

**STUDENT LEARNING GAPS BETWEEN AP HUMAN GEOGRAPHY AND WORLD
GEOGRAPHY**

by

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DEDICATION

I dedicate this Directed Research project to my mom and dad. Thank you for always believing in me even when I doubted myself. You always wanted to see me succeed in my education, and I do not think I could have ever made it this far without your support. Dad, it has been a rough year without you, but I know you have always supported all my decisions, good and bad. I miss you, but I know you are always with me.

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LIST OF ABBREVIATIONS

Abbreviation	Description
Abbr	Abbreviation
AP	Advanced Placement
APHG	Advanced Placement Human Geography
CED	Course and Exam Description
COVID	Coronavirus
GMOs	Genetically Modified Organisms
ISD	Independent School District
NAEP	National Assessment of Educational Progress
NISD	Northside Independent School District
SBOE	State Board of Education
STAAR	State of Texas Assessment of Academic Readiness
TEKS	Texas Essential Knowledge and Skills

ABSTRACT

This directed research aims to address the growing number of students in Texas who take Advanced Placement Human Geography (APHG) in the ninth grade, and who may not be well equipped to take such a rigorous course. This project analyzed the differences between the APHG curriculum and the Texas Education Knowledge and Skills (TEKS) for World Geography Studies at the 9th grade level to better understand the rigor and skill required for incoming first-year high school students. A comparison of the AP Course and Exam Description with the TEKS was made to determine what specific knowledge and skills would be required of a student who enrolls in AP Human Geography versus a student who enrolls in World Geography Studies. For many 9th grade students in Texas, APHG is offered as a substitute for the on-level World Geography Studies.

Quantitative and qualitative data were collected and analyzed from secondary sources to help answer the question of when it is most beneficial for students to take APHG. Secondary data analyzed included APHG exam scores by grade level in Texas. Additionally, the similarities and differences in geographic content between the two courses were assessed to identify subject matter a student may not learn from taking APHG over the on-level world geography course. The major findings of this study prove there is merit in the growing concern of 9th grade students not being adequately prepared to take a rigorous course such as APHG. This study also shows that there are in fact gaps in geographic education curriculum when comparing a regular World Geography course with the curriculum of APHG. If 9th grade students have the foundational geographical skills of an on level regular World Geography course prior to taking AP Human Geography, it is more likely they will perform better on the AP Human Geography exam. This study helps compare geographic education curriculum with a regular World Geography course

with the curriculum of AP Human Geography to determine preparedness for an AP Human Geography course. If 9th grade students have the foundational geographical skills of an on level regular World Geography course prior to taking AP Human Geography, it is more likely they will perform better on the AP Human Geography Exam. The results of this study can inform efforts to find a solution as to how school district personnel can make better decisions for students in high school geography enrollments.

Keywords: Advanced Placement, human geography, world geography, achievement gaps.

I. INTRODUCTION

Geography education, compared to other social studies subjects, is inconsistent in terms of state graduation requirements. Many states prioritize other social studies subjects such as history over geography and therefore do not require a geography credit to satisfy high school graduation requirements (Zadrozny, 2022).

Texas, for example, has a combined requirement for geography at the 8th grade, meaning it is to be paired with either World History or U.S. History. Even though many high schools offer geography in the 9th grade, it is an elective and not a required course to graduate. After House Bill 5 passed in 2013, high school students only need three social studies credits to graduate high school in Texas. Those credits are typically fulfilled through U.S. History taught in the 11th grade, Government and Economics taught in the 12th grade, which leaves the option to take either World History or World Geography Studies to fulfil the final social studies credit to graduate (Zadrozny, 2022). Most districts require World History to fulfil that last credit which then leaves geography courses up as an elective.

The decision to require any type of geography course in high school is left up to individual school districts. Some school districts in Texas, though only required to fulfil three social studies courses, still decide to require the ninth-grade World Geography Studies course for graduation. Therefore, if a senior student transferred from a school district that did not require geography to graduate moves to a district that does require it, they may need to take a variation of geography whether it be World Geography or AP Human Geography to graduate.

Nationally, the number of 9th grade APHG test takers is higher than the number of any other AP Exams taken by 9th graders (Kaplan, 2021). “In the 2019 exam, roughly 69% (151,548) of test-takers were ninth graders” (Collins, 2022). This number has significantly increased since

2008, and it is especially high in Texas and Florida (Solem, 2022). It is also important to make note that in Texas and Florida, the pass rates are the lowest, which is anywhere from 40-46% from 2015-2019 (Scholtz, Scholtz, and Solem, unpublished ms.).

In this study, I focus on data associated with APHG exam participation and performance in Texas. In recent years, 97% of APHG test takers in Texas were students in the 9th and 10th grades (Table 1). Due to the increasing number of ninth graders taking APHG in Texas, it is important to look at the content in APHG and a regular World Geography course to examine the benefits of taking one course over the other.

Table 1: AP Human Geography Test Takers in Texas, 2019 Source: (College Board, 2019).

Grade Level	Percent of Test Takers
9 th and 10 th	97%
11 th and 12 th	3%

II. RESEARCH OBJECTIVE AND QUESTIONS

This study's objective was to determine if it is effective for students in Texas to take APHG in the ninth grade instead of the on-level World Geography Studies. To address this, I analyzed APHG exam participation and performance data and compared the conceptual framework of the APHG curriculum with the TEKS for the on-level World Geography Studies course. The analysis identified overlaps and differences in the curriculum. My project addressed two questions:

- 1) How has student participation and performance in APHG in Texas varied by grade level, race, and ethnicity over time?
- 2) To what extent does the AP Human Geography CED overlap with the World Geography TEKS?

To address my questions, I analyzed the average AP Human Geography exam score for different student groups over a five-year period (2015-2019). As a measure of program effectiveness, I calculated the percentage of students who earned a score of at least 3 on a 5-point scale to qualify for college credit and placement. Additionally, I analyzed the content and subject matter of the APHG curriculum and compared it to the recommended content for the ninth-grade World Geography Studies course in Texas. This analysis identified subject matter that students would have potentially learned had they taken World Geography Studies instead of AP Human Geography in ninth grade, and how this might have better prepared them for taking AP Human Geography as an elective course later in high school.

The research gap I focused on is the academic performance of Texas geography students in ninth grade. As mentioned before, geographic education in the United States has suffered for many years, however, there has been a great interest in APHG enrollment for students in 9th

grade. Many geography educators believe APHG's growth is a sign of interest in the curriculum. Unfortunately, the APHG exam scores often suffer because of the complexity of the course, which was not originally intended for 9th graders in high school. There is a need to better understand the academic outcomes of students who take APHG as a substitute for the World Geography course versus those who take the AP course later in high school. Understanding academic outcomes in geography education is important in determining continued and future interest in the geography discipline (Solem, 2022). This information can help educators decide the best approach on how to improve geography achievement and pique more interest in geography among students in Texas.

II. LITERATURE REVIEW

The common theme throughout my collected pieces of literature focuses on the academic performance of 9th graders taking APHG as opposed to an on-level World Geography course. From previous personal experience, the APHG curriculum framework is more impactful of students truly grasping the concepts of geography and applying them to the real world. Though the TEKS for World Geography are outlined in a conceptual way, as are the APHG standards, many geography teachers, who are often inexperienced, resort to teach through a textbook or by having students merely memorize facts. My literature review includes resources that specify APHG's relationship to national and state geography standards. I also review recent results from the NAEP Geography assessment to place my research questions in the context of student readiness for APHG success.

Geography Education Reform Movement

National Standards

Since the early 1980s, geography education has been undergoing a reform movement to improve geography teaching and learning in K-12 schools. This revolution began in 1984 with the *Guidelines for Geographic Education* in which the five themes of geography were introduced to provide a structure for teaching geography in K-12 schools. The Guidelines were created in response to the growing concern about the low level of geographic knowledge among students in the United States. The Guidelines were written to identify what students should know and be able to do. The purpose of the framework was to demonstrate that geographic education focuses on five central themes, how schools are able to integrate these themes into their programs and identify knowledge, skills, and perspectives students should be able to gain while studying geographic education. The five themes include location, region, place, relationships within

places, and movement. Teachers had the option to follow these guidelines strictly or to just be used as a guide throughout their geography classes. The Five Themes of Geography became a framework that many geography educators followed in their classrooms. For example, location helped understand the position of Earth's surface by understanding absolute and relative location. Place provides students with an understanding of physical and human characteristics. Each theme had specific targets and explanations for students to understand.

The *Guidelines for Geographic Education* also included guides on how the sequencing of geography should build on top of each other grade level after grade level. This was included for the elementary school level as well as the secondary education levels, so educators had a clear idea of where students should be and what kinds of geographic knowledge and skills they should have completed by the time students reached their classrooms. Along with this there were learning outcomes for each theme so educators had clear guidelines on how to build their geography curriculum.

Geography for Life: National Geography Standards were created in 1994 after adding geography as one of the five core subjects in the America 2000 reform plan (Edelson et al., 2013). *Geography for Life* was used by many schools as a structure in how to teach geography. Though helpful, it was a long document and not as easy to follow as the Guidelines which incorporated the Five Themes of Geography (Bednarz, 2013). In 2007 it was decided to “revise the national geography standards to reflect changes in the discipline of geography and the world” (Edelson et al., 2013).

The contents of *Geography for Life: National Geography Standards* included six essential elements. The first element is titled The World in Spatial Terms and focused on the ordering of knowledge and interpreting that knowledge into visual geographic representations.

The second element was where educators focused the bulk of their basic units which was Places and Regions. The third and fourth elements focused on physical and human systems, while the fifth element was Environment and Society, or human and environment interactions. The sixth and final element focuses on how students can better understand the past, present and plan for the future through the Uses of Geography. The changes were intended to provide a better way for students to “do geography” than just learn content through rote memorization.

In order to be successful in “doing geography,” it was helpful to have two key perspectives and follow the geographic inquiry process. Spatial Perspective and Ecological Perspective are the two specific geography perspectives discussed in *Geography for Life: National Geography Standards*. The spatial perspective is the understanding and appreciating how people live on Earth. Many geography teachers, including myself, refer this to our students as “the WHY of the WHERE.” In other words, why is it like that there. Asking questions is essential in geography education, and it was an important part in the *Geography for Life: National Geography Standards*. It notes the Geographic Inquiry Process which includes asking geographic questions, acquiring geographic information, organizing geographic information, analyzing geographic information and answering geographic questions.

The updated *Geography for Life* published in 2012 was focused and framed around these same core elements and perspectives but elaborated on the geographic skill section (Bednarz, 2013). The updated version focused on incorporating more hands-on tools in geography such as geospatial technologies for problem solving and continued to emphasize “doing geography” but adding the element of being an informed citizen and how to use geographic reasoning skills.

National Assessment of Educational Progress

Geography education in America's K-12 schools has not shown remarkable success over the years. The National Assessment of Educational Progress (NAEP) assesses K-12 students in several subjects, and over the years since 1994, geographic knowledge has been assessed by students in the 4th, 8th, and 12th grades. The results over the years have shown that there has been little to no gain in geographic learning in schools across the United States (Solem and Stoltman, 2020). This data is important to recognize because the two most recent assessments were conducted at the 8th grade level. Educators can use this data to help address gaps in geographic education, especially when it comes to offering AP Human Geography to 9th grade students as opposed to on-level World Geography. NAEP data also show achievement gaps associated with race, gender, and other student characteristics that can be used to better understand test scores (Solem, 2020).

Figure 1 shows that in 2018, three-quarters of 8th graders did not achieve NAEP subject area proficiency (Heafner, 2020). Focusing specifically on geography, "the geography report indicated that 75 percent of eighth graders are not proficient in the subject" (Solem, 2022).

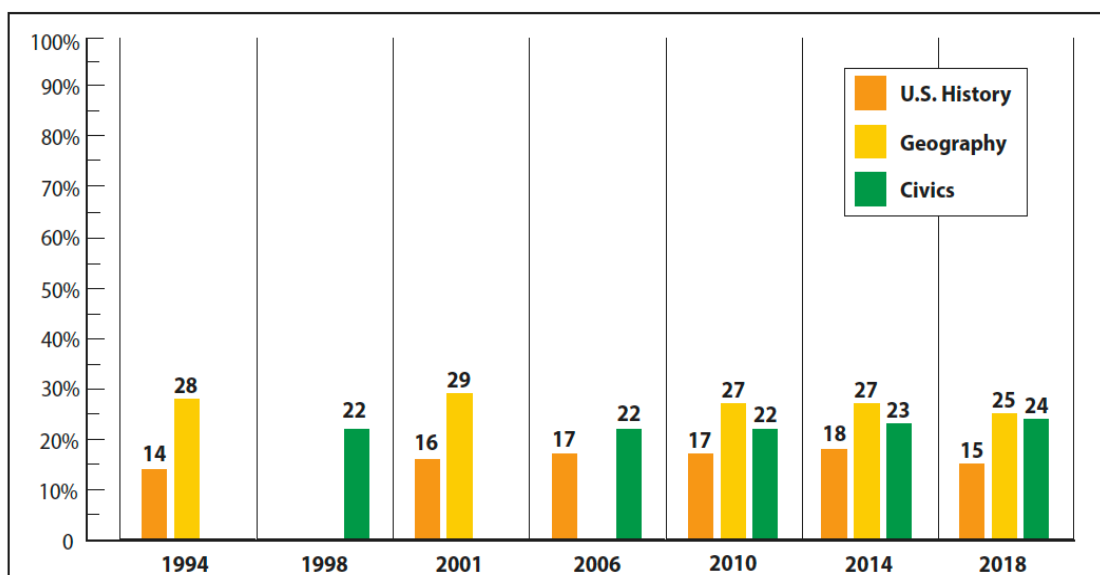


Figure 1: Percentage of Students at or above the NAEP Proficient Level by Year and Subject Area (Heafner, 2020)

AP Human Geography

APHG has come a long way since its introduction in 2001. Originally, AP Human Geography, like other AP courses, was created to give students an opportunity to obtain university credits in high school (Scholz, 2014). The growth of the AP program, including AP Human Geography, has been phenomenal yet mostly concentrated in a handful of states, with Texas being one of the top states with 9th grade participation. According to College Board's website, there are no prerequisites required to take AP Human Geography (AP Human Geography, n.d). They do offer a tool, AP Potential, in which students can log into their College Board account and enter their previous exam scores such as the PSAT or SAT scores. However, students who take the PSAT 8/9 exam only receive a score predicting their potential to do well in AP U.S. History and European History as high school sophomores. As such incoming 9th graders are not informed about their potential for success in AP Human Geography.

The APHG curriculum consists of the Course and Exam Description (CED) published by the College Board. The CED consists of seven conceptual units which includes the following: Thinking Geographically, Population and Migration, Culture, Political Geography, Agriculture, Cities and Urbanization, and Industry and Development. The course takes a spatial approach that “trains students to think geographically by focusing on patterns and processes that impact the cultural landscape” (Collins, 2022).

In Unit One, Thinking Geographically, students are engaged in learning basic geographic skills including different types of maps, map projections, understanding geographic information systems and how geographic data is collected, stored, and analyzed. They are also introduced to the daunting task of understanding scale and scale of analysis. From personal experience, this is a skill many 9th grade students struggle with, but it is important they understand how data can be analyzed at global, regional and local scales. In this unit, students are also introduced with major concepts they see throughout the course such as globalization, diffusion, and sustainability.

Unit Two is Population and Migration Patterns and Processes. In this unit students analyze population distributions around the world, and make connections on how population can have an effect on our natural resources. They use visual tools such as the demographic transition model and population pyramids to analyze and predict current and future population trends, which then they must decide appropriate governmental actions on whether to enact pro-natalist or anti-natalist population policies. They also use this information to understand dependency ratios and how aging populations can have economic strains on a society. Once the population section wraps up then students discuss different migration patterns and reasons for why people migrate from one place to another. They research current migration crisis’ and have to think about how these issues can affect not only countries of origin but receiving countries as well.

Unit three is Cultural Patterns and Process. Most of this unit is focused around the diffusion of cultural groups including their religion, language and popular culture. Students also must understand the difference between traditional cultures and popular culture and how many traditional cultures are privy to extinction.

Unit 4, Political Patterns and Processes, focuses on the political organization of a society. Students understand the contemporary map and the historical influences that contributed to the creation of our modern world. Students are to have a better understanding of governments, centripetal and centrifugal forces that can unite a society or tear them apart, leading to political conflict. Students also get an introduction into the United State voting process through the creation of voting districts.

Agricultural and Rural Land-Use Patterns and Processes, introduces students to different types of agriculture practiced around the world and what kinds of crops are grown where and why. They understand how advances in technology contributed to agricultural practices and how it has late to the creation of lab-created products such as GMOs.

Unit six ties in similar concepts from Unit 5, but rather than rural land-use, Unit 6 focuses on Urban Land-Use Patterns. In Unit 6 students are investigating the origins of civilizations and how cities have changed over time. They explore modern cities and their contribution to globalization.

The final unit is Unit 7, Industrial and Economic Development Patterns and Processes. In this unit students are introduced to factors that categorize countries into economic development. Students learn about economic and social indicators that help identify whether a country may be more developed, less developed or developing as well as economic theories that correlate with

those categorizations. Students build on their understanding of the Industrial Revolution and how that has contributed to improved national infrastructure and economic standing in the world.

Larianne Collins is a veteran APHG teacher who gained a passion for the subject and has since changed the course of her career to further study geography and geographic education. She continues to describe the continuous growth and popularity among the APHG course, as many articles that focus on the APHG course do, but despite the negative perceptions surrounding the rising number of ninth graders taking the course, Collins defended the course and promotes APHG to any student who can take it, no matter their age or grade level.

The APHG course's growth rate has "...exceeded that of any other AP subject..." (Langreran and Ziegler, 2016). Much of that growth, however, has been due to the increasing enrollment of 9th graders as opposed to students in upper grade levels. Specifically, in Texas, since geography is often offered as an elective course, APHG is offered as a substitute to on-level World Geography Studies (Zadrozny, 2022). Research done by Joann Zadrozny in the *Social Studies and Geography Survey for Middle and High School* shows the number of students enrolled in World Geography Studies, APHG has a World Geography Studies substitute, and APHG as an elective (Table 2).

Table 2: High School World Geography and APHG Course Enrollments in Texas, 2015-2022 (Zadrozny, 2022).

School Year	Course Title		
	World Geography Studies (W Geo)a	AP Human Geography (W GEO Substitute)	AP Human Geography (ELECTIVE)
2021-2022	338,195	62,152	621
2020-2021	324,324	63,469	545
2019-2020	328,928	58,318	314
2018-2019	326,621	53,318	331
2017-2018	324,555	48,943	200
2016-2017	331,829	41,966	451
2015-2016	325,555	36,517	233

Many think it may be ineffective to offer APHG to 9th grade students because they are not ready to take college level coursework (Berry, 2022). “While the enrollment in the APHG course has increased, the APHG exam pass rate (in this study, a score of 3 or higher is considered a passing grade and required for receiving college credit) has ranked near the bottom of all AP exams since 2007 (Scholz, et al., 2017). Table 3 shows the AP Human Geography scores from June of 2022, and we can see that the number of students who passed with a score of 3 increased by 1.4% compared to scores from 2021 (Packer, 2022). In 2022, the percentage of all students who took the AP Human Geography exam and passed with a score of 3 or higher was 53.2%. If we compare that to other AP subjects in social studies this number is significantly lower. For example, in 2022, the percentage of students who passed with a score of 3 or higher in AP European History was 58.9%, and those that passed with a score of 2 or higher in AP World History Modern was 62.1% (College Board, 2022).

Table 3: 2021-2022 AP Human Geography Exam Score Distributions (Packer, 2022)

AP Score	2021	2022
5	14.4%	14.7%
4	19.7%	18.7%
3	18.3%	19.7%
2	15.1%	15.1%
1	32.4%	31.9%

Dan Berry shared a study on 9th grade students who take AP Human Geography and how they perform regarding upper-class students. The fear is that if 9th grade students perform poorly on the AP exam, then they may be less likely to enroll in geography courses when students graduate from high school. From personal experience I find after my 9th graders take my AP Human Geography class, they seem uninterested in the content, but the disinterest typically seems to come from the amount of work required, not necessarily the content itself. “It is likely that none of these students will nurture good feelings toward geography and few will seek out geography when they reach the colleges or universities of their choice (Boehm alt. el, 2018).

Texas Essential Knowledge and Skills

The Texas Essential Knowledge and Skills (TEKS) are the state standards for what students should know and be able to do throughout their K-12 Education in Texas. The State Board of Education (SBOE) adopted the TEKS in 1997 and were developed to be more specific and to focus on Essential Elements (Technical Digest, 2011). The TEKS are reviewed and written by the State Board of Education (SBOE) consisting of educators, parents, business industry representatives and employers serving on the review working groups.

The TEKS had incorporated elements of the *Geography for Life* and aligned to high-stakes test and graduation requirements. Students who take APHG follow the Course and Exam

Description (CED), but some Texas school districts also require teachers to weave in the TEKS for students to obtain their geography credits for graduation.

In the Social Studies Report by Dr. Zadronzy, the Social Studies TEKS are broken down by each grade level to see exactly how geography is incorporated within each standard. It is concluded that geography is a separate standard in high school world geography studies (Zadronzy, 2022). The Texas Essential Knowledge and Skills for geography are due for a revision for the upcoming school year.

The Texas Education Agency (TEA) website is a public forum for anyone to look up the TEKS for all subject areas. In Texas, geography is taught as a strand, meaning geography can be found in the Social Studies of all grade levels. Aside from just a strand, World Geography is mostly taught at the 6th grade level and 9th grade level. The TEKS state that World Geography can be taught thematically. Some common themes found within the World Geography TEKS can include people, places, and environments at local, regional, national and international scales. Students also study the spatial and ecological perspectives of geography and describe the influence of geography on past and present events in history as well as contemporary issues. World Geography curriculum and how it is framed and taught is left up to individual school districts. Many teachers teach it regionally and incorporate those common themes throughout each region of the world, but there is no set curriculum for the state of Texas on how to teach World Geography as there is with the AP Human Geography CED outlined by the College Board.

III. METHODS AND RESULTS

I used a mixed methods approach for this Directed Research project. Mixed methods involve combining both quantitative and qualitative data (Creswell and Creswell, 2018). To address my research questions, I analyzed data from secondary sources: College Board AP Program Reports for Texas, the APHG CED, and the TEKS for World Geography Studies. The explanatory sequential mixed method approach follows the sequence of analyzing the quantitative data first, followed by content analysis of the APHG and World Geography curricula. This method was chosen to determine whether an APHG course is beneficial for high school 9th graders to take instead of the on-level World Geography Studies course.

AP Human Geography Exam Data

To address my first research question, I analyzed APHG exam participation and performance data in reports produced by the College Board from 2015-2019. This data was broken down into several distinct categories including race and ethnicity, and grade level. I focus my analysis on the data for race and ethnicity (White, Black, Hispanic) broken down by grade level because these student characteristics are consistently predictive of achievement gaps in U.S. geography education (Solem, 2023). It also is important to note that the College Board reports grade level results across all high school grade levels (ninth through twelfth) as well as separately for 11th grade and 12th grade. The purpose of this research was to focus on the participation of ninth graders, so when analyzing this data, it was necessary to find the data for all grade levels and then subtract the numbers for 11th and 12th grade. This gave me data for 9th and 10th graders but based on the information provided I would not be able to have exact data for ninth graders only. I also intended on including data specific for male and female 9th grade

students, however College Board did not provide data on gender for specific grade levels. The only data on gender that was readily available was for all grade levels.

Table 4 below shows the total exams and mean exam scores by grade level, specifically focusing on the combination of 9th and 10th graders together and 11th and 12th graders together. Data were gathered from 2015 to 2019. Because the data were not originally broken down for 9th and 10th grade students, to collect mean exam scores I had to first find the number of exams taken by 9th and 10th graders, then multiply those numbers by the AP score (5, 4, 3, 2 and 1). This gave me the total points received by all 9th and 10th graders, and that number was divided by the total number of exams taken by 9th and 10th graders to find the mean for 9th and 10th graders combined.

We can see that from 2015-2019 the number of 9th and 10th grade test takers have significantly increased within a 4-year timespan, confirming that most of the AP Human Geography exam takers are 9th graders. As this number goes up every year, we can also see that the mean score fluctuates over the years. We see a significant drop in mean score from 2016 to 2017, but then in 2019 it increases by .68 points. When compared to 11th and 12th grade mean exam scores, however, there is a difference with consistently lower scores for 9th and 10th graders. Ideally, scores should be above 3 to earn college credit. If we were to average the mean scores over this 5-year timeframe, we get an average exam score of 2.93 for 11th and 12th graders vs. an average score of 2.04 for 9th and 10th graders. It is also important to note that the mean scores for 11th and 12th grade students have been on a decline since 2015. In 2015, the mean score for 11th and 12th grade students were nicely above a score of 3 to obtain college credit, then in 2016 it was right at a 3, but from 2017-2019 the mean score drops below a 3 and remains inconsistent.

Table 4: Texas APHG total exams and mean exam scores by grade level, 2015-2019.

Grade level	2015 (N, μ)	2016 (N, μ)	2017 (N, μ)	2018 (N, μ)	2019 (N, μ)
9/10	(22,438, 2.09)	(29,505, 2.15)	(34,457, 1.59)	(39,361, 2.27)	(44,033, 2.14)
11/12	(2,871, 3.13)	(2,963, 3.0)	(2,707, 2.72)	(2,218, 2.92)	(1,748, 2.90)

Table 5 below shows the total exams taken in Texas and mean exam scores by grade level, race, and ethnicity. Across the board, no matter what ethnic group or race, the number of total exams taken increased each year for 9th and 10th graders. The common trend in total exams for 11th and 12th grade is a slight decrease, but this is not always the case. For example, the numbers for White and Hispanic/Latino 11th and 12th grade test takers increased from 2015 to 2016, but then declined the following years. This trend is also true for Black 11th and 12th grade exams in 2015-2016, except from 2017 to 2018 when there was a slight increase.

Race and ethnicity data collected by NAEP has suggested that very few Hispanic/Latino and little to no Black students in eighth grade perform at or above the NAEP-proficient level (Solem, 2023). We can clearly see this trend roll over into the AP Human Geography exam scores for Black and Hispanic/Latino students 9th and 10th grade students. Mean scores for Black 9th and 10th grade students were low at 1.71 in 2015, and then dropped to 1.63 in 2016 and to 1.59 in 2017. Hispanic/Latino mean scores at that grade level were even lower in 2015 at 1.60 and then increased just slightly in 2016 to 1.64, followed by a decline in 2017 to 1.55. The mean scores for Hispanic/Latino saw a significant increase in 2018 to 1.78, but then dipped back down

in 2019 to 1.69. According to TEA, Hispanic/Latino accounts for the highest student enrollment for 2019-2020 (TEA, 2020) yet they have the lowest mean scores of all race and ethnic groups.

Table 5: Texas APHG total exams and mean exam scores by grade level, race, and ethnicity, in Texas, 2015-2019.

Race/ ethnicity & Grade level	2015 (N, μ)	2016 (N, μ)	2017 (N, μ)	2018 (N, μ)	2019 (N, μ)
White 9/10	(8,138, 2.39)	(10,305, 2.51)	(11,145, 2.42)	(12,062, 2.66)	(45,164, 2.20)
White 11/12	(1,182, 3.30)	(1,214, 3.31)	(860, 3.26)	(773, 3.33)	(617, 3.25)
Black 9/10	1,742, 1.71)	(2,098, 1.63)	(2,408, 1.59)	(2,764, 1.88)	(3,214, 1.69)
Black 11/12	(174, 2.86)	(180, 2.45)	(142, 2.32)	(78, 2.32)	(93, 2.41)
Hispanic/ Latina 9/10	(7,362, 1.60)	(11,696, 1.64)	(13,954, 1.55)	(16,510, 1.78)	(18,733, 1.66)
Hispanic/ Latina 11/12	(814, 2.58)	(902, 2.44)	(1,110, 2.12)	(1,076, 3.12)	(640, 2.34)

Comparative Analysis of APHG CED and World Geography TEKS

When comparing World Geography TEKS to College Board's APHG CED, it is important to note that AP Human Geography is typically taught thematically and by topic outlined by the College Board whereas World Geography Studies units are based on world regions. Not all teachers chose to follow this guide, but this is how units are suggested and outlined in College Board's CED and currently how it is taught in the World Geography classroom at Sotomayor High School in Northside ISD. Figure 2 below shows the thematic units for AP Human Geography vs. the Regional Units typically taught in a World Geography classroom. Often in a World Geography classroom, thematic topics are applied to the Regional Units of World Geography. For example, when looking at the World Geography Unit of Latin America, students would learn about the population and migration patterns of Latin America, the culture of Latin America, the type of politics associated with Latin America, so on and so forth. In AP Human Geography, when students are learning about the Thematic Units, they are often using higher order thinking skills by making connections and explaining patterns among multiple locations in the world.

Having prior knowledge about specific locations and places in the world prior to taking AP Human Geography would help increase this understanding, but unfortunately this is not the case for many 9th grade students who take AP Human Geography.

AP Human Geography Unit	World Geography Unit
Unit 1: Thinking Geographically	Unit 1: The World
Unit 2: Population and Migration Patterns and Processes	Unit 2: The United States and Canada
Unit 3: Culture Patterns and Processes	Unit 3: Latin America
Unit 4: Political Patterns and Processes	Unit 4: Europe
Unit 5: Agriculture and Rural Land-Use Patterns and Processes	Unit 5: North Africa, Southwest Asia, and Central Asia
Unit 6: Cities and Urban Land-Use Patterns and Processes	Unit 6: Africa South of the Sahara
Unit 7: Industrial and Economic Development Patterns and Processes	Unit 7: South Asia
	Unit 8: East Asia
	Unit 9: Southeast Asia and the Pacific World

Figure 2: AP Human Geography CED Units vs. World Geography Units taught in NI

Within the curriculum, both subjects include topics and/or standards that students must be able to do to progress towards enduring understanding. Figure 3 below is a chart that shows the correlation between AP Human Geography Units and the World Geography TEKS. The World Geography TEKS are organized thematically. For example, Standards 1-2 are History focused, 3-9 are Geography focused, 10-12 are Economics focused, 13-15 are Government and Citizenship focused, 16-18 are Culture focused, 19-20 are Science, Technology, and Society focused, and 21-23 are Social Studies Skills focused. This

outline makes it easy to connect certain TEKS to specific units and topics to the APHG CED, however some TEKS do tend to get left out of the CED.

AP Human Geography Unit	TEKS Correlation
Unit 1: Thinking Geographically	1A, 1B, 2B, 3A, 3B, 6A, 8A, 8B, 8C, 9A, 9B, 11B, 12B, 13A, 17A, 19A, 19B, 19C, 20A
Unit 2: Population and Migration Patterns and Processes	1A, 1B, 2A, 5A, 5B, 7A, 7B, 7C, 9A, 11A, 12A, 13A, 16A, 17B, 18A, 20B
Unit 3: Culture Patterns and Processes	1B, 2A, 5A, 5B, 7D, 8A, 9A, 13A, 15B, 16A, 16B, 16C, 16D, 17A, 17B, 17C, 17D, 18A, 18B, 18C, 18D, 19C
Unit 4: Political Patterns and Processes	2A, 5A, 5B, 8C, 9A, 10A, 10B, 10D, 12B, 13A, 13B, 14A, 14B, 14C, 15A, 15B, 17C, 18A, 18B, 18D
Unit 5: Agriculture and Rural Land-Use Patterns and Processes	1B, 2A, 2B, 5A, 5B, 6B, 7D, 8A, 8C, 9A, 10A, 10B, 10C, 10D, 11A, 11B, 11C, 12A, 12B, 13A, 17C, 18C, 18D, 19A, 19C, 20B
Unit 6: Cities and Urban Land-Use Patterns and Processes	2A, 2B, 5A, 5B, 6A, 6B, 8B, 8C, 13A, 16D,
Unit 7: Industrial and Economic Development Patterns and Processes	2A, 2B, 5A, 5B, 6B, 7B, 7D, 8A, 8C, 10A, 10B, 10C, 10D, 11A, 11B, 11C, 12A, 12B, 14C, 15A, 16D, 18D, 19A, 19B, 19C, 20B,

Figure 3 APHG CED and TEKS Correlation Chart

Most of the World Geography TEKS align nicely within the AP Human Geography CED, however there are some TEKS that get left out. Regular World Geography curriculum focuses on a mixture of physical and human geography, therefore as we can see below in figure 4, the TEKS that do not necessarily fit within the AP Human Geography CED are related to physical geography. Some APHG teachers may find ways to incorporate these missing TEKS throughout the CED, but students that take AP Human Geography rather than World Geography are often expected to know how these physical processes work before understanding the relationship between human and physical features and vice versa.

Figure 4 shows a physical geography gap between AP Human Geography and World Geography. In AP Human Geography, the curriculum focuses on Environmental Determinism

vs. factors of Possibilism. The AP Human curriculum does not really focus specifically “how” landforms are made or the physical causes of the ocean currents. It is more focused on climate change, sustainability of earth's physical resources and how humans have impacts on the physical environment.

Other TEKS missing from the AP Human Geography CED include TEKS containing Social Studies Skills (21A-23C). These TEKS as shown in Figure 5 can, however, correlate to the course skills included in the AP Human Geography CED. In the APHG CED there are 5 Skill Categories. These include Concepts and Processes, Spatial Relationships, Data Analysis, Source Analysis, and Scale Analysis. These skills are typically scattered out throughout all AP Human Geography Units, and the CED provides the suggested skill for each unit. Similarly, the Social Studies Skills can also be scattered throughout the World Geography Units of Study. These skills are intended to help students build an understanding of not just the content, but the skills required to better understand the content.

World Geography TEKS	Student Expectation (Gap in Learning)
3C	Examine the Physical Processes that affect the lithosphere, atmosphere, hydrosphere, and biosphere
4A	Explain how elevation, latitude, wind systems, ocean currents, position on a continent, and mountain barriers influence temperature, precipitation, and distribution of climate regions
4B	Describe the different landforms and the physical processes that caused their development
4C	Explain the influence of climate on the distribution of biomes in different regions

Figure 4: Gaps in Student Learning between World Geography TEKS and APHG

Social Studies Skills in World Geography TEKS	Student Expectation (Gap in Learning)
21A	Analyze and evaluate the validity and utility of multiple sources of geographic information such as primary and secondary sources, aerial photographs, and maps
21B	Locate places of contemporary geopolitical significance on a map
21C	Create and interpret different types of maps to answer geographic questions, infer relationships, and analyze change
22A	Design and draw appropriate graphics such as maps, diagrams, tables, and graphs to communicate geographic features, distributions, and relationships
22C	Use geographic terminology correctly
22D	Use standard grammar, spelling, sentence structure, and punctuation
22E	Create original work using proper citations and understanding and avoiding plagiarism
23A	Plan, organize and complete a research project that involves asking geographic questions; acquiring, organizing, and analyzing information; answering questions and communicating results
23B	Use case studies and GIS to identify contemporary challenges and to answer real-world questions
23C	Use problem-solving and decision-making processes to identify a problem, gather information, and consider options, consider advantages and disadvantages, and implement a solution, and evaluate the effectiveness of the solution

Figure 5: Potential skills gaps in student learning between World Geography TEKS and APHG CED

V. DISCUSSION

The data collected and analyzed from the College Board AP Exam confirms that student participation in AP Human Geography has increased over time. This increase in participation is due to the increasing number of incoming 9th grade students that enroll into the course as a substitute for regular World Geography and sign up for the AP Exam as opposed to 11th and 12th grade students. The amount of AP exams taken by 11th and 12th grade students also sees an increase over time, however, the number of students taking APHG at those grades is not as drastic as the 9th and 10th grades. Because of the increase in ill-prepared 9th grade students who enroll and take the AP exam, I conclude that this is a contributing factor to the decrease in AP Human Geography exam scores over the years.

When we begin to break up the data and investigate students based on race and ethnicity, we can see some interesting trends that may contribute to the lack of pass rates for specific age groups. Starting in 2016, 9th and 10th Hispanic//Latino students accounted for more test takers than that of White and Black 9th and 10th grade students, however, the mean test scores are lower for Hispanic/Latino students compared with White students. This confirms that achievement gaps associated with race and ethnicity are present among the AP Human Geography exam takers. We can also see that mean scores for Black students were also lower compared with White students, both in 9th and 10th grades and in 11th and 12th grades.

The rigor required for students to take AP level courses is often quite the adjustment for incoming 9th grade students, and often they do not have the skills required to be successful in such a rigorous course. This can also contribute to student's self-efficacy and low performance on the AP Exam. According to Solem (2023, 2), a "student's interest in a subject diminishes in cases where that student develops weak self-efficacy or anticipates negative outcomes in that

subject.” Offering AP Human Geography to higher grade levels as opposed to 9th and 10th grade students prove to be more successful according to the data presented.

The AP Human Geography curriculum overlaps with a regular World Geography course to some degree; however, we do see geography achievement gaps in geography when comparing the two curriculums. Many of the key topics in the AP CED are found as recurring topics within each unit of study, and often students need to have some understanding of how to think spatially, analyze patterns and relationships between historical and contemporary concepts. In addition, students often need to have prior knowledge of how to apply these skills to geographic topics, but incoming 9th grade students lack this foundational knowledge and skill.

The AP Human Geography CED does not address the physical geography gap that is prevalent. Topics such as physical processes, describing different types of landforms, understanding climate and biomes are all topics that are addressed in the world geography TEKS. Students taking AP Human Geography in ninth grade will miss learning about those topics.

If students take regular World Geography prior to AP Human Geography, they stand to gain a foundation of geographic vocabulary, concepts, and thinking skills to build on. The result of my analysis shows that 11th and 12th grade students typically have higher mean scores on the AP Exam, and often they have had prior social studies courses such as World History and/or US History. Having this historical background before taking AP Human Geography would also help students do better in AP Human Geography exam.

I have been teaching in the state of Texas for five years, and within that time I have taught at two different school districts, Medina Valley ISD and Northside ISD. I have personally noticed a differences in how students are enrolled into AP Human Geography, but the ultimate

commonality seems that many 9th grade students do not always fully understand what the course entails when they are signed up. During my time at Medina Valley ISD there did not seem to be much of a recruitment process for students to sign up for AP Human Geography. My former students would often tell me their mom made them take the course and they do not even know what geography is. The only two options for geography in Medina Valley ISD was regular World Geography and AP Human Geography.

My current employment is in Northside ISD, and while I still had a few students tell me the same, most students had a better understanding of what the course entailed at the beginning of the year. My school in Northside ISD did a really good job recruiting to incoming 9th graders and explaining the “AP Pathway” throughout their high school careers. Typically, they push the concept of “obtaining college credit” as a 9th grader in order to increase enrollment in AP courses as a new high school student. In Northside ISD, 9th graders have the option of taking regular World Geography, Advanced Geography and AP Human Geography. There are talks of removing the Advanced Geography course in the near future because what counselors and administrators are noticing is that students are playing it “safe” with Advanced courses in order to get a slight boost in their GPA, however, they do not use the Advanced courses to transition into the Advanced Placement track as school personnel would prefer.

Recommendations

There are a few things that educators can do next to take this research even further. First, we can determine specifically what areas of Texas needed improvement in terms of APHG exam results. For example, researchers should address the pass rates in one city compared with another, and what factors contribute to higher and lower pass rates when we analyze data on a

larger scale. “Looking at individual states does not tell the whole story. APHG exam scores can vary from one part of a state to another and even from one school district to another” (Scholtz, Scholtz, and Solem, unpublished ms). I have been in education for only 5 years, but I have taught in two different districts and I have completed student teaching in an entirely different state. Even in my short amount of time in education, I can personally see that student population varies and teachers have to differentiate to accommodate for those diverse student populations. By knowing your students and understanding their needs will help educators better prepare students to be successful in an AP course.

Another area of need would be to break down the AP Human Geography data by male and female specifically for 9th grade students. The College Board has data collected specifically for male vs. female students, however, this data is cumulative of all grade levels. Next steps to achieve this would be to coordinate with TEA to see how researchers can acquire data for 9th grade male and female AP Human Geography test takers and analyze those groups.

Researchers can also analyze the 8th grade NAEP data more closely to determine what skills students should be proficient in before taking a rigorous course like AP Human Geography at the 9th grade. If we analyze the 8th grade NAEP data more closely we can determine what skills students should be proficient in before taking a rigorous course like AP Human Geography. For example, students who perform at the NAEP-proficient level may perform better in AP Human Geography than students who perform at the NAEP-basic level (Solem, 2023). There is no specific prerequisite course to AP Human Geography, but if we can realize there is a need for some prior geography knowledge and skill prior to taking AP Human Geography then administration and counselors can make better decisions on whether to enroll students into an AP level course or a regular Geography course.

We can also use the NAEP data to analyze trends specific to race and ethnicity. NAEP data has shown that very few Hispanic/Latino and Black students in the 8th grade have performed at or above the NAEP proficient levels (Solem, 2023), which is a similar trend when looking at the pass rates for Black and Hispanic/Latino students on the AP Human Geography Exam. Analyzing these trends more in depth would be useful to delve into this issue further to see how geography educators can help better prepare specific student groups to be more successful in geographic studies.

I have identified areas the AP Human Geography CED and the World Geography TEKS do not match up. We could take this even further by collecting hard evidence of actual geography content knowledge gaps. To do this, we would need to conduct a pre and post-test assessment. I imagine giving both incoming AP Human Geography students and World Geography students a previously released exam at the beginning of the school year. I feel like we could even give both students a regular World Geography pre and post-exam also and compare those results. Then, at the end of the year give students the tests again. The goal would be to see if students in the regular World Geography course performed better at the end of the year after having previous geography knowledge than the APHG students did at the beginning of the year that had none.

VI. CONCLUSION

This research addressed the trend of increasing 9th grade enrollment in AP Human Geography and how that correlates with the low APHG exam scores, specifically in Texas. The results of my research examined student outcomes by grade-level, race, and ethnicity. This research also compared the AP Human Geography CED to the World Geography TEKS to see what student expectations are left out in either course. There is a concern among the AP Human Geography community about high school first-year test scores being too low, so this data will help their research and benefit current and future AP Human Geography teachers to better prepare their 9th grade students for the AP Exam. This will also help pinpoint other systematic issues associated with race and ethnicity to find ways to improve exam scores across the board. With this information, geography educators can pinpoint exactly which student groups are more likely to struggle with the subject and differentiate instruction according to their specific needs.

This research identified geography curriculum that students who enroll in AP Human Geography potentially miss out on without taking a regular World Geography course. This information can be used to assess the extent to which ninth graders successfully acquire geography knowledge and skills by achieving a 3 or higher on the AP Human Geography exam vs. fail the AP Human Geography exam while not taking on level World Geography.

The major findings of this study were that over the last several years 9th grade enrollment in AP courses has been increasing dramatically and this fact alone coincides with the decrease in AP Human Geography Exam scores in Texas. There were certain racial and ethnic groups that performed better than others, and the next step is to analyze the causes of this to see improvement in test data. Researchers should analyze the data on a larger scale and get to the root of the problem if there are improvements to be. This also may imply that it is okay for

students to take regular World Geography courses rather than push the initiative of AP-level courses, especially if younger students are not adequately prepared for the rigor of AP.

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