lack of writing skills, large vocabulary, limited knowledge of where places are in the world, lack of maturity, and lack of study skills.

***Lack of Writing Skills***

Ninth grade students do not have sufficient writing skills for the APHG course was the most prominent theme that emerged from the teachers and administrators interviews. One teacher said, “I think the course required a little more writing and little more reading than they were probably prepared for.” Another teacher said, “A lot of my

freshman don't know how to write intelligent answers. I mean they put the right answers, but they never elaborate or give me more information. I don't think they know how to do that yet, but they will get that when they are older and be able to explain things better.”

Another teacher provided a very similar answer by saying, “The freshmen have not had to write a lot. I think in middle school, if at all. So they haven't had that writing and you don't just answer that question you have to explain why you answered and so that's why they don't. They can answer a question, but they can't tell you why that's their answer. And I think that's the big jump that you are able to make at the upper level that the freshman are not able to.” Another teacher agreed with the above two teachers and explained the key to be successful on the Free Response Questions (FRQ) on the APHG exam was the amount of explanation given. He said, ‘Yeah, and that's where you're going to get all the points. You're going to go from a 2 to a 3 or even a 5 from the more explanation you give. That's where you're going to raise your grade up. The younger kids they haven't had to explain why that's my answer. Here is my answer, pat me on the back, I got my answer right, but why is that the right answer.’”

Many teachers also argued that even though 9th grade students have practiced writing a lot in their English courses in middle school, these courses do not prepare students for the type of writing required in the APHG course. One teacher stated, “So they write a lot in English in middle school, but they don't write a lot in social studies and social studies writing is so different than English writing.” Another teacher explained why the middle school English courses do not properly prepare students for the writing in the APHG course by stating, “They used to teach the five paragraph format in middle school and then something happened with the Tags or something and they let that go and

so we find ourselves teaching basic five paragraph essays in preparation for AP World History. So the writing is a challenge and I think some of what they learn in English is to get their feeling out on paper and we are looking for facts and they don't know how to find those facts and put those facts in there, so we spend a lot of time just talking about what is a fact, what is a legitimate fact to put in your paper." Another teacher went on to explain the differences between the writing for the APHG course and the writing in the English courses, "We spend a couple of days every semester on how to write a Free Response Question and the biggest thing that I have to teach them is that this is not an English paper. It is not fluff. I said think of it like NCIS. I just want the facts. I don't want to know the whole story behind it. Tell me exactly what is happening and give me an example, but I am really not concerned with why this is such a deplorable region. That is your opinion of why it is such a deplorable region give me the facts about it."

Many teachers also felt that the writing skills of 10-12th grade students were much better than that of 9th grade students. One teacher stated, "you get essays and writing samples and there is such a difference between your upperclassmen and your freshman. I had to sit down and have a one on one talk with a student because her writing was so undeveloped and not even written in third person. It was trouble." Another teacher stated, "Well, if kids are taking AP World or US, they are more familiar with the writing techniques. I know when I get my kids in they are more excited that they have to write an FRQ instead of DBQ (Document Based Question), They are like "I don't have to write a DBQ. So, they feel so much more comfortable with that to begin with. So they feel that they have an advantage right off the bat, whereas freshman they don't have any writing skills. That's a struggle right off the bat for them to write at all."

Lack of writing skills was a main reason why many teachers did not think 9th grade students were ready for the APHG course. One teacher shared a solution for this problem by saying, “I incorporate a lot more writing in Pre-AP than the standard level world geography class because I am trying to get them ready for not only the AP Human Geography course possibly, but any other AP courses they are going to have.”

### *Large Vocabulary*

Another theme that emerged from the teachers and administrators' interviews was the large number of new vocabulary that students were required to learn in the APHG course. This was not only a problem for the students, but also for some of the teachers who teach the course for the first time. One teacher said, “One of the biggest challenges is vocabulary alone. The vocabulary I teach in a standard class the students are fine with and I am fine with, but the vocabulary in the AP Human Geography class was more challenging for the students and the first time teaching the class. There were words I had not seen in a long time, so the vocabulary was even challenging for me. There were totally new terms for the freshman coming in and I had to even reintroduce myself to some of the terms as a teacher.”

Another teacher felt that the lack of basic vocabulary of 9th grade students created a bigger challenge for learning a large number of new terms in the course. He said, “It was basically real specific words that I thought everyone should know, but I had 9th grade students in my class that did not know like what grazing was or agriculture. Some of the words were ones that I believe that I knew coming into my freshman year in high school and I did not understand how they could not know, but it is simple words like that and they just did not have that with them.”

Another teacher presented the challenge of vocabulary from another perspective by saying, “I think it is also that there are six textbooks that the exam could use material from and the textbooks do not have the same information and you have to make sure you go through the six textbooks. Even one word that might be in one textbook might not be in another. They also have different terms for the exact same definition. It may be the same exact thing, but they have different words for the same thing. As the teacher you have to make sure you study yourself.” The problem of knowing which terms to cover from different textbooks, the lack of basic vocabulary of 9th grade students, and the large number of new terms to teach in the course together presented a big challenge for the APHG teachers teaching the course in the 9th grade for the first time.

#### *Limited Knowledge of the World*

When students in Texas take the APHG course in the 9th grade, they usually have not taken the World Geography course yet and their exposure to geography is often minimal. One teacher said, “Those kids have never been exposed to where things are in the world, so I try to do maps to help them figure out where things are.” Another teacher expressed his skepticism about 9th grade students’ knowledge of the world by saying, “They could probably point out where the United States is.” One of the administrators had the same opinion by saying, “All the social studies in elementary school including geography is supposed to be integrated with other subjects, but my own third grader is not being taught any geography with social studies. This means that kids are not getting these foundations for the AP Human Geography class early on and they don’t start getting them until maybe 6th grade. It just depends. So when they come into take the APHG class in 9th grade, they have no concept of where anything is.”

Many teachers felt that lack of knowledge of the world was the biggest challenge of teaching the APHG course to 9th grade students. One teacher who has attended many APHG workshops and has even been a facilitator of the workshops said, “I hear teachers say all the time who teach 9th grade students. The one thing they say is the hardest thing is the kids don’t come with any kind of regional geography. They don’t know where places are and that’s the hardest thing teachers are dealing with when districts are hiring them to teach these students and that is by far the hardest thing.”

Lack of knowledge of the world affects students' learning and exam performance in the APHG course. One teacher said, “My freshman did not perform as well as my upperclassmen. I don’t believe they had the basic world geography skills necessary to answer some of the questions. I think they just need a little more seasoning. It is not that they were not intelligent, but the lack of world geography knowledge is what threw my freshman off.” Another teacher said, “There was a question on the APHG exam this year where they had to identify three European countries. They got France and Germany, but they were coming in to class in the morning and the first thing they ask me was is it the Netherlands or is that Denmark because they had to guess which country it was by identifying them.” This example from this teacher demonstrates that lack of knowledge of the world would impact students’ performance on an APHG exam. Another teacher stated, “Definitely knowing the locations and stuff helps. I teach all 9th grade students and I got so fed up with them. For one of the questions I had a map of Europe and it was about centrifugal and centripetal forces within the countries and they are like does Turkey count does Russia count and I got so fed up that I made them put away their essays and get out a pen and paper and trace a map of Europe. So definitely the spatial awareness is

a problem for 9th grade students. They know regions, but they don't know individual countries outside a handful of countries that is all over their head.”

Many teachers who teach the APHG course to 9th grade students ended up spending half of the year in teaching world geography to students. One teacher said, “So usually they find the first half of the year they use the world regional geography book.” Another teacher had a very similar experience by stating, “So I have to spend as much time teaching the course as I have to spend teaching them the foundations like teaching them the spatial awareness which is probably the hardest part really.”

In order to solve this problem, one teacher suggested that students should have the World Geography course before taking the APHG course by saying, “It would be nice if they had World Geography.” One administrator also believed that World Geography should be a prerequisite to the APHG course. They said, “Teachers need world regional geography to be a prerequisite. Teachers need the spatial aspect of place location taken off the table and covered in a prerequisite. They can get that in a world regional course in 9th grade. They can also be exposed to the cultural aspect of geography in a 9th grade world regional geography class to get them ready for APHG.”

#### *Lack of Maturity*

High school students who take a college-level course are expected to be able to handle college-level work. However, students in the 9th grade were not believed to have the maturity to be successful in the APHG course according to the teachers and administrators interviewed. One administrator said, “The challenge is the age of the students who are not as mature; therefore, their attitude about learning, studying, and completing assignments is not as serious as the older students. They are just beginning to

think about their GPAs and this has an impact on that. At the 9th grade they don't even have numbers for that in their mind." One teacher said, "There are the kids who don't ever lift a finger to prepare on their own and there is only so much you can do in class." Another teacher said, "I spend a lot of time with my 9th grade students teaching them that you're a big kid now and I will fail you if you don't do your work, so that is a big problem I have in all of my 9th grade classes especially in APHG." Another teacher said, "I noticed that even with them having the Pre-AP curriculum prior to 9th grade they still don't have a lot of self-discipline. That follows suit with what she was saying (motions to the previous teacher who commented) they lack some of these key skills, but they also lack discipline to go home and study. It is not enough to do the homework, but then you have to study. Sometimes they don't have that I have to go home and do this." Lack of a serious attitude towards learning, studying and completing assignments was a sign of lack of maturity of 9th grade students.

Teachers also thought that 9th grade students did not have the necessary skill set for managing a college-level course. One teacher explained the skill set by saying, "I think one of the biggest challenges is the skill set you have to have in order to function at an AP level like managing a college textbook, time management, prioritization, dealing with timed writings. The pressure of working at a collegiate level is significantly different than what they've had even in Pre-AP classes in the eighth grade. You can take all the kids you want and put them in a Pre-AP class and until we have better vertical alignment, those eighth grade students are not going to be ready for Pre-AP work. It is all of the process skills that I think need most attention because they have been learning content for a long time."

One teacher suggested that failure to handle the pressure of a college-level course was another sign of lack of maturity of 9th grade students. One teacher said, “They get scared and they are young and they are inexperienced and as they get older they improve on those tasks, but the exam can be very scary for kids in the 9th grade.”

Some teachers believed that 9th grade students have not developed critical thinking skills yet, which is also a sign of lack of maturity to take the APHG course. One teacher said, “They are just not developmentally ready because I taught seventh grade for about 5 years and for them to do critical thinking was beyond some of their development, so by the time they are in 9th grade to be able to analyze is a brand new skill.” Another teacher said, “It is thinking in the abstract ways that are required at an AP level and they do not know how to do that.”

One teacher indicated that 9th grade students have difficulties in dealing with the advanced level APHG assignments. This teacher stated, “They have a difficult time dealing with the freedom that comes with taking an AP course because a lot of stuff is here is the project and here are some guidelines, go figure it out and that is very difficult for them, because they want to please and they want to do exactly what you want, and I am like I am not going to tell you. You have to figure this out. This is a skill that you are going to have to have for the next eight years. As you take more AP classes and as you go to college. A professor is going to tell you that you have to write a 22-page paper and you’re going to be like on what and they are going to say you're taking English. They have a hard time with that freedom.”

### *Lack of Study Skills*

Another challenge that emerged from the teachers and administrators' interviews was lack of study skills of 9th grade students for the college-level APHG course, which could be considered a by-product of lack of maturity.

One of the administrators made a comment based on her own experience of teaching the APHG course and working with APHG teachers, “The reading not only the level, but the amount of reading has an impact since they are not used to that. They are not used to as much homework as is required. They are used to finishing it in class or having something they can finish in thirty minutes. AP courses are a very different skill set and mindset, so those 9th grade students they are going to struggle unfortunately.”

One teacher used note-taking skills as an example to illustrate 9th grade students lack of study skills for the APHG course, “They have practically no note taking skills whatsoever. We literally have to spend one day talking to everyone about Cornell notes and how to take notes the best possible way and basically instead of writing the whole thing out, just summarize. Basically to make it as easy as possible I tell them they need to take out any word that is three letters or less and then that makes it shorter because they just get tired of writing. So I tell them sum it up and make it easy for you, but yes there is no note taking skills.”

Other teachers felt that 9th grade students did not have any learning experience other than rote memorization exercises. One teacher said, “I ask my kids are you the kind of kid where the teacher told you everything that was on the exam and you’re a good listener, so you never needed to do anything outside of class as long as you listen to the teacher and spit it back to them you made an “A.” They were all yes and I was like it’s

not like that. There is stuff you're going to just have to learn outside of class because I only have time to teach this much and here is the book and you have to do the rest."

Another teacher said, "You have to teach 9th grade students how to study and the biggest thrill my students get is the one worksheet they get all year. They say, "A work sheet alright!" Because everything else your creating is I will give them the template kind of, but they have to create it. They are so used to be able to get a worksheet and find that spot in the book and just copy it in there. They are real good at it, but they don't know how to look at a textbook and draw stuff out of there on their own, so that is one of the skills we have to teach them." The teachers and administrators both felt lack of study skills and learning experience held 9th grade students back from being successful in the APHG course.

#### ***Sub-question Four: Challenges in Learning the APHG Course in the 9th Grade***

Three themes emerged from the students' interviews as challenges in learning the APHG course in the 9th grade, including large amount of class material, large vocabulary, and critical thinking skills needed in the course. Although lack of writing skills, limited knowledge of the world, and lack of maturity, the themes emerged from the teachers and administrators' interviews, were not identified as learning challenges by the students, they did comment on how those factors impact their learning in the APHG course when they were asked about those challenges.

#### ***Large Amount of Class Material***

The most prominent theme that emerged from the students' interviews was the challenge of learning a large amount of class material in the APHG course. One student simply stated, "Like I said it's a tough course, there was a substantial amount of reading

for the APHG class.” One student who took the course in the 10th grade shared his experience of reading for hours to learn the course material by saying, “Reading the textbook and like trying to comprehend and remember everything and to get to like the bottom of the page and spend hours on it and spend hours reading and not be able to recall it.” One student who took the course in the 9th grade felt the same way by stating, “There was a lot to learn and it was a lot of work because he was teaching all the core of the course.” Another student who took the course in the 9th grade said, “I felt like there was a lot of memorizing that I had to do. I like know for the AP test I got a 3 on that which could be better, but I remember studying practice tests for hours on end and weeks on end memorizing too. Just rotely know those questions and then afterward I would forget. It was the same thing with the map quizzes. We would have map tests twice a week and I would have to rememorize it every week. There was a website where you could stare at the maps and make little algorithms in your head and memorize it. I had to do those over and over again. I think the big thing was absorbing information and then keeping it was the biggest problem for me. Also, it was 9th grade, so it was a big jump from eighth grade. We were already just starting high school and all the sudden, woe, this is a college-level course. Those were probably the big things.” Another student who took the course in the 9th grade simply stated, “The biggest challenge was just like all the projects and the memorization of where everything was.”

### *Large Vocabulary*

Students identified the large number of new vocabulary that was required to learn the APHG course as another learning challenge for students of all grades in high school. One student who took the course in the 12th grade said, “The amount of terms that we

had to learn that was really it.” Another student who completed the course in the 11th grade said, “I guess the challenges would be probably remembering the exact terminology. As I recalled, I didn’t get all that terminology down and there was a lot, but it was pretty basic stuff I guess.”

### *Critical Thinking Skills*

Critical thinking skills were a theme that emerged from the students' interviews, which corresponded to the teachers and administrators' opinion about 9th grade students had not developed critical thinking skills in the lack of maturity theme. However, students did not consider critical thinking skills as being connected to maturity levels.

One student who took the course in the 9th grade identified critical thinking as the biggest challenge in learning the APHG course. He also stated that it was the first time that he had to use critical thinking in a course by saying, “It was really making the deeper analysis questions because I had not been asked to do that before in any course, just the way I guess public school teaches I guess to look in the book and find the answers, so that was the biggest challenge, but I did like that I took that course and it taught me to make those connections. So that was something that I think very well prepared me for the rest of high school.” Another student confirmed that, “It was something that I had never taken before, so I had never taken a geography class that was like that and I had never had to use so much critical thinking skills that were more required in college than they were in high school, so that was a little overwhelming.”

According to students' interviews, there was a lot of critical thinking involved in the APHG course. However, many teachers believed that 9th grade students had not

developed critical thinking skills yet. This created a major challenge for students who took the course in the 9th grade.

### *Lack of Writing Skills*

Students interviewed did consider writing skills as an important factor for their success in the APHG course. One student said, “There was a lot of writing and you needed to write well to do good on the exam.” When asked how prepared they were for the writing skills before taking the APHG course, all the students who took the course in the 9th grade stated that they were not prepared. One student said, “Not prepared at all because we never had to do any writing at that sort of level. In middle school we had simple essays like book reports and things like that.” Another student stated, “No, I think that in middle school the writing was a lot less advanced for the type of writing that you would need for the AP Human Geography exam.” One student who took the course in the 12th grade said he would not have the writing skills necessary to take the course had he taken it in the 9th grade by saying, “When I took the class, especially when taking the AP exam, I wouldn’t have had any particularly writing skills in the 9th grade. I don’t think my writing skills would have been honed enough by that point.”

Many students who took the APHG course in 10-12th grades of high school claimed that by the time they took the APHG course, they had already had good writing skills and that helped them be successful in the APHG course and exam. One student who took the course in the 12th grade stated, “By that time I had taken plenty of English courses which I think helped me better and more kind of developed a good writing style.” One student who took the course in the 11th grade said, “I had taken AP English and I had taken Honors English classes in high school, so I felt like all those courses prepared

me for the writing portion of the class and the writing portion of the AP exam and helped me in being able to explain what I needed to do without unnecessary details.” Another student who took the course in the 11th grade pointed out that AP English course was beneficial to the writing portion of the APHG exam by saying, “My writing skills were very good. I had taken AP English.”

Two of the students interviewed stated that history courses were very helpful in preparing them for the writing portion of the APHG course. One student who took the APHG course in the 12th grade said, “I wanted to say that my history classes helped me a lot more than my English classes because in history you kind of had to analyze what was happening within history and during that time it kind of helped me with human geography.” Another student stated, “Probably my World History teacher was a big help in preparing me. All of his tests were like short essay answers, so that helped prepare me and then my US History was a dual class with English and that was a writing based course as well. I had a lot of writing based history courses and then went into AP Human Geography and that helped as well I feel.”

According to students interviewed, English courses (such as AP English, Honors English) and history courses (such as World History, US History) helped prepare them for the writing portion of the APHG exam. However, AP English would not be available in middle school, and the English and history courses offered in middle school might not prepare students as well as those offered in high school. This means that 9th grade students would not have the necessary writing skills prior taking the APHG course, which presents a major challenge for students learning the course in the 9th grade and for teachers teaching the course to 9th grade students.

### *Limited Knowledge of the World*

Students interviewed agreed that limited knowledge about where places are in the world would impact their learning in the APHG course. Most students who took the course in the 9th grade did not feel that they were knowledgeable about places in the world prior to taking the course. One student said he was not knowledgeable because he did not learn much about places in the world in middle school. He stated, “Thinking back, we really didn’t deal with places. We studied some around the US, but we did not deal very much with outside foreign countries and stuff.” Another student simply commented, “I was not very knowledgeable before taking the course.” Only one student claimed he was very knowledgeable because of his travel experiences. However, not every student had that kind of experience and travel is not always a true assessment of one’s knowledge about the world.

Students who took the World Geography course prior to taking the APHG course confirmed that the World Geography course prepared them with knowledge of the world for the APHG course. One student who completed the APHG course in the 12th grade stated, “World Geography really helped me with the AP Human Geography class.” Another student who took the APHG course in the 12th grade said, “I think World Geography definitely helped me in the AP Human Geography course. It definitely gave me kind of a breach of the surface of what geography is and of what to expect in the course. My teachers were helpful, but by the time I took the course I think I was prepared.” Another student stated that, “The World Geography course I took my freshman year definitely helped expose me a lot more to where things are in the world than I would have been exposed to had I not taken the class prior to taking AP Human

Geography.” Another student had a very similar answer by saying, “I think with taking world geography my junior year it helped a lot like knowing a lot of places in the world.” Although some students claimed they were pretty knowledgeable about where places are prior to taking the World Geography course, they did acknowledge that the course helped them improve upon that. One student who took the APHG course in the 12th grade said, “World Geography helped me somewhat in addition to what I learned on my own.” Another student who took the APHG course in the 10th grade said, “I had a pretty good foundation for where places are at in America, but the World Geography class expanded my horizons just a little bit.”

Some students felt that the World Geography course should be a prerequisite for the APHG course. One student who took the course in the 12th grade said, “I think there should be some sort of world knowledge course or world geography course, so that way you don’t come in and get blind-sided.” Another student who took the course in the 12th grade stated, “For me it would depend on whether they are taking world geography with it or without it because if they’re taking human geography first I feel like that would be kind of hard. World geography is an easy buffer class that you know from my high school you take world geography first and I think that helps the human geography aspect.” Another student who took the course in the 12th grade stated, “It’s like taking Algebra II before Algebra I which I did do, but I think it’s just a nice safety buffer having world geography before AP Human Geography.”

#### *Lack of Maturity*

Lack of maturity was one of the prominent themes that emerged from teachers and administrators’ interviews as a challenge in teaching the APHG course to 9th grade

students. When students were interviewed on maturity levels, most of them believed that maturity level did impact their learning in the APHG course and 9th grade students did not have the level of maturity needed for the APHG course.

Some of the students interviewed stated that students need to be mature enough to be able to have the discipline needed to succeed in the course. One student who took the course in the 9th grade stated that, “There is definitely a level of maturity and self-discipline since there is a lot of work and it comes up fast. You definitely have to be on top of your game and it’s not one of those classes where you can afford to just do the work the period before, so it definitely takes a level of maturity and you can’t be a procrastinator.” Another student who took the course in the 12th grade had a very similar response by saying, “I would say it requires a high level of maturity because it’s a lot of self-discipline and just getting your work done since it’s not daily assignments. It’s not something you have to turn in at the beginning of every class. It’s like weeks go by and then you have something due.” Another student who took the course in the 12th grade said, “I feel like you definitely need to have a lot of discipline to take the class and it’s hard to get someone that doesn’t want to read to read.”

Two other students interviewed believed that students need a higher level of maturity to be able to handle the rigors of the course. One of them said, “I feel like you have to be mature in order to take that course because it’s more in depth and more cultured than other classes. I remember there were some students who decided to drop out of the class because there were words they didn’t understand. They didn’t know what to write about or how to understand what the teacher was giving us.” The other student said, “I think a high level of maturity is necessary. Especially to fully understand and

appreciate the topic and the discipline because it's all really important stuff and I think it's all really necessary stuff. I think at the freshman level I would not have had the maturity to properly immerse myself.”

Only one student interviewed did not feel that maturity level was a factor impacting students' learning in the APHG course. This student stated, “Level of maturity, I guess it would depend on the student. I had several friends who didn't have to study very much, but the information came to them naturally. They watched the news every night. They could tell you what the capital of almost every country. I mean they were ridiculous. They had to study an hour or two and they got 4's and 5's. I know others that studied more than I did and got 2's, so I think it depends on how you study. You know if you are really focusing on what you are studying and just as a student how much geography absorbs within you. Maturity, we all knew how to take tests and so I think with all academic subjects you got to study to do well and studying because you want to be studying, but in general I don't think that class required any extra maturity.”

Most students interviewed did not think that 9th grade students had the level of maturity needed to succeed in the course. One student who took the course in the 9th grade said, “As a general statement probably not, I wouldn't say that they have a high enough maturity level for that type of course.” Another student who completed the course in the 10th grade stated, “Retrospectively I had such a hard time with the class in 10th grade that I can't even imagine trying to take the class at a younger age. I think if I had waited I would have been more mature and be able to perform better in the class, but I only got a 2 on the exam. Well, like I have taken other AP courses in my junior and senior year and I did not fail like I did in AP Human Geography.” Another student who

took the course in the 12th grade said, “I don’t really think 9th grade students have the maturity to take it because they're transitioning and there is that middle school aspect. They are kind of like slacking off, but once like you get to senior year you kind of know what to expect from your teachers and plus my APHG teacher was the same as my world geography teacher, so I knew what to expect from her and I was like more mature.”

Another student who took the course in the 12th grade stated that, “I don’t believe they do. I also like to think that I was pretty mature as a 9th grader and from what I saw of my peers I don’t think they would have been able to handle it and I don’t think they would have scored on the exam very well.”

One student who took the course in the 9th grade did not feel that 9th grade students were mature enough to handle the sensitive topics in the course by saying, “I think you need to have more maturity. I was in a program for the academy of global studies, so a lot of us were like higher level children, but when it comes to talking about religion and different cultures it is definitely important to be sensitive to different topics, so I think that it would be better if it was taught at a higher level than 9th grade.”

Another student who took the course in the 9th grade did not feel that 9th grade students were mature enough to have the discipline needed for a college-level course. He said, “You have to be pretty responsible. Because it’s a lot of reading and memorizing and stuff like that so I don’t think anybody could hardly do it. I couldn’t do it.”

Another student who completed the course in the 12th grade also commented on 9th grade students' lack of discipline, “I was pretty not responsible in the 9th grade. I took it my 12th grade year and I am pretty sure I wanted to drop it and my teacher was like no you have to do it and I was like OK, but yeah that’s a heck of a 9th grader like I honestly

couldn't imagine. It's just like a lot of work and then the test itself is pretty hard to where I feel you need a few years of high school at least to learn how to study that way and like actually care enough to do well on the AP exam."

Only one student interviewed felt that students in any grade in high school had the maturity level needed for the course. This student took the course in the 11th grade. He stated, "In middle school I probably would not have been ready for the class, but by the time I took it in high school I was ready. It was definitely a lot more curriculum. In middle school we probably would not be able to handle it. I think high school is a good level at any grade in high school really."

Most students interviewed also stated that the course should not be offered to 9th grade students since most of them did not have the level of maturity needed for the course. One student who took the course in the 9th grade said, "I think at 9th grade your still at a middle school level. I think AP Human Geography should be in the later grades." One student who took the course in the 9th grade suggested that the course should only be offered to a few 9th grade students who are mature enough to handle the course. He stated that, "As a whole I don't think it's a course that should be given to all 9th grade students, but I think that it should be offered because there are 9th grade students out there who have the maturity level and the drive to complete a course of that difficulty. Therefore, I think as a whole no, but there are a select few who would be successful and the option should be made for those." Only one student who completed the course in the 12th grade said the course should be offered to 9th grade students, but he did have concerns about their performance in the course. He stated, "If the question is should it be

offered I would say yes, but I would say there is a high chance of students not doing well or high chance of the subject matter being reduced to be on a 9th grade level.”

***Sub-question Five: APHG Placement in the 9th Grade***

Although, there was no direct question asking teachers and administrators why APHG is increasingly being placed in the 9th grade, they both provided very valuable information on this important issue in APHG. Two themes emerged on this subject during the interviews which were, 1) APHG being a warm-up course for other AP courses and, 2) financial incentives for schools to increase AP participation.

***Warm-up Course for Other AP Courses***

According to teachers and administrators, high schools are expanding their AP course offerings in recent years and the school administrators consider the APHG course as the best chance to initiate 9th grade students into the AP Program. One teacher interviewed explained why the APHG course was placed in the 9th grade in his school by saying, “Our school is starting an AP nation program in my high school right now and so we have it where AP Human Geography is the first subject you take and you have AP classes all four years. So like freshman take AP Human Geography, then they take AP European History, then they take AP US History, and then they take AP Government, so it is like the scaffolding AP Human Geography provides for us. That is why the push for us has been to have AP Human Geography in the 9th grade and college readiness is such a big push.” One of the administrators interviewed said, “We as geography teachers are outnumbered, so APHG is put in 9th grade as a warm-up for AP World History and other AP social studies courses.” Since this administrator sets curriculum for social studies in her own school, she had refused to place the APHG course in the 9th grade despite

pressures from the principal of her school and the superintendent of her school district. She said, “The superintendent of our school district came into my class two years ago with my boss and others and wanted to know why I won’t support APHG at our school in 9th grade and I said why my course, the course I have a passion in, has to be an experimental project for world history? He was trying to bully me into being submissive and I said absolutely not.”

Some teachers interviewed teach other social studies courses such as AP World History. These teachers felt that the APHG course was a great tool for preparing students for other AP courses like AP World History. One teacher said, “Really the whole reason we implemented APHG was really as a preparation course for AP World History as a skills course and our kids have really been pretty successful with it, but we make a very focused effort with it and are very intentional with teaching them study skills like how to read a college textbook and how to breakdown information and how to take notes and how to find something that works for them.” Another teacher described how the APHG course helped students' performance in AP World History by saying, “The kids that did this course and the kids that did not do this course and then went on to AP World History was like night and day. Kids would come in and complain that they were not ready for AP World History and then we switched to AP Human Geography and they were like Oh, we can do this, so those who took AP Human Geography scored significantly higher on the AP World History exam than those who did not.” Another teacher described the work of teaching the APHG course in the 9th grade as the grunt work for other AP courses by saying, “Somebody always has to do the grunt work like I feel I set up the next AP class and the AP class after that gets set up. Like I feel like somebody has to do the grunt work

and I feel like 9th grade is a great place to start. If they were any younger, I don't think so, but somebody has to do it." Even though these teachers expressed a positive view on the APHG course being a preparatory course for other AP courses, the APHG course should be emphasizing human geography instead of study skills in its teaching to prepare students for other AP courses.

### *Financial Incentives*

Another theme emerged from teachers and administrators' interviews that was less significant was financial incentives. One teacher said, "I can tell you from my school it is because they see the dollar signs because they get money out of these students taking this exam. When the kids take it, the schools get money." Another teacher said, "The College Board gives them money for every student that takes the exam. It is because my high school wants that money and it used to be that they would give it back to the teachers, but that is not the case anymore." The program that offers financial incentives to schools for students taking AP courses is called the Advanced Placement Incentive Program (APIP) and is provided by the state of Texas (Jackson 2008; TEA 2011). School districts in Texas were trying to get more students enrolled in the APHG course so they could receive more financial incentives. However, other AP social studies courses already have taken up the curriculum in grades 10-12. The best opportunity to get more enrollment in the APHG course is to place it in the 9th grade.

## Research Question Two

### *Sub-question One: APHG and Majoring in Geography*

#### *Quantitative Data Analysis*

There were 2,397 students who responded to the on-line survey. Eighty-two percent of them (1,973 out of 2,397) have taken the World Geography (WG) course in high school. Fifteen percent (351) have taken the Honors World Geography (HWG) course and 7% (156) have taken the APHG course in high school. One hundred and fifty participants (6%) were geography majors, 11 participants (0.5%) planned to major in geography, and 70 participants (3%) planned to minor in geography at the time the survey was conducted (Table 22).

**Table 22.** Geography Majors and Minors among Students who Completed Different Sets of Geography Courses in High School (\*There were 128 participants who took other combinations or no geography course in high school such as APHG and IB Geography, WG and Texas Geography, and Pre-APHG alone).

Geography Courses Completed in High School	Number of Students	Geography Majors	Plan to Major in Geography	Plan to Minor in Geography
APHG	47	4 (9%)	0	0
APHG + WG	74	7 (9%)	2 (3%)	3 (4%)
APHG + HWG	23	3 (13%)	0	0
APHG + WG + HWG	6	1 (17%)	0	2 (40%)
HWG	257	13 (5%)	1 (0.4%)	7 (3%)
HWG + WG	53	2 (4%)	0	3 (6%)
WG	1809	111 (6%)	7 (0.4%)	49 (3%)
Total	2397*	150 (6%)	11 (0.5%)	70 (3%)

Students who took the APHG course alone or APHG in combination with WG and/or HWG had a higher percentage of geography majors than students who did not take

the APHG course (Table 22), which indicates that the APHG course had a positive impact on students' majoring in geography. There were a higher percentage (3%) of students who took both the APHG course and the WG course in high school who were planning to major in geography in college (Table 22). The percentage of students who planned to minor in geography was higher among students who took both the WG and the HWG course or all three courses (APHG, WG, and HWG) in high school (Table 22).

It was an unexpected finding that more students completed the HWG course than the APHG course. The HWG course could be as challenging as the APHG course, but students do not receive college credits for taking it. The reason why more students took the HWG course than the APHG course is not clear. Maybe the APHG course is not offered as widely as the HWG course due to its short history, or it could be that the students do not want to take the college-level APHG exam.

Students who took the APHG course in the 12th grade in high school had the highest percentage of geography majors, and students who took the APHG course in the 9th grade were less likely to major in geography than students who took the course in any of the higher grade levels (Table 23). The percentage of students who planned to minor in geography was the highest among students who took the APHG course in the 12th grade and the lowest among students who took the course in the 9th grade (Table 23). This indicates that the positive impact that the APHG course had on students' majoring in geography was much stronger when it was taken in a higher grade level than in the 9th grade.

**Table 23.** Geography Majors and Minors among Students who took the APHG Course in Different Grade Levels in High School (\*There were 3 participants who took the APHG course in the 8th grade and 3 participants who did not indicate the grade level in which they took the APHG course).

Grade Level	Number of Students	Geography Majors	Plan to Major in Geography	Plan to Minor in Geography
9th	43	1 (2%)	2 (5%)	1 (2%)
10th	37	4 (11%)	0	1 (3%)
11th	38	4 (11%)	0	2 (6%)
12th	32	6 (19%)	0	2 (8%)
Total	156*	15 (10%)	2 (1%)	6 (4%)

Recall that 60.4% of 9th grade students scored only 1 or 2 on the APHG exam, compared to 34% for students from other grades combined (Table 18). Failing the APHG exam could cause students' low self-efficacy, and that in turn could lower their interest level in a career in geography (Brown 2002; Lent, Larkin, and Brown 1989; Bandura 1986). Since 9th grade students do not perform as well as students in higher grade levels on the APHG exam, it is more likely that 9th grade students' self-efficacy gets negatively impacted and therefore they are less likely to major and pursue a career in geography. This could be used to explain the quantitative finding that the percentage of geography majors and minors was the lowest among students who took the APHG course in the 9th grade compared to any other grade levels. The increased participation in the APHG course and exam by 9th grade students (Tables 2 & 5) would have a negative impact on the recruitment of geography majors for college geography departments in the US.

### *Qualitative Data Analysis*

When students were asked what aspects of the APHG course make them less likely to major in geography, two major themes and one minor theme emerged from the interviews. The two major themes were, 1) the difficulty of the APHG course and, 2) geography does not meet personal interests. The one minor theme was the perception of limited career opportunities in geography.

Students interviewed pointed out that difficulty of the APHG course was a main factor that could contribute to students not majoring in geography. One 9th grade student said, "It was really time consuming, meticulous, and I had to do a lot of map work." Another student said, "I think it is just like the AP system in general because when I took like the AP test like you really have to study for the AP test, like what is going to be on it and memorize all this stuff." Another student commented, "One it is a difficult class, it's obviously an AP class and for high school students not everyone is willing to make that commitment to a single class especially one that is optional. The second one is it actually has the APHG exam at the end of the semester which is another thing that students have to prepare for on top of the test you take within the course itself, so you have the test your teacher gives you and you have the test within the course. I guess just the difficulty of the class especially if you have a rough semester and fall behind with your grades and stuff like that."

Students who took the course in the 9th grade stated that it was even more difficult when taking the course in the 9th grade and that could cause a student not majoring in geography. One of them said, "Well in our class we read the Rubenstein book and I know a lot of kids in my class struggled with it. I think it was just harder for

them to understand. Maybe the rigor was too much and they just couldn't handle it."

Another student who took the course in the 9th grade also commented on the rigor of the course that decreased students' desire of majoring in geography by saying, "I think that one of the factors of APHG is that it is a lot. It is a very different concept to master at first when you're coming straight from middle school and they are asking you to look into a very deep level of analysis and it's not just look in the book and find the answer; you actually have to make the connections by yourself, so I think that is something that kind of turns kids off especially when they are not looking for a lot of work." Another student who took the course in the 9th grade indicated that the workload of the course could decrease the desire to major in geography by saying, "In my class I know that we had two different subjects put together, world geography and human geography, and so I know comparatively to some of the other classes it was twice the work which you know could decrease the desire." These comments from the 9th grade students could be used to explain why there was a lower percentage of students majoring in geography when the APHG course was taken in the 9th grade than in higher grade levels (Table 23).

Geography does not meet personal interest was another theme emerged from students' interviews that could contribute to students not majoring in geography. Many non-geography majors interviewed said that the reason why they did not major in geography was that they were not interested in geography; it has nothing to do with the APHG course itself or the grade level in which they took the APHG course. One student who took the course in the 9th grade said, "It's not what I am interested in doing for the rest of my life. My skills are more like in one on one like selling and styling. Geography has nothing to do with that." Another student who completed the course in the 10th grade

said, “I was more interested in the health field. I wanted to make sure I changed someone’s life with their health more than geography.” Another student provided a more general answer by saying, “whether or not they are interested in general I suppose would make a difference because if you aren’t very keen on where things are, like who is doing those things at this place or where people are, you will not be interested. I mean if it’s not just in your interest you know I would imagine that those type of people would not want to major in geography and might not be interested in geography at all.” One student suggested that students' lack of interest in some of the topics in the APHG course could cause them not majoring in geography by saying, “Some of the subjects as I recall people didn’t seem as interested in like population or urbanization. I know that some people had a hard time with that.”

Students' perception of limited career opportunities in geography was a minor theme that emerged from students' interviews that could contribute to students not majoring in geography. One student who took the APHG course in the 12th grade said he had no idea what he could do with geography by saying, “Honestly I don’t know what I would necessarily do with it, but I really just want to travel and explore the earth.” Another student who took the APHG course in the 11th grade did not really think he could make a career out of geography, so he never considered it to be a career option. He said, “Honestly, I don’t think I ever considered it. Thinking about it now, I don’t think there are a lot of jobs that really would relate to it.” Both of these students have taken the APHG course in high school. Apparently, the course failed to inform them of career opportunities in geography.

When students were asked what factors from the APHG course make them more likely to major in geography, they stated that the knowledge of the world that the course offered, the APHG course itself and their teacher, and the grade level in which the course was taken all impacted their decision on majoring in geography.

Many students interviewed felt that knowledge of the world learned in the APHG course could contribute to a student majoring in geography. One student who took the course in the 12th grade said, “I really liked the class because I really liked learning about different people and like where they were going and a lot of things about permaculture and just like how the cities were built and how they are all kind of similar across the board in terms of like the business section and then the housing section and then the farming sections and all of that.” Another student who took the course in the 12th grade said, “Gaining an understanding and an awareness of how much is out there in the world and what all that involves and we went pretty in depth too, so it was all just you got to see the core of things of people and the environment and everything that goes in between that and I think that was pretty special for a lot of people.”

Students who took the course in the 12th grade and were geography majors at the time the interviews were conducted said that the APHG course itself and their teacher had a big impact on them deciding to major in geography. One of them said, “The course and my teacher I had in high school had a huge impact on me majoring in geography. I went out to California and then Austin to go to college for my first two years. I thought back to my high school years when I was kind of reevaluating what it was I would like to do in life and when I thought back to AP Human Geography and my teacher I decided to come back to Texas State and major in geography.” Another student said, “The APHG teacher

had such a passion for the course that it rubbed off on me and led to me majoring in geography. Just every topic was interesting to me and the teacher managed to make it really hands on.” Another student who took the course in the 12th grade said the APHG course opened up a new field for him by saying, “I wanted to be a vet all throughout school and then I got burned out on science, so my senior year I took APHG. I really took an interest in that and it really correlated my previous interests. AP Human Geography just opened me up to this whole new field that I really didn’t know existed, but I had a lot of preexisting notions toward. I looked into majors that had a lot of elements from human geography and the ones that I was most interested in was urban and regional planning. I was convinced that geography is what I wanted to go into after taking APHG and my deep interest in urban planning. It was the next logical step after that class.” These students' interviews indicated that the APHG course had a positive impact on students majoring in geography, which explained why there was a higher percentage of students majoring in geography when they took the APHG course in high school, the result that was found in the quantitative analysis (Table 22).

One student who took the course in the 12th grade and was a geography major indicated that taking the course in the 12th grade instead of 9th grade could make students more likely to major in geography. He shared his own experience by saying, “I didn’t take the course in the 9th grade. I took it when I was in the 12th and I am thankful for that. I took my standard geo course when I was in the 9th grade and barely got through that. I am a fairly average kid, so I would say that your average high schooler in the 9th grade is not really ready for the APHG course. I feel lucky to have taken it in the 12th grade because it is a closer bridge to what I am actually studying in college.” This

student's opinion could help to explain why there was a higher percentage of students majoring in geography when the course was taken in 10-12th grades than in the 9th grade, the quantitative analysis result in Table 23.

***Sub-question Two: APHG and Interest Level in Geography***

*Quantitative Data Analysis*

The average interest level (on a Likert scale of 1 to 5) in geography of all participants was above neutral (3.0), but this did not result in more geography majors or minors (only 6% of the total were geography majors and 3% of the total planned to minor in geography at the time the survey was conducted) (Tables 22 & 24). This indicates that students were only interested in the subject of geography, but neither did they consider it for their careers nor help with their careers. The average interest level in taking geography courses was close to neutral and is slightly lower than students' interest level in the subject of geography (Table 24).

Students who took both the APHG and the HWG course in high school were more interested in geography and taking geography courses than students who did not take both of the two courses in high school (Table 24). Students who took a combination of APHG, WG, and HWG had the highest level of interest in geography and taking geography courses.

**Table 24.** Interest Level in Geography and Taking Geography Courses among Students who Completed Different Sets of Geography Courses in High School (\*There were 128 participants who took other combinations or no geography course in high school).

<b>Geography Courses Completed in High School</b>	<b>Number of Students</b>	<b>Interest Level in Geography</b>	<b>Interest Level in Taking Geography Courses</b>
APHG	47	3.26	3.00
APHG + WG	74	3.38	3.01
APHG + HWG	23	3.70	3.26
APHG + WG + HWG	6	4.33	4.00
HWG	257	3.37	2.97
HWG + WG	53	3.25	2.94
WG	1809	3.27	2.93
Total	2397*	3.30	2.96

Students who took the APHG course in the 9th grade had the lowest level of interest in geography and taking geography courses (Table 25). The higher the grade level APHG is taken, the more interest students had in geography (Table 25). There was also a higher level of interest in taking geography courses among students who took the APHG course in the 11th and 12th grade than students who took the course in the 9th and 10th grade (Table 25). The lower interest level in geography and taking geography courses of 9th grade students may have something to do with the self-efficacy theory again (Brown 2002; Lent, Larkin, and Brown 1989; Bandura 1986). Since 9th grade students do not perform as well as students in 10-12th grades on the APHG exam, their self-efficacy in geography may be low and this could decrease their interest level in geography and taking other geography courses.

**Table 25.** Interest Level in Geography and Taking Geography Courses among Students who took the APHG Course in Different Grade Levels in High School (\*There were 3 participants who took the APHG course in the 8th grade and 3 participants who did not indicate the grade level in which they took the APHG course).

Grade Level	Number of Students	Interest Level in Geography	Interest Level in Taking Geography Courses
9th	43	3.12	2.81
10th	37	3.22	2.92
11th	38	3.66	3.37
12th	32	3.84	3.28
Total	156*	3.44	3.08

### *Qualitative Data Analysis*

When students were asked what aspects of the APHG course could make them more interested in geography, two themes emerged from their interviews: 1) the knowledge of the world that students gained from taking the course and, 2) the interdisciplinary nature of geography.

Many students commented on how the knowledge of the world, especially the cultural aspect learned in the APHG course, increased their interest level in geography. One student who took the course in the 9th grade said, “We learned so much about the human aspects of different locations which was more interesting than I expected.” A student who completed the course in the 10th grade said, “Just knowing about different cultures and different places and being overall knowledgeable.” Another student who completed the course in the 11th grade said, “It’s interesting you get to learn about the different cultures and people around the world.” Another student who completed the course in the 12th grade explained how the APHG course increased his interest in geography by making locations on the map into real places. He stated, “The thing in the

course that increased my interest was the application of social factors to geography. It took from geography just being places on the map to a reality of actual place that exists in reality and it opened that up to me. I became curious as I explored deeper into what exactly is place and what factors change it and influence it.”

The interdisciplinary nature of geography was another theme that emerged from students' interviews and increased their interest levels in geography. One student who completed the course in the 11th grade commented, “I like that it’s broad and interdisciplinary. I like that it involves everything from civil engineering to just knowing socio-economic facts to business to everything. I really like that and I actually got interested in it when I was in high school through AP human geography.” Another student who took the course in the 12th grade stated, “As far as an interest what I remember was that the course was so much different than the other courses that were being taught at our school. We did things from current world issues which was actually another class, but was incorporated into the class we were taking. Also, a lot different demographics and physical aspects were fascinating to me and they were interdisciplinary which was a lot different than pretty much anything you get at a public high school. Especially from the one where I came from, so that is what drew me is the interdisciplinary nature of the class.” Another student who took the course in the 12th grade said, “I like that it incorporates like the cultures and like the history within regions and like how it interacts with other places and how it all comes together with like the human race and like the land aspect as well. Like how it affects people’s lives.” Another student who took the course in the 12th grade said, “I like how broad it is and how it’s essentially just a springboard into so many different subjects and brings them all together

at the same time. I am particularly interested in human geography and the cultural aspect of geography.” Another student who took the course in the 12th grade listed the different topics he studied in the APHG course by saying, “we studied all different types of cultures and we studied different trends of socio-economics. We studied human movement or migration and we studied historical facts. We also did projections, so we did everything across the board.”

When students were asked what factors from the APHG course could decrease their interest level in geography, four minor themes emerged from their interviews. These minor themes are: 1) lack of interest in the topics discussed in the APHG course, 2) lack of skills used in the APHG course, 3) lack of interest in maps and graphics used in the APHG course and, 4) difficulty of the course.

Lack of interest in the topics discussed in the APHG course could decrease students' interest levels in the subject of geography in general. One student said, “I really did not find anything from the course that I was interested in. I had to read the book and I didn't really understand what was going on and the book if I remember. I read two books. I read the Kite Runner which I liked and then I had to read this other book that didn't make any sense to me and so that I guess like if that had anything to do with geography it really didn't do much to peak my interest.” Another student who took the course in the 9th grade said, “I am less interested because I do not like the physical part of geography.”

Some students found that they were not good at some skills in geography like reading maps from taking the APHG course and this made them less interested in the subject of geography. One student who took the course in the 9th grade said, “I'm really bad at maps and so I feel like that has a lot to do with where everything is and so I don't

understand. I get really confused with directions and maps, so that makes me not interested.” One student who took the course in the 9th grade said, “Probably the fact that I have very little natural talent in geography and so I have to work a lot harder at geography and history in general.”

Lack of interest in maps and graphics used in the APHG course could also make students less interested in geography. One student who completed the course in the 11th grade said, “Something that really annoyed me was just repetitive like going through graphs like the information it was like sample graph after sample graph. It wasn’t interesting to just decode these graphs that really didn’t have any relevance to real world situations. I think I would have found it a lot more interesting if it was like I gathered the data or something like that.” Another student who took the course in the 12th grade complained that, “I think it is probably that just like looking at a map and I had to look at a map like every single day for 5 days.”

Only one student who took the course in the 10th grade indicated that the difficulty of the APHG course made him less interested in taking other geography courses. He said, “It was a much more difficult class than a lot of the other ones I was taking. That was the only AP they offered at that age, so I guess the difficulty level made it harder. It was a little bit of a deterrent in taking other geography classes later.”

### ***Sub-question Three: APHG and Career Interest in Geography***

#### ***Quantitative Data Analysis***

Students from all different combinations of geography courses including APHG alone expressed a low likelihood of pursuing a career in geography (On a Likert scale of 1 to 5) with the exception of students who had completed all three geography courses

(APHG, WG, and HWG) in high school (Table 26). The fact that those students completed all three courses in high school may be a sign that they already had a significant interest in geography, so it is no surprise that they would be interested in a career in geography. Students were much more interested in the subject of geography and taking geography courses than pursuing a career in geography (Tables 24 & 26). Lack of awareness of geography career opportunities may be an explanation for this.

**Table 26.** Career Interest in Geography among Students who Completed Different Sets of Geography Courses in High School (\*There were 128 participants who took other combinations or no geography course in high school).

Geography Courses Completed in High School	Number of Students	Likelihood of Career in Geography
APHG	47	1.72
APHG + WG	74	1.81
APHG + HWG	23	1.83
APHG + WG + HWG	6	3.17
HWG	257	1.73
HWG + WG	53	1.81
WG	1809	1.78
Total	2397*	1.79

Students who took the APHG course in a higher grade level were more likely to pursue a career in geography than students who took the course in a lower grade level (Table 27). This again could be explained by the self-efficacy theory: 9th grade students' poor performance in the APHG exam negatively impacted their self-efficacy and decreased their interest level in pursuing a career in geography compared to students in 10-12th grades (Brown 2002; Lent, Larkin, and Brown 1989; Bandura 1986).

**Table 27.** Career Interest in Geography among Students who took the APHG Course in Different Grade Levels in High School (\*There were 3 participants who took the APHG course in the 8th grade and 3 participants who did not indicate the grade level in which they took the APHG course).

<b>Grade Level</b>	<b>Number of Students</b>	<b>Likelihood of Career in Geography</b>
9th	43	1.51
10th	37	1.65
11th	38	2.00
12th	32	2.34
Total	156*	1.84

*Qualitative Data Analysis*

Students interviewed pointed out that teachers did not discuss career opportunities in geography in the APHG course. One student who took the course in the 12th grade and was a geography major said, “No, no it really wasn’t career oriented.” Another student who took the course in the 12th grade said, “I don’t think I found that from the class. I did my own research.” Another student who took the course in the 12th grade was a little more explicit in his response, “No actually. He never really explained it to us. I just took the course because it was a free elective. He never really explained what we could do. Like, what degree in geography we could get or any career possibilities.” Another student who took the course in the 10th grade said, “I couldn’t tell you what I learned about careers since they didn’t bring up what people could do with geography.” One student who took the course in the 9th grade said, “Our class focused on religion actually. Cultures, religions, and stuff, but that’s it. No, we didn’t talk about any career paths at all.”

Students also admitted that the only career paths in geography they figured out from taking the APHG course were working for the government or being a geography teacher or researcher. One student who took the course in the 12th grade said, “You could work for like the government because geography it affects how people interact with one another, so it could work out with the government and you could work in foreign relations and you could even be a geography teacher if you like it.” Another student who took the course in the 9th grade commented, “The fact that you could teach geography and I couldn’t even really think what you could do. I guess you could like study certain aspects of the world, that’s all. Like a research job maybe.” Another student who took the course in the 9th grade stated, “I know obviously there is cartography, but there is different things like city zoning and planning, they are things are relative to the area where they are and I think that’s all we really learned in the class was municipal services jobs.” Another student who took the course in the 11th grade said, “I learned that you can get your name out there by displaying a graph. I am trying to think of that guy. He had that graph where the E-Coli spread and he did the dot plot of where it was.” This student did not realize that the case he talked about was doing research in geography.

## **CHAPTER 7**

### **CONCLUSIONS**

The quantitative and qualitative findings for each research question are summarized in this chapter. Implications of those findings for different stakeholders such as administrators, APHG teachers, counselors, students, parents, geography departments, and the discipline of geography are also discussed. Recommendations and future research directions are suggested at the end of this chapter.

#### **Research Question One**

##### ***Sub-question One: APHG Exam Performance***

Ninth grade students' performance in the APHG exam was not as good as the performance of students in other grade levels and the difference was statistically significant. Administrators interviewed confirmed the quantitative findings. One of them particularly pointed out that lack of basic concepts in geography and knowledge about where places are in the world were reasons for 9th grade students' poor performance, which were recognized as challenges of teaching and learning the course in the 9th grade in the analysis of Sub-questions Three and Four of Research Question One.

It is clear that APHG exam scores are lower when the course is placed in the 9th grade. This could become a very serious problem when there is a national trend of placing the course in the 9th grade curriculum. Teaching a college-level course to students with a 9th grade maturity level and skill set may have a detrimental impact on students, APHG teachers, administrators, and school districts who are subject to intense scrutiny. Most importantly, students who could not get college credit for taking this

course may develop a negative perception on this course and the subject of geography at a young age.

***Sub-question Two: Correlation between APHG Course Grades and Exam Scores***

Most students who took the APHG course in the 9th grade received a higher grade in the human geography course than in the AP exam. The standard APHG course did not prepare students well for the AP exam when it was taught in the 9th grade. Teachers and administrators' interviews provided useful insight on the correlation between course grades and exam scores. Course grading system, pressure from the administration and parents, teachers' unpreparedness, and students' lack of maturity, prior knowledge, and study skills were the themes that emerged to explain the higher course grades and lower exam scores in APHG.

***Sub-question Three: Challenges in Teaching the APHG Course to 9th Grade Students***

Lack of writing skills, large vocabulary, limited knowledge of the world, lack of maturity, and lack of study skills were the five major challenges in teaching the APHG course to 9th grade students. It was found that: 1) English courses in middle schools cannot prepare students for the writing required in the APHG course and the writing skills of students in 10-12th grades were much better than that of 9th grade students; 2) the large number of new terms used in the APHG course and the lack of basic vocabulary of 9th grade students created a big challenge for teaching the course in the 9th grade; 3) lack of knowledge of the world affects students' learning and exam performance in the APHG course and many teachers spend a half year teaching world geography to 9th grade students; and, 4) students in the 9th grade do not have the maturity level to be successful in the APHG course, including lack of study skills, failure to handle pressures

of the course and exam; lack of critical thinking skills, and difficulties in dealing with the advanced level assignments.

These findings are important because they show that 9th grade students are not ready or have not developed the necessary skills to take a college-level course. This may be the most important reason why 9th grade students do not perform as well as students in 10-12th grades on the APHG exam. Therefore, it is not fair to ask students to be successful in a course that they cannot handle, nor is it fair to ask teachers to prepare them well for the exam that they are not ready for. Teachers in this situation struggle to help 9th grade students quickly develop necessary skills and knowledge. In the meantime, students struggle to quickly catch up with the course.

***Sub-question Four: Challenges in Learning the APHG Course in the 9th Grade***

Large amount of class materials, large number of new vocabulary, and a lot of critical thinking involved in the course were the learning challenges of 9th grade students in the APHG course. When asked about writing skills, students did confirm that good writing skills could help them be successful in the APHG course; English and history courses could help them with the writing skills; and 9th grade students did not have the writing skills needed for the course. When asked about knowledge of the world, students stated that the World Geography course could prepare them with the knowledge of the world for the APHG course; and most 9th grade students did not have that kind of knowledge prior to taking the APHG course. When asked about maturity level, students admitted that maturity level did impact their learning in the APHG course and 9th grade students did not have the level of maturity needed for the APHG course, thus the course should not be offered to all 9th grade students. These findings once again show that the

majority of 9th grade students do not have the skills, development, or maturity to be successful on the APHG exam. Unfortunately, the APHG course is promoted to 9th grade students in many high school in Texas and even required for all 9th grade students in some high schools in Texas.

***Sub-question Five: APHG Placement in the 9th Grade***

Although money may play a hand in the APHG course being place in the 9th grade, it is clear that the course is used to prepare 9th grade students for other AP courses. Geographers need to decide whether or not this course should be perceived as a warm-up course for other AP courses. Apparently, the APHG course cannot raise the status of geography nor accomplish the task of recruiting geography majors and careers by being a preparatory course for history and other social studies courses.

**Research Question Two**

***Sub-question One: APHG and Majoring in Geography***

Students who took the APHG course in high school had a higher percentage of becoming geography majors in college than students who did not, and students who took APHG in 10-12th grades had a higher percentage of becoming geography majors than students who took the course in 9th grade. The APHG course increases the number of geography majors especially when it is taken in 10-12th grades in high school. Ninth grade students' lack of self-efficacy and interest level in a career in geography may get negatively impacted when they did not perform well on the APHG exam. This creates a problem for the recruitment of geography majors for college geography departments in the US.

Difficulty of the course especially when it is taken in the 9th grade, lack of interest in geography, and the perception of limited career opportunities in geography were the reasons for students not majoring in geography. The knowledge of the world that the course offered, the APHG course itself, and a passionate APHG teacher were the factors that lead to a student majoring in geography.

These results have big implications for the discipline of geography. AP courses are supposed to increase the number of majors in a discipline according to Murphy (1998). Geography departments are supposed to be able to recruit more majors from freshman who had taken the APHG course in high school. The result of this sub-question shows that this is more likely to happen among students who took the APHG course in the later years of high school. This results in professional irony since most of the APHG courses are offered in the 9th grade in the US.

***Sub-question Two: APHG and Interest Level in Geography***

Students were more interested in the subject of geography than in taking geography courses, and students who took APHG in 10-12th grades in high school were more interested in geography than students who took APHG in 9th grade. The knowledge of the world learned in the APHG course and the interdisciplinary nature of geography made students more interested in geography. Lack of interest in the topics discussed in the APHG course, lack of skills used in the course, lack of interest in maps and graphics, and difficulty of the course all contributed to students not being interested in geography.

It is interesting that students' interest level in geography was higher than their interest level in taking geography courses. Many students interviewed indicated that their interest in geography was actually in travel rather than in taking geography courses.

Therefore, the higher interest in geography does not translate into taking geography courses.

### ***Sub-question Three: APHG and Career Interest in Geography***

Students were much more interested in the subject of geography and taking geography courses than in pursuing a career in geography, and students who took the APHG course in 10-12th grades were more likely to pursue a career in geography than students who took APHG in 9th grade. Students' interviews showed that APHG teachers seldom discuss career opportunities in geography in the APHG course, and the only career paths in geography they figured out from taking the course were working for the government or being a geography teacher or researcher. Students being unaware of career opportunities in geography may be used to explain why they did not consider a career in this field.

### **Recommendations**

#### ***APHG Should Not be Taught in the 9th Grade***

The quantitative and qualitative findings of this dissertation demonstrates that the APHG course should not be taught in the 9th grade. First, APHG exam scores of 9th grade students are lower than scores of students in 10-12th grades, which means 9th grade students were not properly prepared for the APHG exam. Second, most students receive higher course grades than exam scores in APHG. It is possible that the course material is brought down to fit the level of 9th grade students. Third, 9th grade students are not ready to take the APHG course. Finally, taking the course in the 9th grade has a negative impact on the original purpose of the creation of the APHG course. The APHG course was created to raise the status of geography in the US and increase enrollments in

geography departments. However, when the course is taken in the 9th grade, few students choose to major in geography in college.

Many of the teachers, students, and both administrators interviewed felt that the APHG course should not be taught in the 9th grade. One administrator remarked that even the College Board would not endorse teaching AP courses in the 9th grade by saying, “The College Board itself does not recommend any course be taken below the 10th grade.” AP courses were meant to be a bridge between high school and college (Ellwell 1967) rather than a bridge between middle school and college.

### ***World Geography Should be a Required Prerequisite for APHG***

Many of the teachers, students, and both administrators interviewed in this study argued that 9th grade students do not have the knowledge of the world needed to be successful in the APHG course. The APHG course covers many topics in Human Geography, such as population geography, cultural geography, political geography, economic geography, and urban geography. However, it does not emphasize locations and assumes the students already have the knowledge of places in the world. Students cannot be expected to tackle these complex topics without the knowledge of the world. Thus, it should be recommended that students take a World Geography course prior to taking the APHG course.

### ***Schools Should Use the AP Potential Tool to Determine if Students are Ready to Take the APHG Course***

Students should be educationally and developmentally ready before taking a college-level course and exam. According to College Board research reports, one of the best predictors of a student’s success on an AP exam is their performance on the PSAT or

NMSQT exam (Ewing, Camara, and Millsap 2006; Camara and Millsap 1998). As stated in the introduction of this dissertation, AP Potential is a tool used by counselors and teachers for identifying students who are ready for an AP course. This tool relies heavily on PSAT and NMSQT exam results and can be found on the College Board website. Administrators, counselors, and teachers should use this tool to determine whether or not a student is ready to take the APHG course. The only problem is that those exams are usually taken in the 10th or 11th grade. The PSAT or NMSQT results would not be available for evaluating students' readiness for the APHG course if APHG was taken in the 9th grade.

### **Future Research**

Previous research suggested that AP courses may have an impact on students' college outcomes. Students who take different geography courses in high school can be compared for their college performances, including grades in college geography courses, second year retention in a geography program, graduation rate from a geography program, and time to graduation, etc. Student's achievement factors and student's backgrounds should be controlled in the study through logistic regression models.

The five challenges in teaching the APHG course to 9th grade students (including lack of writing skills, large vocabulary, lack of maturity, limited knowledge of the world, and lack of study skills) can be used to study factors that cause low scores in the APHG exam. They also lead to many questions that need to be answered to help improve the performance on the APHG exam. For instance, what writing skills are needed on the APHG exam and what is the best strategy to teach these skills? What vocabulary is essential to know in the APHG course? A vocabulary list should be created for the APHG

course. This list could be compiled from the APHG literature and from working with experienced APHG teachers. How to determine whether or not a student has the maturity level to take the APHG course? What places, regions, and general knowledge of the world should a student know prior to taking the APHG course? This set of knowledge of the world can be emphasized in a prerequisite course such as Honor World Geography or a World Geography course. What are the study skills needed for taking the APHG course? How to teach those skills and in which prerequisite course should these skills be taught? These are all potential areas of research in the future that is derived from the results of Research Question One.

This dissertation also examined the impact of taking geography courses in high school on the number of geography majors and minors, interest level in geography and taking geography courses, and likelihood of pursuing a career in geography. The APHG course was the focus of this research. The next step is to investigate which geography course in high school (APHG, Honors World Geography, World Geography, or Dual Enrollment in Geography) provides the best preparation for being a geography major.

When the interdisciplinary nature of geography is considered, the career possibilities in geography are endless. This research uncovered a problem in the APHG course that had a negative impact on students pursuing a career in geography. This problem is that career possibilities in geography are seldom discussed in the APHG course. Therefore, there is a need to identify different careers available with a geography degree and the number of job placements of undergraduate students in different careers by geography departments. Research on this has been done by the AAG and others, but it is important to keep this information up to date. Most importantly, determining which

strategies improve students' awareness of career possibilities in geography should be investigated.

Finally, one aspect that was not explored in this research is the compounding impact of placing the APHG course not only in the 9th grade, but also in underrepresented inner city school districts. Students in these school districts may be the most vulnerable to fail the APHG exam when the course is placed in the 9th grade. Many schools in the Houston school district in Texas are suffering from this compounding impact. None of the teachers interviewed in this research were from any of these schools. Future research should not only examine why 9th grade students in these schools are having problems on the APHG exam, but also investigate what the motivation is for encouraging students in these disadvantaged areas to take the APHG course and APHG exam, particularly in the 9th grade.

**APPENDIX SECTION**

**APPENDIX A FOCUS GROUP CONSENT FORM**

ID #: \_\_\_\_\_ Date: \_\_\_\_\_

Focus Group Leader: **Michael Scholz**

Participant Consent Form

I, \_\_\_\_\_, give my consent for **Michael Scholz** of Texas State University-San Marcos to interview me and video and audio-record our group conversation. I understand that this focus group is voluntary and is not intended in any way to be an evaluation of my individual performance, but, rather, is a component of research of the AP Human Geography Course. I understand that at any time during this interview I may decline participation. Further, my identity will not be revealed.

\_\_\_\_\_  
Name (print)

\_\_\_\_\_  
Participant signature

\_\_\_\_\_  
Date

As a researcher of Texas State University-San Marcos, I, **Michael Scholz**, agree to use an identification number for participants when presenting the results of this review. In order to protect participants' identities, no names or other identifying demographic information will be collected. Results will be reported as focus group findings and will not be used for purposes other than those related to this research.

\_\_\_\_\_  
Name (print)

\_\_\_\_\_  
Researcher Signature

\_\_\_\_\_  
Date



**APPENDIX B INTERVIEW CONSENT FORM**

ID #: \_\_\_\_\_ Date: \_\_\_\_\_

Interviewer: **Michael Scholz**

Participant Consent Form

I, \_\_\_\_\_, give my consent for **Michael Scholz** of Texas State University-San Marcos to interview me and video and audio-record our conversation. I understand that this interview is voluntary and is not intended in any way to be an evaluation of my individual performance, but, rather, is a component of research of the AP Human Geography Course. I understand that at any time during this interview I may decline participation. Further, my identity will not be revealed.

\_\_\_\_\_  
Name (print)

\_\_\_\_\_  
Participant signature

\_\_\_\_\_  
Date

As a researcher of Texas State University-San Marcos, I, **Michael Scholz**, agree to use an identification number for participants when presenting the results of this review. In order to protect participants' identities, no names or other identifying demographic information will be collected. Results will be reported as interview findings and will not be used for purposes other than those related to this research.

\_\_\_\_\_  
Name (print)

\_\_\_\_\_  
Researcher Signature

\_\_\_\_\_  
Date

## LITERATURE CITED

- American College Testing (ACT). 2008. *The forgotten middle: Ensuring that all students are on target for college and career readiness before high school*. College Readiness Report for ACT.
- Allen, J., G. Gregory, A. Mikami, J. Lun, B. Hamre, and R. Pianta. 2013. Observations of effective teacher-student interactions in secondary school classrooms: Predicting student achievement with the classroom assessment scoring system—secondary. *School Psychology Review* 42: 76-98.
- Angrist, J. D., and V. Lavy. 1999. Using Maimonides' rule to estimate the effect of class size on scholastic achievement. *Quarterly Journal of Economics* 114: 533-75.
- Bailey, A.J. 2003. Recruiting and preparing students for university geography: Advanced placement human geography. *Journal of Geography in Higher Education* 27: 7-15.
- Bailey, A.J. 2006. What kind of assessment for what kind of geography? Advanced placement human geography. *The Professional Geographer* 58: 70-77.
- Bailey, T., K. Hughes, and M. Karp. 2003. *What role can dual enrollment programs play in easing the transition between high school and postsecondary education?* Washington, D.C.: U.S. Department of Education, Office of Vocational and Adult Education.
- Balfanz, R., J. McPartland, and A. Shaw. 2002. *Re-conceptualizing extra help for high school students in a high standards era*. Washington, D.C.: U.S. Department of Education, Office of Vocational and Adult Education.
- Bandura, A. 1986. *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bausmith J.M. and V. Laitusis. 2012. *The impact of AP achievement institute 1 on students' AP performance*. College Board Research Report 2012-7. New York, NY: The College Board.
- Bednarz, R. S. (ed.) 2004. *A teacher's guide to advanced placement geography: Essays, strategies, and resources*. Jacksonville, Alabama: Geography Education National Implementation Project and National Council for Geographic Education.
- Bednarz, R.S., and S.W. Bednarz. 2004. Geography education: The glass is half full and it's getting fuller. *The Professional Geographer* 56: 22-27.

- Bergeson, J.B. 1966. *The academic performance of advanced placement program participants compared with non-participants at Northwestern University, 1965*. Unpublished doctoral dissertation, Northern Illinois University.
- Bergeson, J.B. 1968. An unanswered question about the advanced placement program: Do examination questions predict grades? *Journal of Higher Education* 39: 101-04.
- Blaschke, J. 2013. Texas State sets enrollment record for 16<sup>th</sup> consecutive year. *Texas State University News Service*. Uploaded on September 23, 2013 from [http://www.txstate.edu/news/news\\_releases/news\\_archive/2013/September-2013/Enrollment091613.html](http://www.txstate.edu/news/news_releases/news_archive/2013/September-2013/Enrollment091613.html)
- Boehm, R.G. 1997. The first assessment: A contextual statement In *The first assessment*, ed. R.G. Boehm and J.F. Petersen, 1-17. San Marcos, TX: The Grosvenor Center for Geographic Education.
- Booth, S. 2010. *2010 Report on the status of U.S. geography education*. Geography Education National Implementation Project Report. Washington D.C.: National Geographic Society.
- Borko, H., and R.T. Putnam. 1995. Expanding a teacher's knowledge base: A cognitive psychological perspective on professional development. In *Professional development in education: New paradigms & practices*, ed. T.R. Guskey. and M. Huberman, 35–66. New York, NY: Teachers College, Columbia University.
- Bransford, J. D., A.L. Brown and R.R. Cocking (Eds.). 2000. *How people learn: Brain, mind, experience, and school*. Washington, DC: National Academies Press.
- Breland, H.M., D.O. Danos, H.D. Kahn, M.Y. Kubota, and M.W. Bonner. 1994. Performance versus objective testing and gender: An exploratory study of the Advanced Placement history exam. *Journal of Education Measurement* 31: 275-93.
- Broward County School District Report. 2010. *Advanced Placement Program enrollment and results, 2007-08 through 2009-10*. Appendix D.
- Brown, D., S.D. Brown, A. Collin, R.V. Dawis, L.S. Gottfredson, G. Hackett, M.K. Johnson, R.W. Lent, J.G. Lenz, E.J. Luchetta, J.T. Mortimer, G.W. Peterson, R.C. Reardon, M.H. Richwine, J.P. Sampson Jr., M.L. Savickas, A.R. Spokane, and R.A. Young. 2002. *Career Choice and Development 4<sup>th</sup> ed.* ed. S.D. Brown. Ipswitch, MA: Jossey-Bass.
- Burdman, P. 2000. Extra credit, extra criticism. *Black Issues in Higher Education* 17: 28-33.

- Camara, W.J., and R.E. Millsap. 1998. *Using the PSAT/NMSQT and course grades in predicting success in the Advanced Placement Program*. College Board Research Report No. 98-4. New York, NY: College Board.
- Chajewski, M., K. Mattern, and E.J. Shaw 2011. AP participation and college enrollment. *Education Measurement: Issues and Practice*, 30: 16–27.
- Chatman, S., and K. Smith. 1998. Dual credit preparation for further study in foreign languages. *National Association of Secondary School Principals (NAASP) Bulletin* 82: 99-107.
- Chingos, M.M. 2012. The impact of a universal class size reduction policy: Evidence from Florida’s statewide mandate. *Economics of Education Review* 31: 543-62.
- Cho, H., P. Glewwe, and M. Whitley. 2012. Do reductions in class size raise students’ test scores? Evidence from population variation in Minnesota’s elementary schools. *Economics of Education Review* 31: 77-95.
- Cocking, D.J. 1990. Don’t throw the baby out with the bath water. *Gifted Child Today* 13: 13-15.
- College Board. 2002. *Advanced placement program course description: Human geography may 2002*. New York: College Board.
- College Board State Integrated Summary. 2010. *AP Exam Participation and Performance*. Florida Department of Education.
- College Board State Level Data. 2010. *College Board State Summary Reports for 2010*.
- College Board Program Summary Reports. 2001-2013. *Program Summary Reports 2001-2013*.
- College Board Course Descriptions. 2013. *AP Human Geography Course Description Effective 2013*.
- College Board Student Score Distributions. Reports. 2013. *Student Score Distributions by Subject 2013*.
- Cremin, L.A. 1988. *American education: The metropolitan experience, 1876-1980*. New York, NY: Harper and Row.
- Creswell, J. W. 2009. *Research design: Qualitative, quantitative, and mixed method approaches* (3<sup>rd</sup> ed.). Thousand Oaks, CA: Sage.

- Creswell, J. W., V. L. Plano Clark, M. Gutmann, and W. Hanson. 2003. Advanced mixed methods research designs In *Handbook on mixed methods in the behavioral and social sciences*, ed. A. Tashakkori and C. Teddlie, 209–40. Thousand Oaks, CA: Sage.
- Darling-Hammond, L. 1993. Reframing the school reform agenda: Developing capacity for school transformation. *Phi Delta Kappan*, 74: 752–61.
- Darling-Hammond, L. 2000. Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives*, 8.
- Darling-Hammond, L. 2001. *Doing what matters most: Investing in quality teaching*. New York, NY: National Commission on Teaching & America’s Future.
- DiLorenzo, R. 1999. Teaching advanced placement United States history in the urban, minority high school: successful strategies. *The History Teacher* 32: 207-21.
- Dodd, B., R. Fitzpatrick, and J. Jennings. 2002. *An investigation of the validity of AP grades of 3 and a comparison of AP and non-AP student groups*. College Board Research Report No. 2002-9. New York, NY: College Board.
- Dougherty, C., L. Mellor, and S. Jian. 2006a. *The relationship between advanced placement and college graduation* National Center for Educational Accountability: 2005 AP Study Series, Report 1. Austin, Texas: National Center for Educational Accountability.
- Dougherty, C., L. Mellor, and S. Jian. 2006b. *Orange juice and orange drink? Ensuring that “advanced courses” live up to their labels*. Austin, TX: National Center for Educational Accountability.
- Dougherty, C. and L. Mellor. 2009. *Preparation matters*. Report for National Center for Educational Achievement. Austin, TX: National Center for Educational Achievement.
- Dougherty, C., and L. Mellor. 2010. Preparing students for advanced placement: It’s a preK-12 issue IN *AP: A critical examination of the advanced placement program*, ed. P.M. Sadler, G. Sonnert, R.H. Tai, and K. Klopfenstein, 219-32. Cambridge, MA: Harvard Educational Press.
- Duffy, W.R. II, 2010. Persistence and performance at a four-year university: The relationship with advanced coursework during high school IN *AP: A critical examination of the advanced placement program*, ed. P.M. Sadler, G. Sonnert, R.H. Tai, and K. Klopfenstein, 139-63. Cambridge, MA: Harvard Educational Press.

- Elwell, D. B. 1967. *A history of the advanced placement program of the college entrance examination board*. Unpublished doctoral dissertation, Columbia University Teachers College.
- Ewing, M., W.J. Camara, and R.E. Millsap. 2006. The relationship between PSAT/NMSQT scores and AP examination grades: A follow-up study. College Board Research Report No. 2006-1. New York, NY: College Board.
- Falk, B., L., Darling-Hammond. 2010. Documentation and Democratic Education. *Theory into Practice* 49: 72-81.
- Ferguson, P. and S.T. Womack. 1993. The impact of subject matter and education coursework on teaching performance. *Journal of Teacher Education* 44: 55–63.
- Finley, M. K. 1984. Teachers and tracking in a comprehensive high school. *Sociology of Education*, 57 Ethnographic Studies of Education: 233-43.
- Finn, J. D., and C. M. Achilles. 1990. Answers and questions about class size: A statewide experiment. *American Educational Research Journal* 27: 557-57.
- Floden, R. E. 2001. Research on effects of teaching. In *Handbook of research on teaching* (4<sup>th</sup> ed.) ed. V. Richardsen 3–16. Washington, D.C.: American Educational Research Association.
- Foad, N.A., and P.L. Smith. 1996. A test of a social cognitive model for middle school students: Math and science. *Journal of Counseling Psychology*, 43: 338-46.
- Fund for the Advancement of Education (FAE). 1957. *They went to college early*, Evaluation Report No. 2: New York, NY.
- Garner, J. 2012. Freshman nine: Helping high school freshman be successful in AP human geography. *The Geography Teacher* 9: 3-5.
- Geiser, S., and V. Santelices. 2004. *The role of advanced placement and honors courses in college admissions*. Berkeley, CA: Center for Studies in Higher Education.
- General Education in School and College (GESC). 1952. *A committee report by members of the faculties of Andover, Exeter, Lawrenceville, Harvard, Princeton, and Yale*. Cambridge, MA: Harvard University Press.
- Geography Education Standards Project (GESP). 1994. *Geography for life: National geography standards 1994*. Washington D.C.: National Geographic Research and Exploration.
- Glass, G. V., and M. E. Smith. 1979. Meta-Analysis of research on class size and achievement. *Educational Evaluation and Policy Analysis* 1:2-16.

- Glesne, C. and A. Peshkin. 1992. *Becoming qualitative researchers: An introduction*. White Plains, NY: Longman.
- Goldhaber, D. D. and D.J. Brewer. 2000. Does teacher certification matter? High school teacher certification status and student achievement. *Educational Evaluation and Policy Analysis*, 22: 129–45.
- Gray, P.T., B.S. Hildebrandt, and R. Strauss. 2006. Advanced placement human geography: The first five years. *Journal of Geography* 105: 99-107.
- Greenwald, R., L.V. Hedges, and R.D. Laine. 1996. The effect of school resources on student achievement. *Review of Educational Research* 66: 361–396.
- Hansen, D., M. Gutman, and J. Smith. 2000. Scheduling AP classes in a 2x4 block schedule. *Phi Delta Kappan* 82: 209-211.
- Hansen, J.C. 1984. The measurement of vocational interests: Issues and future directions. In *Handbook of counseling psychology*, ed. S.D. Brown and R.W. Lent, 99-136. New York, NY: Wiley.
- Hanson, W.E., J.W. Creswell, V.L. Plano Clark, K.P. Petska, and J.D. Creswell. 2005. Mixed methods research designs in counseling psychology. *Journal of Counseling Psychology* 52: 224–35.
- Hanushek, E.A. 1999. Some findings from an independent investigation of the Tennessee STAR experiment and from other investigations of class size effects. *Educational Evaluation and Policy Analysis* 21:143-63.
- Hargrove, L., D. Godin, and B.G. Dodd. 2008. College outcomes comparisons by AP and non-AP high school experiences College Board Research Report 2008-3. New York, NY: The College Board.
- Hart, B., and T.R. Risley. 1995. *Meaningful differences in everyday experiences of American children*. Baltimore, MD: Paul H. Brookes.
- Hays, L. 2008. *2008 Pilot: Annual Report on the Status of U.S. Geography Education*. Geography Education National Implementation Project Washington D.C.: National Geographic Society.
- Herr, N.E. 1992. Administrative policies regarding advanced placement and honors coursework. *NASSP Bulletin* 76: 80-87.
- Hoffman, N. 2003. College credit in high school; Increasing college attainment rates for underrepresented students. *Change* 35: 43-48.

- Houston Independent School District. 2012. *Advanced Placement Report 2011-2012*.
- Hoxby, C. M. 2000. The effects of class size on student achievement: New evidence from population variation. *Quarterly Journal of Economics* 115:1239-85.
- Hyser, R.M. 1999. Is a 3 a C?: The reliability of the advanced placement United States history test for college credit. *The History Teacher* 32: 223-35.
- Information Technology Assistance Center. 2013. Personal communication with help desk worker. September 24, 2013.
- Ivankova, N.V., J.W. Creswell, and S.L. Stick. 2006. Using mixed methods sequential explanatory design: From theory to practice. *Field Methods* 18: 3-20.
- Jackson, C. K. 2008. Cash for test scores: The impact of the Texas advanced placement incentive program. *Education Next*, 8: 70-77.
- Jackson, C. K. 2012. *Do college-prep programs improve long-term outcomes?* National Bureau of Economic Research (NBER) Working Paper 17859. Cambridge, MA: National Bureau of Economic Research. Retrieved from: <http://papers.nber.org/papers/w17859>
- Jeong, D. W. 2009. Student participation and performance on advanced placement exams: Do state-sponsored incentives make a difference? *Educational Evaluation and Policy Analysis*, 31: 346-66.
- Jump, S. AP/IB specialist Houston Independent School District October 2011. Houston ISD AP data.
- Keng, L., and B.G. Dodd. 2008. *A comparison of AP and non-AP student groups in 10 subject areas* College Board Research Report No. 2008-7. New York, NY: College Board.
- Kerr, C. 1982. *The uses of the university*. Cambridge, MA: Harvard University Press.
- Klopfenstein, K. 2004. The advanced placement expansion of the 1990's: How did traditionally underserved students fare? *Education policy analysis archives* 12: 68.
- Klopfenstein, K., and M.K. Thomas. 2005. *The link between advanced placement experience and college success: Fact or fiction*. American Economic Association. Retrieved from [http://www.aeaweb.org/annual\\_mtg\\_papers/2005/0108\\_1015\\_0302.pdf](http://www.aeaweb.org/annual_mtg_papers/2005/0108_1015_0302.pdf)

- Klopfenstein, K., and M.K. Thomas. 2009. The link between advanced placement experience and early college success. *Southern Economic Journal*, 75: 873–91.
- Klopfenstein, K., and M.K. Thomas 2010. Advanced placement participation: Evaluating the policies of states and colleges IN *AP: A critical examination of the advanced placement program*, ed. P.M. Sadler, G. Sonnert, R.H. Tai, and K. Klopfenstein, 119-38. Cambridge, MA: Harvard Educational Press.
- Konstantopoulos, S. 2008. Do small classes reduce the achievement gap between low and high achievers? Evidence from project STAR. *Elementary School Journal* 108: 275-91.
- Konstantopoulos, S. 2011. How consistent are class size effects? *Evaluation Review* 35: 71-92.
- Krueger, A.B. 1999. Experimental estimates of education production functions. *Quarterly Journal of Economics* 114: 497-532.
- Krumboltz, J.D., A.M. Mitchell, and G.B. Jones. 1976. A social learning of theory of career selection. *The Counseling Psychologist*, 6: 71-81.
- Lacy, T. 2010. Access, rigor, and revenue in the history of the advanced placement program IN *AP: A critical examination of the advanced placement program*, eds. P.M. Sadler, G. Sonnert, R.H. Tai, and K. Klopfenstein, 17-48. Cambridge, MA: Harvard Education Press.
- Lagemann, E.C. 1983. *Private power for the public good: A history of the Carnegie Foundation for the Advancement of Teaching*. Middletown, CT: Wesleyan University Press.
- Laitusis, V. 2012. *An analysis of the relationship between school-level AP professional development activity and subsequent student AP performance*. College Board Research Report 2012-8. New York, NY: The College Board.
- Lanegran, D.A. 2011. The Growth of Advanced Placement Human Geography and its Impact on the discipline of geography In *Geographic literacy in the United States: Challenges and opportunities in the NCLB Era*. ed. G.S. Elbow, D.J. Rutherford, and C. Shearer., 73-77. Washington D.C.: National Council for Geographic Education.
- Lee, V.E., and S. Loeb. 2000. School size in Chicago elementary schools: Effects on teachers' attitudes and students' achievement. *American Educational Research Journal* 37: 3-31.
- Lent, R.W., K.C. Larkin, and S.D. Brown. 1989. Relation of self-efficacy to inventoried vocational interests. *Journal of Vocational Behavior*, 34: 279-88.

- Liben, L. S., and R. M. Downs. 1993. Understanding person-space-map relations: Cartographic and developmental perspectives. *Developmental Psychology* 29: 739-52.
- Liben, L.S. and R.M. Downs. 1997. Can-ism and can'tianism: A straw child. *Annals of the Association of American Geographers* 87: 159.
- Lichten, W. 2010. Whither advanced placement—now? IN *AP: A critical examination of the advanced placement program*, ed. P.M. Sadler, G. Sonnert, R.H. Tai, and K. Klopfenstein, 233-43. Cambridge, MA: Harvard Educational Press.
- Lichten, W. and H. Wainer. 2000. The aptitude-achievement function: An aid for allocating educational resources, with an advanced placement example. *Educational Psychology Review* 12: 201-228.
- Lu, Y. 2013. Personal Communication.
- Marcello, J.S. 2011. *AP human geography*. Washington D.C: National Council for Geographic Education.
- Mathews, A.J. 2013. Personal Communication.
- Mathews, A.J., Y. Lu, M.T. Patton, N. Dede-Bamfo, and J. Chen. 2013. College students' consumption, contribution, and risk awareness related to online mapping services and social media outlets: does geography and GIS knowledge matter? *GeoJournal* In Press.
- Mattern, K.D., E.J. Shaw, and M. Ewing. 2011. *Advanced placement exam participation: Is AP exam participation and performance related to choice of college major?* College Board Research Report No. 2011-6. New York, NY: College Board.
- Mattern, K. D., E.J. Shaw, and X. Xiong. 2009. *The relationship between AP exam performance and college outcomes* College Board Research Report 2009-4. New York, NY: The College Board.
- Meckna, S.H. 1999. Teaching advanced placement European history in a multi-ethnic urban setting. *The History Teacher* 32: 249-58.
- Mendels, P. 1999, April 28. Advanced placement courses offered online. *The New York Times*, 1-5.  
<http://www.nytimes.com/library/tech/99/04/cyber/education/28education.html>.
- Milesi, C., and A. Gamoran. 2006. Effects of class size and instruction on kindergarten achievement. *Educational Evaluation and Policy Analysis* 28: 287-313.

- Milewski G.B. and J.M. Gillie. 2002. What are the characteristics of AP teachers? An examination of survey research. College Board Research Report 2002-10. New York, NY: The College Board.
- Morgan, R., and J. Klaric. 2007. *AP students in college: An analysis of five-year academic careers* College Board Research Report 2007-4. New York, NY: College Board.
- Morgan, R. and B., Maneckshana. 2000 *AP students in college: An investigation of their course-taking and college majors*. ETS Statistical Report No. 2000-09. Princeton, NJ: Educational Testing Service.
- Morgan, R., and L. Ramist. 1998. *Advanced placement students in college: An investigation of course grades at 21 colleges*. ETS Research Report No. SR-98-13. Princeton, NJ: Educational Testing Service.
- Murnane, R. J., and B.R., Phillips. 1991. Learning by doing, vintage, and selection: Three pieces of the puzzle relating teaching experience and teaching performance. *Economics of Education Review* 1: 453–65.
- Murphy, A.B. 1998. Advanced placement geography: opportunities and challenges for geographers. *Journal of Geography* 97: 132-36.
- Murphy, A.B. 2000a. Geography's expanding place in American education. *College Board Review* 191: 2-6. Reprinted in a 2000 AAG Newsletter.
- Murphy, A.B. 2000b. Teaching advanced placement human geography. *Journal of Geography* 99: 93-97.
- Murphy, A.B. 2007. Geography's place in higher education in the United States. *Journal of Geography in Higher Education*. 31: 121-41.
- Murphy, D. and B.R. Dodd. 2009. *A comparison of college performance of matched AP and non-AP student groups*. College Board Research Report No. 2009-6. New York, NY: The College Board.
- National Assessment of Educational Progress (NAEP). 1990. *The geography learning of high school seniors*. Washington D.C.: US Department of Education, Office of Educational Research and Improvement.
- National Research Council (NRC). 2001. *Knowing what students know: The science and design of educational assessment*. Committee on the Foundations of Assessment. ed. J. Pelligrino, N. Chudowsky, and R. Glaser. Board on Testing and Assessment, Center for Education. Division of Behavioral and Social Sciences and Education. Washington, D.C.: National Academies Press.

- National Research Council (NRC). 2002. *Learning and understanding: Improving advanced study of mathematics and science in US high schools*. Committee on Programs for Advanced Study of Mathematics and Science in American High Schools. ed. J.P. Gollup, M.W. Bertenthal, J.B. Labov, and P.C. Curtis Jr. Center for Education. Division of Behavioral and Social Sciences and Education. Washington D.C.: National Academies Press.
- Nye, B., L.V. Hedges, and S. Konstantopoulos. 1999. The long-term effects of small classes: A five-year follow-up of the Tennessee class size experiment. *Educational Evaluation and Policy Analysis* 21: 127-42.
- Nye, B., L. V. Hedges, and S. Konstantopoulos. 2000. Effects of small classes on academic achievement: The results of the Tennessee class size experiment. *American Educational Research Journal* 37:123-51.
- Oberjurgel, M. 1999. Raising the bar: Historically disadvantaged students can meet the AP challenge. *The History Teacher* 32: 263-67.
- Onwuegbuzie, A. J., and C. Teddlie. 2003. A framework for analyzing data in mixed methods research. In *Handbook on mixed methods in the behavioral and social sciences*, ed. A. Tashakkori and C. Teddlie, 351–84. Thousand Oaks, CA: Sage.
- Paek, P.L., E. Ponte, I. Sigel, H. Braun, and D. Powers. 2005. *A portrait of advanced placement teachers' practices*. College Board Report No. 2005-7. New York, NY: College Board.
- Paek, P.L., H. Braun, C. Tranpani, E. Ponte, and D. Powers. 2007. *The relationship of AP teacher practices and student achievement*. College Board Report No. 2007-5. New York, NY: College Board.
- Paek, P.L., H. Braun, E. Ponte, C. Tranpani, and D. Powers. 2010. AP biology teacher characteristics and practices and their relationship to student AP exam performance IN *AP: A critical examination of the advanced placement program*, ed. P.M. Sadler, G. Sonnert, R.H. Tai, and K. Klopfenstein. 119-38. Cambridge, MA: Harvard Educational Press.
- Pfankuch, T. 1997, June 23. Students losing full advantage of advanced placement. *The Jacksonville, FL Times-Union*.
- Piaget, J., and B. Inhelder. 1954. *The child's conception of space*. New York, NY: Norton.
- Pong, S., and A. Pallas. 2001. Class size and eighth-grade math achievement in the United States and abroad. *Educational Evaluation and Policy Analysis* 23: 251-73.

- Pope, D. 2001. *Doing school*. New Haven: Yale University Press.
- Porter, A.C. and J. Brophy. 1988. Synthesis of research on good teaching: insights from the work of the institute for research on teaching. *Educational Leadership*, 45:74-85.
- Ratbun, A., J. West, and E.G. Hausken. 2004. *From kindergarten through third grade: Children's beginning school experiences*. National Center for Educational Statistics Report No. 2004-007. Washington, D.C.: National Center for Educational Statistics.
- Robinson, M. 2003. Student enrollment in high school AP sciences and calculus: How does it correlate with STEM careers? *Bulletin of Science, Technology, & Society*, 23: 265-73.
- Rossman, G.B. and B.L. Wilson. 1985. Numbers and words: Combining quantitative and qualitative methods in a single large scale evaluation study. *Evaluation Review*. 9: 627-43.
- Sadler, P.M. 2010. How are AP courses different? IN *AP: A critical examination of the advanced placement program*, ed. P.M. Sadler, G. Sonnert, R.H. Tai, and K. Klopfenstein 51-61. Cambridge, MA: Harvard Educational Press.
- Sadler, P.M., and G. Sonnert. 2010. High school advanced placement and success in college coursework in the sciences IN *AP: A critical examination of the advanced placement program*, eds. P.M. Sadler, G. Sonnert, R.H. Tai, and K. Klopfenstein 119-138. Cambridge, MA: Harvard Educational Press.
- Sadler, P.M., and R.H. Tai. 2007. Advanced Placement exam scores as a predictor of performance in introductory college biology, chemistry, and physics courses. *Science Educator* 16: 1-19.
- Santoli, S.P. 2002. Is there an advanced placement advantage? *American Secondary Education* 30: 23-35.
- Sharma, M.B. 2002. Advanced placement geography: El Dorado or pandora's box?. *Journal of Geography*. 101: 41-43.
- Smith, W., and T. Bender (Eds.). 2008. *American higher education transformed, 1940-2005: Documenting the national discourse*. Baltimore, MD: John Hopkins University Press.
- Swinton, J.R., T.D. Berry, B. Scafidi, and H.D. Woodard. 2010. Does in-service professional learning for high school economics teachers improve student achievement?. *Education Economics* 18: 395-405.

- Sublett, M.D. 2007. Advanced placement human geography and the annual meetings of the national council for geographic education. *Journal of Geography* 106: 21-28.
- Stoltman, J.P., B. Blouet, S. Hollier, A. Standish, and A. Conrad. 2005. Research opportunities with advanced placement human geography. *Research in Geographic Education* 7: 5-20.
- Super, D.E. 1957. *The psychology of careers*. New York, NY: Harper and Row.
- Tai, R. H., C.Q. Lui, J.T. Almarode, and X. Fan. 2010. Advanced placement course enrollment and long-range educational outcomes. In *AP: A critical examination of the Advance Placement program* ed. P.M. Sadler, G. Sonnert, R.H. Tai, and K. Klopfenstein 109-18. Cambridge, MA: Harvard Education Press.
- Tashakkori, A., and C. Teddie. 1998. *Mixed methodology: Combining qualitative and quantitative approaches*. Thousand Oaks, CA: Sage.
- Texas Education Agency Data. 2011. Advanced Placement and International Baccalaureate Examination Results from Texas 2010-2011.
- Texas Education Agency. 2013. *Advanced placement and International Baccalaureate General Information, 2010-2011*. Austin, TX: Division of Research and Analysis of the Texas Education Agency.
- US Department of Education. 1991. *America 2000: An education strategy*. Washington, D.C: US Department of Education.
- Watt, K.M., C.A. Powell, and I.D. Mendiola. 2004. Implications of one comprehensive school reform model for secondary school students underrepresented in higher education. *Journal of education for students placed at risk* 9: 241-259.
- Wenglinsky, H. 2002. How schools matter: The link between teacher classroom practices and student academic performance. *Education Policy Analysis Archives* 10 (12).
- Western Interstate Commission for Higher Education (WICHE). 2006. *Accelerated learning programs: Moving the needle on access and success* Publication No. 2A358. [http://www.wiche.edu/info/publications/Accelerated\\_Learning\\_Options.pdf](http://www.wiche.edu/info/publications/Accelerated_Learning_Options.pdf)
- Willingham, D.T. 2006. How Knowledge Helps: It Speeds and Strengthens Reading Comprehension, Learning—and Thinking. *American Educator* 30 (1).
- Willingham, W., and M. Morris. 1986. *Four years later: A longitudinal study of advanced placement students in college*. College Board Research Report 86-2. Princeton, NJ: College Board.