A CONTEXTUAL VISUAL AND WRITTEN ANALYSIS OF NINTH GRADE PHYSICAL SCIENCE TEXTBOOKS AND THE REPRESENTATION OF AFRICAN-AMERICAN MALES IN OKLAHOMA FROM 1954 TO 1994

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PREFACE

This study was conducted to provide new knowledge to the historical, visual, and written numerical representation of African-American males in physical science textbooks adopted in Oklahoma. Textbooks are resources of visual and written information for the student. The Oklahoma State Department of Education adopts ninth grade physical science textbooks every six years. However, these textbooks may be less reflective visually of African-American males of the actual state and school population of the time period from 1954 to 1994.

The specific objectives of this study were to identify the number of (a) visual representations of African-American males in the physical science textbooks adopted from 1954 to 1994 for ninth-grade students in Oklahoma, (b) written representations of African-American male scientist in the physical science textbooks adopted form 1954 to 1994 for ninth-grade students in Oklahoma, (c) differences between the numerical visual representations of African-American male individuals and scientists in the physical science textbooks adopted by the state of Oklahoma from 1954 to 1994 and the representations of females and members of Asian, Caucasian, Hispanic and Native American ethnic groups.

It was suggested by the committee that the thesis title be changed. The original title has been changed, however the content remains the same with all integrity.

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Chapter I

Introduction

The visual and written textbook representations to which mainstream students respond are often different from those to which students who are not in the mainstream respond. Visual representations may lead students to different perceptions of their social environment. Factors that affect or even separate students are economic status, national background, religion, academic ability, race, sex, or a number of other characteristics (Thomas, 1965, p. 109). One's perception of their social environment is a key to his or her action. Peters (1973) states, "[I]n the evolutionary perspective, thought is an adaptive instrument for overcoming environmental difficulties" (p. 78). If textbooks are distorting the perceptions of African-American male students through visual and written representation, it is important to try to understand the extent of this representation in textbooks. This study addresses the issue of visual and written quantity of African-American male representations that were present in ninth-grade physical science textbooks used in Oklahoma public schools from 1954 to 1994.

Background

The representation in textbooks of African-American males, as well as of others who differ from the mainstream in race, ethnicity, and/or gender, are

important concerns of educators. It seems that much literature, both past and current, has given a negative image to America's citizens of color and to America's poor. Early examples of negative images or stereotypes of people of color are fixed firmly in newspapers, television, and even some school textbooks. Thomas (1965) states this about textbooks:

> In the minds of many American adults, certain ethnic groups have an inordinate amount of certain personality traits. These stereotypes of ethnic characteristics are reflected in such terms as hot-tempered Irish, conniving Jews, dirty Mexicans, lazy Negroes, dumb Swedes, furtive Japanese, inscrutable Chinese, hardheaded Germans, and stingy Scotch.
>
> Either by implication or direct instruction, many of these stereotypes are passed on by parents to their children. Stereotypes are also taught or reinforced by such media as movies. The greatest offenders in promoting stereotypes are not the motion [pictures] created today, since the producers of current films operate in an atmosphere of social conscience which presses hard for equal rights for minorities, at least in the public level, but the old movies, like Our Gang comedies and films from 1930's which are now seen on television. These films feature Negroes as lazy or jolly comedy characters, thus continuing to reinforce stereotypes. Some of the widely used textbooks for today's schools also support stereotypical concepts of ethnic groups and of people in other lands. Even though they are intended to be kindly, these texts fail to reflect the actual diversity of personality traits found within an ethnic strains." (pg. 37-38)

Wilson and Guttierrez (1985) further states:

> Generally, all ethnic minority characteristics in early films projected an attitudinal posture of White superiority. That attitude revealed itself on screen through the portrayal of minorities as inferior in two major capacities: intellect and morality. Virtually every minority characterization was designed to reinforce the attitude of White superiority. Given the low socioeconomic status of working-class Whites during the heyday of the industrial age, movie producers capitalized on audience insecurities by using minority stereotypes to bolster their self-esteem and reinforce racial attitudes. White insecurities, as reflected in the first 40 [forty] years of American popular cinema, were revealed to be a fear of miscegenation and the threat that minority cultures would have an impact on White social values.
>
> ...With the release of the technical epic The Birth of a Nation by D. W. Griffith (1915), movies began to institutionalize racial stereotypes. Griffith established a pattern, which would endure for decades, of portraying American Blacks as intellectually and morally inferior to Whites, and the film carried a strong message against sexual contact between the races. Perhaps the first film to openly proclaim the doctrine of White Supremacy over Native American Indians was William S. Hart's The Aryan, which was released in 1916. One of the titles projected across the screen of this silent movie also played to the fear of miscegenation and read in part "Our women shall be guarded. (pg. 78-79)

Textbooks used by students during this time period may have help structure negative psychological attitudes. This was being done both by what textbook authors state [write] and picture [visual] and by what they choose to

omit. Traditionally, textbooks are representations of middle-class values. Schubert (1986) states:

> Curriculum writers such as Apple and Giroux argue that schools essentially reproduce class hierarchies and inequities by failing to attend critically to the knowledge they provide as curriculum. For example, the textbook that predominates in most classrooms can be seen as symbolizing knowledge as a commodity received from experts as contrasted with knowledge as something produced by ordinary experience. One might argue that children who learn to see knowledge as a received commodity begin to view themselves primarily as clients, patients, and spectators, as well as students. Anyon and others provide evidence that children of different social classes are treated differentially by hidden curriculum in schooling. Children from higher social classes are treated as being capable of generating knowledge while those of low classes are thought to be docile recipients of it. The message that upper classes control production of values and knowledge as well as material commodities is transmitted by schools, while they also depict lower classes as consumers of the same. Knowledge and values, to put it blatantly, are treated similarly to soaps, deodorants, soft drinks, beer, and automobiles on television ads. (p. 106)

For many African-American students, the value system upon which textbooks are based may be one about which they know little. Therefore, many ninth grade African-American males often learn through textbooks to devalue and reject their own environment. They learn to embrace a social environment that is essentially middle class and Euro-centric or reject the system and get angry.

Public schools are led by systematic policies and procedures designed to create a community which provides equal opportunity for its citizens. Thomas Jefferson and other advocates of free public schools believe fervently that an educated populace is the lifeblood of democracy (Comer, 1988). Implementation of this ideal has been hampered, however, by such problems as segregation, classism, racism, and gender bias. From its very beginning the United States has been troubled with contradictions between its democratic ideals (the promise of equality for all) and its denial of equality to Blacks striving to right these wrongs. Amendments to the Constitution and Civil Rights laws passage during the 1860's and 1870's protected free slaves in the areas of housing employment, and education (Robinson and Spitz, 1986, pg. 84-100).

Traditional educational theory and practice have been modified over the years in recognition of the diversity of children entering schools. However, many parents still find that the curriculum seems to exclude their children. In addition, other issues such as inequity in school funding have created underlying systematic problems. Thus, the question still remains: Do public schools offer textbooks that have a subject matter which is representative (visual and written) of the educational experience of minority students and which encourage minority students to achieve?

During the civil rights movement of the 1960s civil rights leaders spoke of a need for change in racial participation in educational institutions. Racial segregation caused many citizens (minorities or especially people of color) to fall behind socially, economically, and educationally. Segregation forced many to play catch-up in the education game. The Black leaders of this period suggested that America's educational theory and its practice were exclusive rather than inclusive. In his "I have a Dream" speech, (King, 1963) states, "that America has

defaulted on the promissory note" given to her citizens of color. Sleeter and Grant (1988) states:

> Education is a form of socialization. The purpose of education is to modify behavior, to make the individual a different person from what he would otherwise be. It is for this reason that educational policy is always social policy and that, in the modern world, the school is employed, deliberately, for the achievement of definite social purposes, becomes, in fact, a crucial element in national policy. (p. 113)

It was during this period of social change integration policies made visible unkept promises and unfair educational treatment in our nation's schools. The social movements of the 1960s clashed with both theory and practice in education. Gradually, the promise of equal education for all began to dominate traditional educational policies and procedures. However, many schools were reluctant to implement educational changes. Sleeter and Grant (1988) also found, "School desegregation meant that in many cases, people of color and White people would have to share the same facility (school)." This reluctance often had far-reaching effects. Comer (1988) states:

> In the 1960's I began to speculate that the contrast between a child's experiences at home, and those in the school deeply effects the child's experiences at home, and those in the school deeply affects the child's psycho-social development, and this in turn shapes academic achievement. The contrast would be particularly sharp for poor children from families outside the mainstream. If my hunches were correct, then the failure to bridge the social and cultural gap between home and school lie with these children. (p. 43)

In his book Savage Inequalities, Kozol (1991) adds that many view the nonwhite school population in our nation as "expendable" (p. 8). Such a view of the nonwhite population, and of the poor in some cases, implies that educators are continuing to use biased curricular material that promotes this thought. The school population becomes expendable through the influence also of such "silent social changes" as tracking and testing. Oaks (1992) states, For example, "tracking structures are firmly widespread and historically rooted beliefs about human capacity and individual group differences" (p. 44).

Teachers are agents of change in the educational system. Textbooks are the teachers' chief tool through which change occurs. Textbooks that reflect negative influences to a student's own experiences are becoming a major concern for society. "To what degree students are influenced by textbooks and by teachers has not been extensively investigated," states Jackson (1992). Its undeniable that textbooks are curricular guides for teachers. But, the connection they have to the individual student's educational experiences are not as clear.

The student diversity in school classrooms today lessens the likelihood that all students will identify with the ideals espoused in textbooks. The experiences many bring to the classroom may conflict with those of the dominant culture whose norms, values, and traditions are visually represented in textbooks. Yet effective use of the textbook is essential for academic success. Thus, it is imperative that textbooks be as representative of the various cultures for the student population reflects as possible.

Nevertheless, few textbooks include little evidence of the African-American culture. Some educators feel such omission can effect African-American students' perceptions of their capabilities and influence their behavior. It may be a factor in causing some students to be what Finn (1991) classified as "masked" as at risk students. This status applies to "pupils whose learning problems go

unnoticed because they call little attention to themselves through misbehavior or by grades that are completely failing" (Finn 1991, p. 30).

Are textbook authors designing textbooks, especially physical science textbooks, to reflect diversity? Are the goals and objectives presented in texts inclusive of all students as opposed to exclusive? Designing or reconstructing curriculum material to reflect diversity not only will help a student gain success but also will help the educator in their classroom presentation. The reconstructionist theory contends that schools can and should lead the way to social improvement (Schubert, 1986, p. 205). Reconstruction theory goes beyond using textbooks as systematic socialization tools and advocates using textbooks to improve society culturally. The textbook is a cultural artifact. The classroom relationship between the teacher and student becomes ineffective if the content of the textbook does not reflect cultural diversity. Meaningful experiences that are organized to express cultural inclusion and exclusion determines whose knowledge gets into the curriculum and pedagogical practices known as the "totalizing principle" (McCarthy, 1990, p. 84).

The question of whose cultural knowledge and language are honored becomes an important issue in the textbook. The visual and written representation use in textbooks are to help students make connections to meaningful educational experiences. Unfortunately, this issue often serves as a silent factor by which students are classified. Sleeter and Grant (1988) states:

> For example, lower-class students tend to be sorted into lower-ability and remedial classes, while upper-class students tend to be sorted into college-bound classes. On the surface, this process appears fair because it uses objective testing and professional guidance. Once sorted, students learn to view their own status as acceptable and learn to relate to each other in a leader-follow

> fashion. The status quo is reproduced, but in a manner that appears natural of their group rarely make notable achievements, contributions, or political decisions, children of oppressed groups often see themselves and their group as powerless and worthless....If the Black female child sees few Black women who seem to have contributed anything of social value, implicitly she is being taught that Black females-herself included-must not have much to contribute. This is a message of powerlessness and hopelessness. (p. 114)

A message such as this may lead the teacher-student behavior relationship toward a "self-fulfilling prophecy." Neito (1992) states, "The term self-fulfilling prophecy, coined by Merton in 1948, means that students perform in ways in which teachers expect." Neito (1992) reports that research implies "teachers have overwhelming, and indeed the sole, responsibility for students' achievement or lack of it" (p. 29). Teachers who are aware of the reconstructive literature may question the visual representation in textbooks of a diverse student population. Silver (1983) further states:

> A related body of research-on Pygmalion effects or self-fulfilling prophecy-indicates that teachers' expectations regarding student achievement affect the achievement levels students attain. In addition, teachers' differential expectations regarding the achievements of groups of youngsters-minority group children and majority group children, middle class children and poor children, female and male children-result in differential achievements of those groups, not because of a mystical transference of beliefs from teacher to student but because teachers systematically behave differently toward different groups of students. (p. 344)

Public school teachers who use state-adopted textbooks must become aware of how diversity is represented visually and written, especially in physical science textbooks. Physical science classroom instructional media are to encourage students to reach specific science standards. The creation of science standards occurs at the national, state, and local levels of education. Some teachers are not likely to connect these standards to a diverse classroom culture and may thus unconsciously label students. Neito (1992) states, "[A]lthough a small number of these teachers are convinced that their students of color and/or poor students are genetically or culturally inferior and simply want verification of their racist and classist beliefs, this is certainly not true in the vast majority of cases (p. xxiii)." Are societal standards verifying institutionalized racism, classism, sexism and genderism, beliefs? Sleeter and Grant (1988) states:

> Ethnic psychological captivity is [a stage] experienced mainly by members of oppressed social groups who internalize society's negative perceptions of them...[1] Individual experiences ethnic psychological captivity when he or she "inoculates" the negative ideologies and beliefs about his/her ethnic group that are institutionalized within society. Consequently, he/she exemplifies ethnic self-rejection and low self-esteem. (p. 86)

These stages certainly may or may not be true in the majority of cases for textbooks representing African-American males. Bronfenbrenner (1975) states:

> Educators who observe these signals [diversity] are truly ahead of their time, because America's schools are "browning in the classrooms". Schools have been socially segregated for society by social changes. As a result the schools have become one of the best breeding grounds of alienation in American society. (p. 499)

A visual and written analysis of physical science textbooks may indicate that African-American male students are being less represented by authors of textbooks and/or of teachers. The question is how can a student begin to recognize visual representations are ways in which societal standards becomes part of his/her educational experience in physical science? Teachers' and textbook authors' expectations may reflect negative (nonconformist) or positive (conformist) attitudes toward a diverse student population. Neito (1992) notes:

> At the beginning of the school year, the teacher made subjective evaluations of her students based on this [teacher and textbook author expectation] ideal type. By the end of the school year, the teacher's differential treatment of children based on who were the "fast" and "slow" learners became evident. The "fast" learners received more teaching time, more reward-directed behavior, and more attention. The patterns between the teacher and her students then took on a "castelike" appearance. The result, after three years of similar behavior by other teachers, was that this behavior toward the different groups became an important influence on the children's achievement. (p. 30)

Textbooks provide instruction for the dominant cultural needs that separate students into fast and slow learners. Textbooks designed for the educationally challenged (i. e., special education) and the gifted and talented students are good examples to support this point. A review of current teacher expectation literature for a student conclude that if race is not present as an issue, teachers' expectation is often based on the social class of the student. Neito (1992) found that expectations for poor children were lower than those for middle-class children. Perhaps the underlying issues which most notably affect teacher expectations are social class and race. Furthermore, social class has its

stratification into subgroups, with each subgroup having its own class values and sensitivities.

Textbooks need to keep pace with the changing society and its diversity. Jackson (1992) points out that school subjects "succeed, at least in terms of survival, only when the disjunctures between what is taught and what is publicly acceptable do not become too great" (p. 440). Educators need to determine whether what is being taught or close to society's expectations regarding African-American males of the 1954 Brown Supreme Court decision.

Statement of the Problem

Although few teachers teach exclusively from textbooks, textbooks are and always have been instrumental in determining the content of public school classes. Students who understand the content of the textbook are more likely to succeed in school than those who do not. However, some textbooks companies seem to keep representations of culturally diverse students out of school textbooks and out of mainstream society. Most textbooks are written toward traditional European-centered thought. McCarthy (1990) indicates:

> Changing textbook content is one way to be sensitive towards students' role expectations. Textbooks are important curriculum components in schools that reinforce dominating European American perspectives and sustain stereotypes [of] groups perceived to be outside the mainstream. These findings are not new. A 1949 comprehensive analysis of 300 textbooks revealed that many of them perpetuated negative stereotypes of "minority groups". (p. 75)

Undeniably, textbooks, as well as schools, must be sensitive to cultural needs. Neito (1992) observes that when schools are culturally sensitive and make sense to the students, the students tend to succeed. Yet, textbooks are printed for the dominant culture. For example, publishers print textbooks with attractive bindings, color photos, attractive covers, plenty of activities to keep students occupied, while maintaining traditional content with which teachers are familiar, and noncontroversial content that prevents public protest (Shubert, 1986).

The Supreme Court 1954 decision in the Brown v. Board of Education case underscores the need of schools to be culturally sensitive. The court decision ruled that public schools must be desegregated "with all deliberate speed." It ruled that schools separated on the basis of race were not equal. Educating the citizenry of a state is the state's business. The Tenth Amendment to the U. S. Constitution specifies that powers not delegated to the United States, are reserved to the states, or to the people (Guthrie, 1978).

It follows that textbook adoption criteria should reflect the schools' desire to be culturally sensitive. These criteria should acknowledge that visual and written representations are significant. As Markaramankee (1985) points out, textbooks are "important instructional materials, and illustrations are significant components of most textbooks. Certainly the variety of visuals used (e.g., drawings, photographs, graphs) provide different effects on student learning" (p. 6).

A textbook remains on the adoption list of the Oklahoma Department of Education for six years. Obviously, textbook information may change during a six-year period. However, it is expensive to change a textbook content. Therefore, school funding and social economics are underling issues that affect textbook adoptions. Nevertheless, schools need to update their textbook selections often enough to keep them culturally sensitive.

Purpose of the Study

This study focuses, in quantitative terms, on the visual and written representations of African-American males in twenty ninth-grade physical science textbooks adopted by the state of Oklahoma between 1954 and 1994. The study has an historical dimension by having the investigation date from the year of the Brown v. Board of Education decision of 1954. This research determines whether the visual and written representations of African-American males are significantly different in the physical science textbooks adopted after the 1954 Brown decision from the representations in the textbooks adopted before the Brown decision. It further determines whether these representations results in a positive or a negative image of African-American males during the years between 1954 to 1994.

Objective of the Study

The objective of this study is to provide insight regarding the effectiveness of the physical science textbook used in ninth-grade classes in Oklahoma between 1954 and 1994. Specific attention is directed to the numerical visual representation of the African-American male.

Significance of the Study

Persons who are responsible for the selection of instructional materials need to be well informed in order to make appropriate decisions for cultural transmission. They need to be aware, as is (Peters 1973, p. 78), that if education is to transmit what is intrinsically worthwhile, "thought is an adaptive instrument

for overcoming environmental difficulties and it should not be "geared purely to the production of technicians to keep the wheels of industry turning." It must also help shape individuals who have a sense of wholeness, a sense of self.

Seemingly minute statements and/or actions can greatly influence one's sense of self. A case in point is what Claude Steele, a noted Stanford University social psychologist, terms "stereotype threat." "Stereotype threat can cause an anxiety so disruptive that it impairs intellectual performance. The victim may reject the stereotype, yet can't avoid the glare" (Woo, 1995, 2A).

In a study Steele conducted with Joshua Aronson of the University of Texas, they speak of "situational pressure" caused by pervasive negative performance. The pressure can be prompted by something as trivial as asking a student to identify his race before taking a test. "When blacks were asked to state their race, they scored dramatically lower than whites. But when the race question was absent, their scores matched those of whites" (Woo, 1995, 2A). Steele and Aronson suggest that self-doubt combines with stereotypes when a test-taker faces a difficult question.

Although Steele's investigations, which began in the late 1980s, focus primarily on blacks, he has established that stereotype-vulnerability is not restricted either by race or by gender. A Steele-Aronson study found that the scores of white men "plummeted" in text situations that implied that their mathematical ability would be compared with that of Asians. Holland, Michigan, the researchers found that stereotyping women as "mathematically inept" had a negative effect on the test performance of women (Woo, 1995, 2A).

These findings suggest that the visual representations of African-American males in textbooks may influence the performance of African-American male students. An investigation regarding the frequency of these representations are warranted.

Hypotheses

The following hypothesis relate to the research question in this study:

1) There are significant numerical relationships between the visual written representations of African-American male individuals ethnicity in the physical science textbooks adopted in 1954 to 1994 for ninth-grade students in Oklahoma and the physical science textbooks adopted between 1954 and 1994 in Oklahoma.

2) There are significant numerical relationships between the written representation of African-American male scientists in the physical science textbooks adopted in 1954 to 1994 for ninth-grade students in Oklahoma and the physical science textbooks adopted between 1954 and 1994 in Oklahoma.

3) There are significant differences in the visual representations of African-American male scientists ethnicity in the physical science textbooks adopted in 1954 to 1994 for ninth-grade students in Oklahoma adopted between 1954 and 1994 and the representations of males and of members of Asian, European, Native-American, and Hispanic groups in Oklahoma.

Conception Assumptions

The following assumptions apply to this investigation:

1) The American educational system is a reflection of American society in which the representation in the sciences by people of color (especially African-American males) are relatively small. Textbooks are guides used in the classrooms to help the student gain an understanding of career opportunities in science or other careers through culturally fair curriculum. Rowser and Koontz (1995) states:

> First, the culture-fair curriculum acknowledges and professes the mathematical contributions of many cultural groups. Rarely do history textbooks acknowledge that many cultures contributed to the development of mathematics as it is known today.
>
> Appropriate role models should be invited to the classroom to enhance student motivation and to share with students real-world applications of mathematics [and physical science]. An [African-American] engineer-test car driver, for example, was invited into a classroom to discuss how mathematics and physics helped people better design car tires for comfort, fuel economy, and safety." (p. 451)

A school is defined as good to the extent that it nurtures in its pupils the conviction that education is a lifelong experience of meaningful action through social politics. The basic aim of education is self-realization of the individual (Peters, 1973).

2) School systems which are not sensitive to the changing community and its changing classroom may find that they are using biased textbooks not only regarding people of color but also in such areas as gender, socio-economic class, and cultural values. Science textbooks may imply that the student should become a scientist; however, there are covert messages present indicating that the student must be able to understand specific systemic social roles and expectations of the scientist. The student must understand that there are institutional and systematic barriers such as (1) gifted and talented programs, (2) science and magnet schools, (3) testing relevancy (how to take the test), and (4) underlying socio-economics designed to limit the number of competent

individuals in a democratic but capitalist society. A student's access to an educational opportunity is important.

3) The cultural impact of middle-class textbooks in the physical sciences and of teacher values may isolate students from their own cultural background. Such isolation may cause students either to reject the idea of being a scientist or to accept the idea of being a scientist based on various cultural opportunities and experiences.

Definitions of Terms

Terms that have particular significance to the study are as defined in the definitions.

African-American: Black. A person having origins in any of the black racial groups of Africa (U. S. Bureau of the Census, 1995).

American Indian: Native American. American Indian. A person having origins in any of the original peoples of North America, and who maintains cultural identification through tribal affiliation or community recognition (U. S. Bureau of the Census, 1995).

Anglo-American: White. A person having origins in any of the original peoples of Europe, North Africa, or the Middle East (U. S. Bureau of the Census, 1995).

Asian: A person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area

includes for example, China, India, Japan, Korea, the Philippine Islands, and Samoa (U. S Bureau of the Census, 1995).

Chi Square: Chi square, symbolize as x^2, is a nonparametric test of significance appropriate when the data are in the form of frequency counts occurring in two or more mutually exclusive categories. A chi square is not appropriate when data in the form of test scores. A chi square test compares proportions actually observed in a study with proportions expected, to see if they are significantly different. Expected proportions are the frequencies which would be expected if the groups were equal, although they may be based on past data. The chi square value increases as the difference between observed and expected frequencies increases. Whether the chi square value is significant is determined by consulting a chi square table. (Gay, 1987)

Content Analysis: The systematic quantitative description of the composition of the object of the study. Typical subjects for content analysis include books, documents, and creative productions such as musical compositions, works of art, and photographs. Textbooks are frequently analyzed to determine such things as readability level and the existence or extent of bias in presentation of material. Content analysis, for example, can be used to determine if a particular textbook is appropriate for the intended grade level by analyzing such variables as frequency of certain vocabulary words and average sentence length. Content analysis studies may be quite simple involving primarily frequency counts, or very sophisticated and complex, involving investigation of the existence of bias or prejudice in a textbook. (Gay, 1987).

Curriculum: The curriculum may therefore defined in two ways: (1) it is the entire range of experiences, both undirected and directed, concerned in unfolding the abilities of the individual; or (2) it is the series of consciously directed training experiences that the schools use for completing and perfecting the unfoldment. Our profession [by which he presumably meant educators at large] usually uses the term in the latter sense. (Jackson, 1992)

Ethnicity: When the primary focus of a two or more specific identifiable groups in the population, one or more specific identifiable groups in the population, one or more of which is racial or ethnic, it is acceptable to display data for each of the particular groups separately and to describe data relating to the remainder of the population by an appropriate collective description (U. S. Bureau of Census, 1995).

Equity Standard: In an equitable assessment, each student has an opportunity to demonstrate his or her mathematical power. Because different students show what they know and can do it in different ways, assessments should allow for multiple approaches. Equitable practices honor each student's unique qualities and experiences. Adherence to an equity standard means that all students, including those with special needs or talents, are expected to reach high levels of accomplishment. It also means that each student is given opportunities to reach those levels and the necessary support to do so (Assessment Standards for School Mathematics. National Council of Teachers of Mathematics, 1995).

Gender: Male or female sexual characteristics of an individual

Hispanic: A person of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture origin, regardless of race (U. S Bureau of Census, 1995).

Historical Analysis: A comparison of the pre-1954 textbooks used in this study with post-1954 textbook used.

Multicultural: Grant for the Association for Supervision and Curriculum Development (1977) defines multicultural education as the following, Multicultural education, as interpreted by ASCD a humanistic concept based on the strength of diversity, human rights, social justice, and alternative life choices for all people. It is mandatory for quality education. It includes curricular, instructional, administrative, and environmental efforts to help students avail themselves of as models, alternatives, and opportunities as possible from the full spectrum of our cultures. This education permits individual development in any culture. Each individual simultaneously becomes aware that every group (ethnic, cultural, social, and racial) exists autonomously as a part of an interrelated and interdependent societal whole. Thus, the individual is encouraged to develop social skills that will enable movement among and cooperation with other cultural communities and groups.

Ninth Grade Student: Person who has successfully completed eight years of academic development beyond the kindergarten level and whose chronological age is typically between fourteen and sixteen years.

Nonparametic Test: Significantly appropriate when the data represent an ordinal or nominal scale, when a parametric assumption has been greatly violated, or when the nature of the distribution is not know.

Oklahoma School Year Length: The School Laws of Oklahoma (1994) defines school year as, a school year for all public schools in Oklahoma shall consist of at least ten (10) months of four (4) weeks each, during which time school shall actually be in session and instruction offered for not less than one hundred eighty (180) days. Five (5) days may be used for attendance of professional meetings and district may authorize parent-teacher conferences to be held during a regular school day. Following such authorization by the school district, these conferences shall be counted towards a school day, as defined in Section 1-111 of this title, and included as a pare of the one hundred seventy-five (175) days of classroom instruction. A school district may maintain school for less than term only when conditions beyond the control of school authorities make the maintenance of said term impossible and the State board of Education has been apprised and has expressed concurrence in writing. (School Laws of Oklahoma, 1994)

Public Schools: The public schools of Oklahoma shall consist of all free schools support by public taxation and shall include nurseries, kindergartens, elementary, which may include either K-6 or K-8, and secondary schools, not to exceed two (2) years of junior college work, night schools, adult and other special education classes, vocational and technical instruction and such other school classes and instruction as may be supported by public taxation or otherwise authorized by laws which are now in effect or which may hereafter be enacted (School Laws of Oklahoma, 1994).

Physical Science: The study of matter and energy (Lamb, Cuevas and Lehrman, 1989).

Race: A variety of mankind distinguished by form of hair, color of skin and eyes, stature, bodily proportions, etc.; one of three major groups (the Caucasoid, Negroid, and Mongoloid), each with various subdivisions (Webster's New World Dictionary, 2nd College Ed., 1974)

Textbook(s): Instructional material(s) that are designed for use by pupils as learning resource(s). (School Laws of Oklahoma, 1994).

Visual Representation: An examination of the photographs, pictures, graphs, illustration etc. as presented in the textbooks.

Written Representation: An examination of the written documentation of the text as presented in the textbooks

Scope and Limitations

This study has the following scope and limitations:

1) Twenty (20) physical science textbooks approved by the Oklahoma State Department of Education between 1954 and 1994 were used in the study. The textbook selections reflect state adoptions during the decades of 1950, 1960, 1970, 1980, and 1990. However, this researcher has no control over out-of-date or out-of-print textbooks on the state's textbook adoption list. Therefore, a limited textbook sample is reflected.

2) A visual quantitative analysis was undertaken for the twenty (20) textbooks in limitation one.

3) The analysis reflects only physical science textbooks on the Oklahoma state textbook adoption list of the decades in limitation one.

4) The analysis reflects the visual representation of African-American males in the twenty Oklahoma state-adopted physical science textbooks selected for this study.

5) The analysis reflects the changes in visual representations of African-American males, if any, that occurred in the twenty state-adopted, ninth-grade physical science textbooks which were examined.

6) The analysis reflects gender, race, and equity representation in the physical science textbooks examined.

7) The analysis reflects the five major citizen populations African-American, Anglo-American (Caucasian), Asian-American, Hispanic-American, and Native-American in the Oklahoma public school population.

8) The analysis does not reflect which school districts nor how many school districts used one or more of the textbooks examined in this study.

9) The analysis does not reflect which teachers nor how many teachers used the textbooks examined in this study.

Logical Assumptions

This investigation was guided by the following logical assumptions:

1) Textbooks are media materials used in public and private school systems by teachers and students.

2) Physical science textbooks reflect careers in the science field.

3) Ninth-grade students are required by state law to take one science course; however, the course studied is the choice of the student, parent, teacher, and/or counselor.

4) Textbooks may not portray all races or ethnic groups in ways that members of the group(s) consider to be positive.

5) The visual context of textbooks may imply the existence of an underlying (hidden) curriculum that is perceived differently by students, depending on a students - economic status, educational opportunity, gender, race, and /or class.

Summary

America's school population is diverse. It is important, therefore, that the chief instructional tool used in schools, the textbook, be as representative as possible of the various cultures which are a part of the school population. This is the African-American culture represented in the text.

This study examines twenty (20) physical science textbooks on the textbook adoption list of Oklahoma between 1954 and 1994 to determine how sensitive textbooks are to African-American males relative to Asian, Caucasian, Hispanic, and Native American visual and written representations.. The visual written representations in these textbooks of African-American males were analyzed to determine whether the representations present a positive or negative image of the African-American male. Texts used before 1954, the date of the Brown v. Board of Education decision, were compared with those adopted after 1954 to determine whether the ruling had any observable impact on the visual representations of African-American males in the texts.

This investigation is important because, in the past, public schools did not represent gender, race, or ethnicity equally. Instead, they reinforced the middle-

class values of the dominant culture. Other cultures were presented less favorably, if not negatively.

The educational system may cause many minority students to devalue and reject their own cultural environment. The failure of textbooks to represent gender, race or ethnicity in an equitable manner are disadvantages to schools and its diverse populations. Whether the physical science textbooks used in Oklahoma schools between 1954 and 1994 are a part of this failure is the focus of this study.

Specifically, this study examines the visual and written representations of African-American males in ninth-grade physical science textbooks adopted in the schools of Oklahoma between 1954 and 1994. Chapter I states the background of the problem addressed by this research and outlines the bases of the research. Chapter II is a brief review of the literature relating the issues of race, gender, and equality and their impact on textbooks and students. Chapter III discusses the methodology of the study, including an explanation of the data collection process. Chapter IV reports the quantitative analysis of the data produced by the study. Chapter V presents the summary, conclusions, and recommendations.

CHAPTER II

REVIEW OF RELATED LITERATURE

Legal and Psychological Background of Modern Education

The American ideal is to educate all the nation's citizens so that their obtained education skills would lead to the good life for everyone. Kilpatrick (1932) presents the goal in this way:

> From early days onward this country has meant to give to every man, especially to the plain man, a chance to the fullness of life denied him elsewhere in the world. Our dream has been of freedom, that no caste or hereditary privilege should deny [anyone] opportunity to work out his own life by his own effort and , according to his own planning, achieve economic security, live reasonably well, serve as a worthy and effectual citizen, educate his children and see them well set upon the same road toward a like successful life. (p. 5)

This dream has not become a reality and has been much less accommodating for many minorities. The educational system of the 1990s, for example, has evolved slowly, and often contingent European male values, still does not afford everyone equal opportunity to acquire the skills needed for happiness and success in American society. Echoes of education in earlier America still persist.

In colonial times, public school education was denied to women and poor. Since slaves and Indians were not considered citizens, obviously they too were denied. The Freedmen's Bureau, which was established in March 1865, worked fervently to provide education for emancipated blacks. The Fourteenth Amendment to the U. S. Constitution, enacted in 1868, granted citizenship to the

former slaves. With citizenship came the legal right to a public school education for many. Churches, missionaries and philanthropists also worked zealously to provide education for the freed slaves.

Persons opposing the social, educational, and political equality for the freed slaves rallying in constant opposition. The result was the enactment of several Jim Crow laws, named derisively after a minstrel character created by a black-faced white entertainer, Thomas D. Rice of New York (Mitchell, 1983). Jim Crow laws separated black and white races into a duality systemic educational system of public education. Louisiana's Jim Crow law regarding travel by train led to one of the most significant Supreme Court ruling of all time, Plessy v. Ferguson.

The Plessy v. Ferguson decision established the "separate but equal" doctrine that became the norm for public schools in the United States. The law was established because Homer Plessy had challenged the Louisiana law requiring segregation on trains within the state. Plessy considered himself seven-eighths white and only one-eighth black.

> The crux of Plessy's case was a warning that if a physical distinction--skin color, for example--could be used as a basis for segregation, then discrimination against persons with blond or red hair could also be considered reasonable and legal. And Plessy argued that, in legally sanctioning segregation of some of its citizens, Louisiana implied that such citizens were inferior in the eyes of the law. (Ebony, 1971, p. 88)

Plessy lost in the state courts and the appeal went to the U. S. Supreme Court.

The Court ruled that the Fourteenth Amendment did not separate accommodations if they were equal. If refuted the claim that separating the races implied inferiority of one race. The ruling, rendered in 1896, made Jim Crow laws

constitutional. John Marshall Harlan was the only justice to vote against the ruling. Justice Harlan declared that the Constitution was "color-blind" and predicted in his descent that the Plessy case would "prove to be as pernicious as the decision made by the same tribunal in the Dredd Scott case" (Long, 1985, p. 34).

The Dredd Scott decision of 1857 had ruled that Dredd Scott was still the property of his slave master. Ebony (1971) states:

> Scott, a Missouri slave, had been carried to Illinois by his master and then to a fort in northern part of the Louisiana Purchase, which had been designated as free territory by the Missouri Compromise. When Scott returned to Missouri he sued for his freedom on the grounds that living in free territory had made him free. In the decision on Scott vs. Sandford the U. S. Supreme Court majority said Scott could not bring suit in the courts because as a slave, he was not a U. S. citizen. Chief Justice Roger B. Taney, a Maryland slave holder, said that since the Missouri Compromise was unconstitutional, masters could take their slave into free states and continue to own them. Abolitionist regarded this statement as open advocacy of slavery by the U. S. Supreme Court. (p. 237)

The decision had devastating effects on the hopes of black people, most of whom legally were slaves.

Implementation of Plessy v. Ferguson led to a dual system of education--one set of schools for white students and another supposedly equal set of schools for blacks. The dual system was very expensive to maintain and posed several problems regarding organization. Furthermore, as Good and Teller (1969) state, "fear of Negro control, the burning issue of mixed schools, and the

outright opposition to Negro education even in separate schools tended to paralyze the agencies that might have developed public education" (p. 470).

The Plessy v. Ferguson ruling came during a time when the idea of white superiority was in vogue in the western world and had made considerable inroads in American intellectual thought (Herbers, 1973). Publications in the South portrayed the Negro through negative stereotypes. Many political and educational leaders embraced Social Darwinism, a theory that "appropriated the biological concepts of 'evolution' and 'survival of the fittest" and [applied] them to social, political, and economic developments (Mitchell, 1983, p. 122). Social Darwinism promoted the idea that Negroes are inferior. It seemed to echo the claims that were common in the 1800s and 1900s regarding "the Negroes" innate inferiority, shiftlessness and hopeless unfitness for full participation in the white man's civilization" (Mitchell, 1983, p. 117).

How did Social Darwinism influence the innate learning process? It is a tenet of the Arnold Gesell Child Development Theory, a philosophy that acquired many supporters. Gesell's theory, as Welch (1989) states,

> [H]olds that intelligence is innate, the ground plan of which is laid down by genes....[I]ntelligence is a function of growth, and the tissues of the mind develop in the same way as the tissues of other organs. Furthermore, the development of thought is lawfully patterned. In sum, Gesellian theory finds learning to lie within the organism; it cannot be externally controlled. (p. 32).

Educators, public officials, and parents adhering to Social Darwinism and Gesell Child Development, felt these theories were of many by which define the learning process in children, despite the contrasting Developmental Theory of Cognitive Learning expunged by Jean Piaget. Piaget contends that,

> [I]ntelligence is neither innate, nor is it hereditary. Learning is constructed....In the process, the child cognitively acts upon objects and events in the world with "continuous and laborious effort" [and] construction is an active, not passive, internal process. (Welch, 1989, p. 193)

The belief that Negroes are innately inferior is the foundation upon which the practice of "separate but equal" education rest. However, as Zook (1947) points out:

> [T]he "separate but equal" principle has nowhere been fully honored. Educational facilities for Negroes in segregated areas are inferior to those provided for whites. Whether one considers enrollment, over-all cost per student, teachers' salaries, transportation facilities, availability of secondary schools...the consequences of segregation are always the same, always adverse to the Negro citizen. (p. 31)

Furthermore, when examining the philosophy, as the President's Committee on Civil Rights did the conclusion is incriminating. Zook (1947) states,

> The separate but equal doctrine stands convicted on three grounds. It contravenes the equalitarian spirit of American heritage. It has failed to operate, for history shows that inequality of service has been the omnipresent consequence of separation. It has institutionalized segregation and kept groups apart dispute indisputable evidence that normal contacts among these groups tend to promote social harmony (p. 31).

Nevertheless, "separate but equal remained the law of the land until the Brown decision of 1954. The U. S. Supreme Court ruled unanimously in the Brown v. Board of Education of Topeka, Kansas, that separate educational facilities were

"inherently unequal." Public schools were ordered to desegregate "with all deliberate speed".

The Brown decision was heralded as the solution to the nation's systemic education problems. Supporters were jubilant, ecstatically optimistic about the future. In Oklahoma, Luper (1979) states:

> Governor Johnston Murray and Raymond Gary furnished straight-forward, far-sighted leadership which led to acceptance of the 1954 Supreme Court decision that eliminated legal separation in all public schools. [Also] Roscoe Dunjee, Jimmie Stewart, Dr. Williamson and the NAACP continued to call for the complete integration of schools. (p. 244)

In 1965, the Elementary and Secondary Education Act was passed by Congress and signed into law by President Lyndon B. Johnson. The action marked the advent of the federal government's active role in assuring adequate educational opportunity for all American children (Frost and Hawkes, 1966). Other civil rights acts passed during the 1960s withheld federal funding from institutions that practiced racial discrimination and forbade discriminatory practices in assigning students to classes.

Examination of Desegregated Schools

The desegregation mandates by the government meant that students in public school classrooms would be more diverse than previously. Instead of one-race class, classes would consist of students from two, three or more races, ethnic groups and/or cultural backgrounds. Oklahoma schools had students in significant numbers from at least five groups: Anglo-American (Caucasian), African-American, Hispanic-American, Asian-American, and Native-American.

Schools were challenged to meet the needs of every minority group, indeed of all individuals. Sommerville-Allen (1994) speaks to this issue, with particular reference to science classes. She wrote:

> They [teachers] are continuously challenged to [the] needs of an increasingly diverse learning population, which may include learners of ethnic and racial minorities, language variations, and various socioeconomic classes. This places a unique demand on strategies to incorporate culturally relevant science, assist students to understand and appreciate their personal backgrounds and cultural heritage, and provide opportunities for students to function easily and effectively with members of both their own and other ethnic, racial, and cultural groups. (p. 18)

The responses to cultural diversity in contemporary schools forced educators to reexamine traditional curriculum, textbooks, and other media materials. Teachers had to determine whether any of these variables were favoring middle-class, Euro-centric values, as many claim. Foster (1986) states:

> [The] school is seen to be the site of a cultural clash where the working-class pupil, who has previously been exposed to different cognitive assumptions, values, accents, or language, is subordinate to a middle-class culture teachers imposing their own conception of the good and the true on their pupils who have been differently socialized. (p. 100)

Frost and Hawkes (1966) ponder the possible effect on teachers of the press for cultural diversity.

> When teachers with middle class values "orient," "readjust," or in fact deny their value system in order to become more effective, what will the substitute value system look like? Several logical

> possibilities seem to exist: (a) teachers may accept the values of another class; (b) teachers may reject values of the middle class without substituting a new value system (this would seem a psychological impossibility); and (c) teachers may replace their current value system with a new one. (p. 55)

Hodgen-Sanchez (1990) adds, "Research has focused on the relationship between teacher expectations and a child's classroom performances, and the teaching environment which includes nurturing, teacher "image", teacher interest, and teacher attitude (pg. 4-61)." It is also felt, Jackson continues, that there are "untoward outcomes of schooling" which are distressingly pervasive in their overall effects.

> Moreover, at least some of the negative outcomes are now believed to be the product not of inept teachers but of institutional qualities over which we have little control....[I]nterest began to shift some time in the 1960s to the possibility that schools do harm and do it systematically to many, if not all, students. (p. 8).

What is a certainty, not simply a possibility, is that students grow through curricular materials that provide less than positive reinforcement. A diverse student needs to view their culture as a part of the mainstream, not as a second-class appendage. Jackson (1992) states, "[O]utcomes-the positive and negative are so markedly different, there has grown a tendency to speak of their being two separate curricula in every school: one explicitly endorsed, to other not " (p. 8). This need is made more complex by the "subtle psychological filters" which are at work. "People process messages," reports Nesbitt (1971), in a way that will enable them to correspond to their predisposition--the pictures they already have in their heads (p. 18). He elaborates:

> Anthropologists have pointed out for many years that we all wear some kind of cultural goggles that cause us to feel that our own way of looking at the world is the only really sensible one; we are all ethnocentric to some degree. How much the goggles distort reality depends upon experience with other cultures and different kinds of people within one's own culture, as well as upon a variety of psychological factors. (p. 13)

It is also worth noting, comments of Stone (1983):

> [T]hat advances in transportation and communication in modern society have increased the awareness by many minority groups of their distinct cultural or ethnic identify and also of the threat posed to the survival of the minority as a separate entity...for the integration of the state requires some transference of loyalty from the ethnic group (or nation) to the wider state organization. (p. 88).

The degree to which textbooks reflect the need to present varying cultures are legitimate concerns of educators. Minority representation is a relatively new component of textbooks. Prior to late 1960s, the textbook reform movement was feeble and virtually ignored. Textbooks reflected the "respectability" racial and ethnic bias enjoyed during the 1920s and 1930s.

Jackson (1982) states,

> [He] found expression in textbooks as outright hostility to blacks and Chinese and more subtle bias against Jews and occasionally, Catholics.
>
> Racial bias appears in textbooks in a number of forms, including language, stereotypes, and in the exclusion by schools of texts authored by individuals whose names are ethnically undesirable. It also appears negatively when textbook authors refuse to take a

> moral stand on such issues as segregation and other forms of discrimination. Similarly, in analyzing discrimination toward blacks in a sample of 36 American history textbooks for grades 4-8, it was found that authors depicted racial violence as frequently as they did peaceful relations among races. The sufferings of American blacks under slavery and as a result of more recent segregation and discrimination were rarely discussed, and the masses in general were ignored in favor of a few selected black heroes. More extreme cases can be found in the South prior to desegregation, as in Mississippi where the state Senate Education Committee recommended that the civics texts provided for Negro schools contain no references to voting, elections, civic responsibility, or democracy. (p. 445)

Sparks (1989) adds that when minority representation began to surface in the late 1960s and early 1970s, the growing number of "minority experience" books were written, edited, and published by whites and thus had a "white point of view." Children's books that even remotely reflected a pluralistic society did not appear until the early 1970s, and few non-sexist books were published before 1972. The trend was short-lived since a reversal occurred in the late 1970s. Therefore, (Sparks, 1989) copyright dates can be a clue as to how likely the book is to be overtly racist or sexist, although a recent or sensitivity (p. 145).

A power struggle over textbook content is of concern to underrepresented groups in society. The NAACP, NOW, the ACLU, and the People for the American Way also are part of the power struggle over control of textbook content in that they also lobby for or against specific content (e. g., fair treatment of minorities, portrayal of women in professional roles, omission of racial slurs) (Jackson, 1992). The advocacy is misdirected, however, states

Foster (1985), because differences between classes arise from differences within the material base (between rich and poor), not from cultural artifacts alone.

> [It] is not the imposition of middle-class culture on other groups whose own culture is quite alien, but a process of further ideological incorporation of the subordinate classes. Thus, it is not a particular cultural variant that is being expressed so much as it is the idea of the right way of doing things. Working and under-class children are not expected to become middle class; they are expected to subscribe to the notion that there should be different groups in society, some meant to produce and others to control. (p. 112)

Thus the power struggle over cultural diversity in schools and textbooks are, in the view of Foster (1986), a struggle over public education as an agent of a caste structure. He cites Ogbu's definition of caste:

> Castelike minorities are distinguished from immigrant and other types of minorities in that (1) they have been incorporated into the society rather involuntarily and permanently, (2) they face a job and status ceiling, and (3) they tend to formulate their discrimination, which they perceive as more than temporary. Examples of caste-like minorities in the United States include blacks, Indians, Chicanos, and Puerto Ricans. Blacks were brought here as slaves more than 400 years ago and after the emancipation relegated them to lower-caste status; Indians were the original owners of the land who suffered military defeat and were removed to reservations almost from the beginning of American society. Chicanos were conquered in the Mexican-American War during the first half of the nineteenth century and were then regulated to subordinate status, a status that was extended to other Mexicans who have since

> immigrated from Mexico; Puerto Ricans were annexed as a colonial people in 1989. (p. 112)

Johnson (1951) expresses the same concern by stating that if some students have great opportunities for educational advancement while educational facilities for others are meager, "education becomes an instrument of stratification and of basic and dangerous inequality" (p. 17). But this inequality, contends Foster (1986), is part of the structure of American education. That is, the educational system duplicates the hierarchy of the workplace. Foster (1986) further states:

> The ranking of administrator, teacher, then student is comparable to that of manager, foreman, then worker, and the goal is the produce a work force. Whose capacities, credentials, and consciousness are dictated in substantial measure by the requirements of profitable employment in the capitalist economy. Schools reproduce inequalities because these very inequalities are needed in a hierarchically divided economic system. (p. 95)

These inequalities are linked socially and politically. This affects the diversity that exist as many American cultures which are not viewed as equal cultures in schools and textbooks.

Conclusion

Whether textbooks are instrumental in promoting a caste system, an unequal system of stratification, or an inequitable view of diverse cultures has not been researched adequately. The key is making certain that the text accommodate the needs or interests manifested in the classroom.

Significant changes are occurring in the schooling of America's student populace. The underlying change may be occurring as a shift in which cultural diversity questions previous educational theory and practice. The change asks whether textbook authors and educators are responding to the cultural diversity of schools and students. Or, whether if it will respond in ways that suggest culture diversity are valued equally by schools.

The specific question raised is whether the textbooks used in public schools seem equitable in their visual representation of the various cultures and students who use them. Traditionally, America's schools have endorsed middle-class Euro-centric values. However, all students are not middle-class Euro-centric. Those who are not have a separate culture which is their heritage and to which they identify during their non-school hours. Such students may feel alienated from their cultural identity if the school system does not seem to recognize their culture in the curriculum. The Yale Law Journal (1950) states:

> Public school education, through powers reserved by the Tenth Amendment, has become a vital function of every state. Statutes provide a basic framework for the system, and then delegated to various school boards, state, and local powers to formulate and effectuate educational policy. This delegation to the land lay citizenry enables schools administrators to reflect most effectively the aspirations of the community and its needs. Determination of courses of study, certification of teachers, and of textbooks and library materials are but a few of these manifold responsibilities.
>
> But school boards are not automatons and their actions are best understood by recognizing the human element in their compositions. The board members' personal predilections, and their sensitivity to various social, economic, religious, and political forces

> in the community, are often reflected in the content of courses they design, the character of personnel they employ, and the types of literature they choose for the school. (pg. 954-958)

As a result, these students may assimilate the culture advanced by the school system but be reluctant to express that fact in their home environment. Or they may resent the lack of recognition of their culture and reject the culture presented by the school system. Such rejection would likely lead to poor performance by the student and/or to slow or limited advancement in the school setting. Culturally diverse groups are questioning textbooks and school curricula as a whole in an effort to gain recognition of each student's individuality. The pop rock musical group Three Dog Night expresses the basic concern in the song entitled "Black and White":

> The ink is black, the page is white.
> Together we learn to read and write, to read and write.
> And now a child can understand this is the law of all the land, all the land.
>
> Their robes were black, their heads were white,
> The schoolhouse doors closed to tight.
> Nine judges all that signed their names.
> To end years and years of shame, years of shame.
> A child is black, a child is white.
>
> The whole world looks upon the sight.
> The beautiful sight.
> For very well the whole world knows.
> This is the way that freedom grows, freedom grows. (Butler-Lowell, 1987, p. 58).

The song writer expresses a time before integration in the United States. Schools reflected governmental policies that was enacted upon it and had to integrate. Many did not want this to occur in their community. However, the Supreme Court Judges made a decision based upon precedent to uphold segregation.

The song also expresses hope for a new generation of popular culture in the future to be able to communicate with each other. It concerns itself with social concerns of Civil Rights for the individual and of socio-economics of classism. It refers to freedom and how it starts with the children of the land.

Chapter III Methodology

Introduction

In Oklahoma, secondary schools require students by state law to take two years of science education. All ninth-grade students are required to take one year physical science or its equivalent in Oklahoma secondary schools. There are concerns regarding whether science textbooks adopted by school districts reflect the diversity of the state's population with regard to ethnicity, gender, and cultural differences. School Laws of Oklahoma for 1994 (1994) state:

> The superintendent of schools of each school district in the state shall appoint a local textbook committee consisting of not fewer than three nor more than nine members. Each committee shall have one lay member, with the remainder of the members being teachers employed in the public schools of the district, a majority of whom shall be classroom teachers. The superintendent of schools or a designee who shall be a principal or a curriculum specialist shall serve as chairperson of such local textbook committee.
>
> The Legislature has mandated that the local committee adopt textbooks from State multiple list. There are no directives as to how the selection process is to be carried out. Therefore, in light of the Oklahoma Constitution and applicable statutes, there is no requirement that a local textbook committee review the full list of textbooks adopted by the State Textbook Committee, but whichever books they select must come for that list. (p. 165 -166).

Oklahoma is a central southwestern state. It is known primarily for its agricultural and oil-producing regions. The five ethnic populations of the state of this study will be Asian, Black (African-American), Hispanic, Native, and White (Caucasian)

Americans. Other ethnic populations are present but are not included in this study.

The purpose of this study is to examine twenty grade ninth-grade level physical science textbooks used in Oklahoma schools between 1954 and 1994 for visual and written representations of African-American males. Jackson (1988) states:

> Pappademos (1989) charges that the mainstream content of schooling both excludes and negates the personal and cultural histories of minority students. In a survey of 17 textbooks of physics and physical science published by leading U. S. publishing houses since 1970 and currently used in schools. Pappademos found that the history of physics portrayed is far from neutral or objective; indeed, it "tends to reinforce racial stereotypes".
>
> A whole continent [Africa] is deleted from the history of physics: in all 17 books surveyed, not once is a scientific discovery or discoverer identified as being of African origin. No Black scientist is pictured in any of the books, nor is a single Black scientist credited with any contribution. The picture of science in general and physics in particular that emerges from these books without exception is that the cradle of physics was in Europe and that it owes its present development entirely to scientists of the U. S. and Europe (rarely other than White males).
>
> Pappademos found the exclusion of minorities in these textbooks to be both textual and visual: Another mark of respect is the inclusion of a picture or a portrait of a scientist. As shown in my survey, out of the 17 books surveyed, although there were 94 different scientist appearing in 186 pictures of scientists, Asian scientist were pictured

> only eight times....There was not a single Black or Latino scientist pictured in any of the books.
>
> Pappademos concludes that these contemporary U. S. textbooks "effectively promote the view that the progress of physics owes little or nothing to the intellectual ability and labor of other whites". (p. 647)

Textbook Selection

The textbooks used in this study were selected on these following bases. First is the number of years in which a textbook title remains on the state adoption list. The second basis is at least five textbook publishers who appear consistently on the state adoption list from 1954 to 1994 were chosen for this study. Textbook publishers who are cognizant of curriculum content issues can be expected to emphasize cultural, sex, gender, and racial equity. The publisher who attempts to incorporate contributions of minority science scholars of the past and present may be more successful in broadening student career choices.

Once approved, the state of Oklahoma may keep a textbook on its education adoption list for six years. School Laws of Oklahoma for 1994 (1994) states:

> Not later that the first day of December of each year the State Textbook Committee shall meet at the call of the chairperson at the State Capitol and select textbooks for subjects taught in the public schools of the state up to and including the twelfth grade, which selections shall be for not more than six (6) years for every textbook. (p. 322)

The textbook material for the text obviously will have changed during this adoption period. A changing curriculum without changing visual material may effect the views of African-American ninth-grade male students regarding the content of their physical science courses.

The inclusion of scholars who represent different sexes, races, genders, cultures, and ethnicity will enhance the students' understanding of science through visual analysis of physical science textbooks. The visual representation of a scientist may impact on a student's science-career decision. African-American males who are visually represented in physical science textbooks may have an impact on the career decisions of African-American male students.

Research Methodology

In the present study no control variable was used. However, the selection of observable data from textbooks was tabulated. A historical and descriptive method were used in the study to determine the current status of African-American males numerical representations physical science textbooks. The study will develop insights as to how many African-American males are portrayed in the number of visual representations in physical science textbooks.

The copyright date will be obtained from twenty state-approved textbooks used between 1954 and 1994. Each of the decades (1950s through 1990s) will be represented by three or more textbooks.

This study is nonparametric. The chi square test will be used to compare frequencies occurring in different categories or "categories groups", so that it compares groups with respect to their different event frequency occurrences (i. e. sex and ethnicity). The degree of freedom is $df = K$ - n, $dr = 20$ -1, where (n = twenty textbooks) used in the study. The Chi-square test will be calculated at a

value where p = .05. The frequencies of African-American males will be compared to other ethnic groups in categories III, IV, and VI (see page forty-seven) of numerical visual and written representation in textbooks for this time period to either accept or reject the hypotheses. Bar graphs will be utilized as pictorial representations of tables CXXI, CXXII, CXXIII, CXXIV, and CXXV totals.

Definition of Historical and Content Analysis

A historical resource helps to validate the accuracy of a study. Eagleton (1983) states, "Historical change is a matter of the gradual realignment of fixed elements within the [cultural] system nothing ever disappears, it merely changes shapes by altering its relations to other elements" (p. 111). Along with systematic changes the society is effected. A society is composed of different cultural systems that have policies and laws to support them. Society itself was made up of a whole set of systems of "series", as the Formalists called them, each of which was powered by its own internal laws, and evolve in relative autonomy of all the others (Eagleton, 1983). The American population is in fact changing. School is a reflection of the society which can be observed in the classroom.

A content analysis, as a research tool may provide critical data in the form of frequent occurrences and the percent in which African-American males are portrayed in textbooks. Tongchinsub (1980) defines content analysis as, "Content analysis has been used in three methods of evaluating communications: (1) evaluation of performance against a priori standards as "balance" or "social purpose"; (2) evaluation of performance by comparing one body of content with another (the internal criteria); and (3) evaluation of

performance by comparing content with non-content source (the external criteria) (p. 54).

Procedures

Twenty physical science selections will be analyzed according to the established criteria. The examination of each textbook will include: (a) scientist name list, (b) reading any biographical information about scientist written name frequency will be tabulated, (c) reading and analyzing selections in terms of scientist visual and written representation, and (d) the number of visuals represented in each textbook for African-American (Black), Asian, Caucasian (White or Anglo-American), Hispanic-American, and Native American. Data collected will be used for the following purposes: (a) to determine the frequency and percentage of representation of African-American male scientist visually and written, (b) to determine the frequency of Asian, African, Hispanic, Native-American, and White representation visually and written.

Instrument

A numerical tabulation will be made of the visual and written representations of African-American males in the physical science textbooks used by ninth-grade students in Oklahoma from 1954 to 1994 will result in six different tables as discribe in this chapter.. The textbook will be analyzed for the number of visuals for Asian, African, Caucasian Hispanic, and Native Americans. The visual analysis will start with the page cover and ending at the index page, including appendages it of each textbook. The cover of the textbook will also be included in the visual analysis. Each textbook will be analyzed for the number of

times (text entry or occurrences) a scientist's name occurs in written form. A category is designed to identify the scientist by sex, country, and ethnicity as describe in this chapter. Each page will be examined for visual representation to determine the sex, and ethnic groups of scientist, adults, students, and non-adults. Group photos containing large number of individuals or crowds will include all recognizable individuals in the count.

Textbooks Criteria for Selection

The text selected for study consist of physical science textbooks visual used in Oklahoma from 1954 to 1994 A selection of twenty textbooks will be examined for the number of African-Americans males in the textbook from cover cover to the index visually represented. A minimum of fifteen textbooks will be analyzed for the time period 1954 to 1994. A minimum of three textbooks per decade will be analyzed because, many of the textbooks maybe out of print or unavailable. Sex and ethnicity will be other variables visually analyzed. Also a numerical written representation of African-American males will occur using the same textbooks. Sex and ethnicity written numerical variables will be also used to collect data.

Observations are classified in the following categories for this study.

Table I

Written Representation Review of Physical Science Textbooks Individual Results.

Categories: Scientist, Text Entry, Country, Male, and Female.

African-American	<>	Denotes
Asian-American	{ }	Denotes
Caucasian		
Hispanic-American	[ ]	Denotes
Native-American	/ /	Denotes

Table II

Written Representation Review of Physical Science Textbooks Scientist By Country Results: Categories: Country, Total, Male, and Female.

Table III

Written Representation Review of Physical Science Textbooks American Scientist By Ethnicity Results. Categories: Ethnicity, Total, Male, and Female.

Table IV

Visual Representation of Physical Science Textbooks Ethnicity Results:

Categories: Ethnicity, Total, Male, and Female.

Table V

Visual Representation of Physical Science Textbooks By Country Results:

Categories: Country, Total, Male, and Female.

Table VI

Visual Representation of Physical Science Textbooks American Scientist Ethnicity Results

Categories: Ethnicity, Scientist Total, Male, and Female.

African-American	(Female : Male)
Asian-American	(Female : Male)
Caucasian	(Female : Male)
Hispanic-Hispanic	(Female : Male)
Native-American	(Female : Male)

Conclusion

The researcher will review each textbook (a total of twenty) for the number of African-American males visually and written represented in textbooks. African-American males who are numerically visually and written represented in physical textbooks may impact career decisions for African-American male students to choose science. This argument must take into consideration that sex and racial bias that may occur in the textbooks. Although the numerical written representation of African-American data is important, however the main emphasis of the study is number of visual representations of African-American males for each category.

CHAPTER IV

FINDINGS

Introduction

The purpose of this visual investigation design is to describe the number of African-American males represented in physical science textbooks. To accomplish this purpose the data that is gathered in this study will expand over a thirty-eight year time period. The data was collected from a southwestern southern state school adoption list.

There were twenty state adopted textbooks analyzed in this study. For this study five ethnic groups were used. The ethnic groups are African-American (Black), Caucasian (White), Asian-American, Hispanic-American, and Native-American (Indian). The Oklahoma school population are reflections of each ethnic group. However, study concerns are that of visual representation of African-American male individuals and scientists in ninth grade physical science books.

The data analysis information is presented in tabular form. There are six tables 1. Written Representation Review of Physical Science Textbooks Individual Results. Categories: Scientist, Text Entry, Country, Male, and Female, 2. Written Representation Review of Physical Science Textbooks Scientist by Country Results. Categories: Country, Male, and Female, 3. Written Representation Review of Physical Science Textbooks by American Scientist Ethnicity, Categories: Ethnicity, African-American (Black), Caucasian (European), Asian-American, Hispanic-American, and Native-American (Indian), Male, and Female, 4. Visual Representation of Physical Science Textbooks Individual

Ethnicity Results. Categories: Ethnicity, African-American (Black), Caucasian ((European), Asian-American, Hispanic-American, and Native-American (Indian), Male, and Female, 5. Visual Representation of Physical Science Textbooks Individual Scientist by Country Results. Categories: Country, Male, Female, and 6. Visual Representation of Physical Science Textbooks American Scientist Results. Categories: Ethnicity, African-American (Black), Caucasian ((European), Asian-American, Hispanic-American, and Native-American (Indian), Total, Male, and Female. These tables are to be reflective of this study.

The Written Representation Review of Physical Science Textbooks categories are the written form of individuals names located throughout these textbooks. These names will be tabulated in the three written tables as mentioned beforehand.

The Visual Representation Review of Physical Science Textbooks categories are pictorial (visual) representations of individuals located (adults and students) throughout these textbooks. The pictorial representation will be tabulated in three visual tables as mentioned beforehand.

The Written and Visual Representation Review of Physical Science Textbooks Results will describe the different representations of the five ethnic groups in this study (see Chapter Three). However, the focus and concerns of the study are the visual representations of African-American male scientists and individuals in physical science textbooks on the Oklahoma Department of Education State Adoption List.

Visual representations includes photographs of individuals of the human form. Photographs of any individual and group with a part or a whole of human specimens are included in this category.

Description of the Sample

This study comprises of a total of twenty physical science textbooks for ninth graders reviewed. The study will focus upon African-American male in the different categories as described early. The sample will be a representation over a thirty-eight year period from 1956 to 1994 of physical science textbooks adopted by the Oklahoma textbook committee.

Data Collection

The data is presented as follows. These are the category tabulations and totals. In category one, written representation review of physical science textbooks individual results has a total of ten thousand six hundred four pages reviewed. The total text entries were three thousand five hundred seventy-seven. The total number of individuals identified were one thousand thirty-six.

Category two, written representation review of physical science textbooks scientist by country result has a total of one thousand thirty-six scientist. The total number of males and females represented were nine hundred sixty-eight and sixty-eight respectively.

Category three, written representation review of physical science textbooks by American scientist ethnicity results total scientist are three hundred ten. The total number of males and females scientist represented were two hundred sixty-five and forty-five respectively.

Category four, visual representations of physical science textbooks individual ethnicity results total are two thousand two hundred eighteen individuals identified. The total number of males and females individuals

represented by ethnicity were one thousand three hundred sixty-three and eight hundred fifty-five respectively.

Category five, visual representations of physical science textbooks science by country results totals were one hundred eighty-five individuals were identified. The total number of males and females individuals represented were one hundred forty-two and forty-five respectively.

Category six, visual representation of physical science textbooks by American scientist ethnicity results total are one hundred four. The total number of males and females American scientist represented sixty-seven and thirty-six respectively.

Testing of Hypotheses

The hypotheses of this study were tested by using visual and numerical data tabulated in six different categories tables. The possibility of manipulating data in the development of this study to study cause-effect relations is not possible. Since it was not possible to manipulate variables and determine established controls, thus the investigation resulted in a quantitative study. The study has put forth in Chapter I these hypotheses. The hypothesis are as follows:

1) There are significant numerical relationships between the visual representation of African-American males in the physical science textbooks adopted in 1954 to 1994 for ninth-grade students in Oklahoma and the physical science textbooks adopted between 1954 and 1994.

2) There are significant numerical relationships between the written representation of African-American male scientists in the physical science

textbooks adopted 1954 to 1994 for ninth-grade students in Oklahoma and the physical science textbooks adopted between 1954 and 1994.

3) There are significant differences in the visual representations of African-American male scientists ethnicity in the physical science textbooks adopted by the state of Oklahoma between 1954 and 1994 and the representations of females and of members of African-American, Asian, European, Native-American, and Hispanic groups.

Summary

A total of one hundred twenty-five tables were tabulated from twenty physical science textbooks. The statistical analysis reveals it was not until late 1960's and through the 1970's African American male scientists visual and written representation occurs. It is found throughout many of the textbooks that more African American females were represented more by the written, than by visual representation. A description of the results of each table will be located at the end of each table.

TABLE I

Written Representation Review of Physical Science Textbooks Individual Results.

Merrill. (1993). pp. 1-690

Scientist	Text Entry	Country	Male	Female
Isaac Newton	12	English	x	
Arihius Celsius	8	Dutch	x	
Joseph Lister	8	English	x	
Blaise Pascal	7	French	x	
Gegor Geiger	6	German	x	
Galileo Galilee	4	Italian	x	
Edwin Hubble	4	American	x	
Antoine Lavoisier	4	French	x	
Francis Grimald	3	French	x	
Kanellos Kanelloboulos	3	Greek	x	
Lord Kelvin	3	English	x	
Hans Oested	3	Danish	x	
Alma Thomas	3	American		<x>
Isaac Asimov	2	American	x	
Henri Becquerel	2	French	x	
Marie Curie	2	French		x
Pierre Curie	2	French	x	
Louis Laumiere	2	French	x	
Auguste Lumiere	2	French	x	
Vincenzo Niviani	2	Italian	x	
Michelangelo Ricci	2	Italian	x	
John Asmus	1	Italian	x	
Jacques Cousteau	1	French	x	
George Eastman	1	American	x	
Thomas Edison	1	American	x	
Paul Ehrlich	1	German	x	
Michael Faraday	1	British	x	
Enrico Fermi	1	French	x	
Emile Gagnan	1	French	x	
Robert Goddard	1	American	x	
Charles W. Hall	1	American	x	
Otto Hahn	1	German	x	

< > Denotes African-American
{ } Denotes Asian-American
[ ] Denotes Hispanic-American
/ / Denotes Native-American

TABLE I CONTINUED

Written Representation Review of Physical Science Textbooks Individual Results.

Focus on Physical Science. (1993) Merrill. pp. 1-690

Scientist	Text Entry	Country	Male	Female
Joseph Henry	1	American	x	
James Joules	1	British	x	
Lise Meitner	1	French	x	
Marin Merzenne	1	Italian		x
Fritz Strassmann	1	German	x	
Thomas Young	1	English	x	

Total Entries: 102 Individual: 38

< > Denotes African-American { } Denotes Asian-American
[ ] Denotes Hispanic-American / / Denotes Native-American

Table I has a total of one hundred two entries identified. Thirty-eight individuals were identified by scientist, country, male, female, and ethnicity.

TABLE II

Written Representation Review of Physical Science Textbooks Scientist By Country Results. (1993) Focus on Physical Science. Merrill. pp. 1-690

Country	Total	Male	Female
American	9	7	2
British	2	2	0
Danish	1	1	0
Dutch	1	1	0
English	4	4	0
French	12	11	1
German	4	4	0
Greek	1	1	0
Italian	5	4	0
Total:	38	35	3

Table II has a total of nine different countries identified. A total of thirty-five males were identified, while three females were identified.

TABLE III

Written Representation Review of Physical Science Textbooks American Scientist Ethnicity Results. (1993) Focus on Physical Science. Merrill. pp. 1-690

Ethnicity	Total	Male	Female
African-American	1	0	1
Asian-American	0	0	0
Caucasian	8	7	1
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	9	7	2

Table III represents the written representation for American scientist ethnicity as seven males and two female. Total representation of African-Americans are males none and females one.

TABLE IV

Visual Representation of Physical Science Textbooks Individual Ethnicity Results. (1993). Merrill. pp. 1-690. Categories: Ethnicity, African-American, Caucasian, Asian, Hispanic, Native-American, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	42	24	18
Asian	12	2	10
Caucasian	108	54	54
Hispanic	6	2	4
Native-American	2	1	1
Total:	170	83	87

Table IV represents visual representation of individuals in physical science textbooks. A total of one hundred seventy individuals were identified. Forty-two African-Americans were identified, twenty-four males and eighteen females.

TABLE V

Visual Representation of Physical Science Textbooks Scientist By Country. (1993). Merrill. pp. 1-690. Categories: Country, Total, Male, and Female

Country	Total	Male	Female
American	3	1	2
English	2	2	0
French	3	3	0
German	1	1	0
Total:	9	7	2

Table V represents the visual representation of scientist by their country. A total of four different countries were identified. One male and two female American scientist were identified.

TABLE VI

Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results. (1993). Merrill. pp. 1-690. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	1	0	1
Asian	0	0	0
Caucasian	2	1	1
Hispanic	0	0	0
Native-American	0	0	0
Total:	3	1	2

Table VI represents the visual ethnicity of American scientist. One female and no male African-American scientist were identified.

TABLE VII

Written Representation Review of Physical Science Textbooks Individual Results. Conceptual Physics-The High School Physics Program. (1992). Addison-Wesley. pp. 1-633. Categories: Scientist, Text Entry, Country, Male and Female.

Scientist	Text Entry	Country	Male	Female
Isaac Newton	72	English	x	
Albert Einstein	39	American	x	
Galileo Galilee	18	Italian	x	
Daniel Bernoulli	11	Italian	x	
Olaus Roemer	9	Danish	x	
Charles Coulomb	8	French	x	
Christian Doppler	8	Dutch	x	
Christian Huygens	8	Dutch	x	
Lord Kelvin	8	English	x	
Archimedes	7	Greek	x	
Aristotle	7	Greek	x	
Nicolaus Copernicus	7	Dutch	x	
Neils Bohr	6	Danish	x	
Arrehius Celsius	6	Swedish	x	
James Maxwell	6	Britain	x	
Albert Michelson	6	American	x	
Ernest Rutherford	6	English	x	
Louis de Broglie	5	French	x	
Van de Graaff	5	French	x	
Michael Faraday	5	English	x	
Robert Brow	4	Scottish	x	
John Locke	4	English	x	
Max Plank	4	German	x	
Robert Boyle	3	English	x	
Robert Hooke	3	British	x	
Gregor Ohms	3	German	x	
Thomas Young	3	Britain	x	
John Adams	2	English	x	
Henri Cavendish	2	English	x	

<> Denotes African-American
{} Denotes Asian-American
[] Denotes Hispanic-American
// Denotes Native-American

TABLE VII CONTINUED

Written Representation Review of Physical Science Textbooks Individual Results.

Conceptual Physics-The High School Physics Program. (1992) Addison-Wesley. pp. 1-633. Categories: Scientist, Text Entry, Country, Male and Female.

Scientist	Text Entry	Country	Male	Female
Edmund Halley	2	American	x	
Joseph Henry	2	American	x	
Heinrich Hertz	2	German	x	
Urbain Leverrier	2	France	x	
Lister A. Pelton	2	American	x	
Andre' Ampe're	1	French	x	
Francis Bacon	1	English	x	
Rene Descarte	1	French	x	
Euclid	1	Greek	x	
James Joule	1	English	x	
Philip von Jolly	1	German	x	
Robert Millkan	1	American	x	
Julianne McNamara	1	American		x
Frank Oppenheimer	1	American	x	
Blaise Pascal	1	French	x	
Plato	1	Greek	x	
Pythagoreas	1	Greek	x	
Paul Robinson	1	American	x	
Socrates	1	Greek	x	
James Watt	1	English	x	
Total:	Entries: 300	Individuals: 50		

<> Denotes African-American
{} Denotes Asian-American
[] Denotes Hispanic-American
// Denotes Native-American

Table VII has a total of three hundred entries were identified. Fifty individuals were identified by scientist, country, sex and ethnicity.

TABLE VIII

Written Representation Review of Physical Science Textbooks By Country Results. Conceptual Physics-The High School Physics Program. (1992) Addison-Wesley. pp. 1-633. Categories: Country, Total, Male and Female.

Country	Total	Male	Female
American	9	9	0
British	4	4	0
Danish	2	2	0
Dutch	3	3	0
English	10	9	1
French	7	7	0
German	5	5	0
Greek	6	6	0

TABLE VIII CONTINUED

Written Representation Review of Physical Science Textbooks By Country Results. Conceptual Physics-The High School Physics Program. (1992) Addison-Wesley. pp. 1-633. Categories: Country, Total, Male and Female.

Country	Total	Male	Female
Scottish	1	1	0
Swedish	1	1	0
Total:	50	49	1

Table VII has a total of ten different countries identified. A total of forty-nine males and one female was identified.

TABLE IX

Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results. Conceptual Physics-The High School Physics Program. (1992) Addison-Wesley. pp. 1-633. Categories: Ethnicity, Total, Male and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian-American	0	0	0
Caucasian	10	9	1
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	10	9	1

Table IX represents the written representation for American scientist ethnicity as nine males and one female. Total representation of African-Americans are males none and females one.

TABLE X

Visual Representation of Physical Science Textbooks Individual Ethnicity Results. Conceptual Physics-The High School Physics Program. (1992). Addison-Wesley. pp. 1-633. Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	20	11	9
Asian	16	8	8
Caucasian	50	40	10
Hispanic	0	0	0
Native-American	1	0	1
Total:	87	59	28

Table X represents the visual ethnicity of individual scientist. Eleven males and nine female African-American scientist were identified.

TABLE XI

Visual Representation of Physical Science Textbooks Scientist By Country Results. Conceptual Physics-The High School Physics Program. (1992). Addison-Wesley. pp. 1-633. Categories: Country, Total, Male and Female.

Country	Total	Male	Female
American	3	3	0
English	4	4	0
Italian	2	2	0
Total:	9	9	0

Table XI represents the visual representation of scientist by their country. A total of three different countries were identified. Three male and no female American scientist were identified.

TABLE XII

Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results. Conceptual Physics-The High School Physics Program. (1992). Addison-Wesley. pp. 1-633. Categories: Ethnicity, Total, Male and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian	0	0	0
Caucasian	3	3	0
Hispanic	0	0	0
Native-American	0	0	0
Total:	3	3	0

Table XII represents the visual ethnicity of American scientist. Three male and no female American scientist were identified. No African-American male or female scientist were identified.

TABLE XIII

Written Review of Physical Science Textbooks by Individual Results. Physical Science. (1990). Scott and Foresman. pp. 1-627. Categories: Scientist, Text Entry, Country, Male and Female.

Scientist	Text Entry	Country	Male	Female
Isaac Newton	53	English	x	
Albert Einstein	21	American	x	
Galilei Galileo	14	Italian	x	
Aristotle	10	Greek	x	
Christian Doppler	10	Dutch	x	
Max Planck	10	German	x	
Ernest Rutherford	10	English	x	
Dmitri Mendeleev	9	Russian	x	
Jacqueline Barton	7	American		x
Roger Angel	6	American	x	
Gilbert N Lewis	6	American	x	
Blaise Pascal	6	French	x	
Noel Runyan	6	American	[x]	
Hans Geiger	5	German	x	
Shirley Ann Jackson	5	American		<x>
Marjorie Smigel	5	American		x
J J Thompson	5	English	x	
Rosalyn Yalow	5	American		x
Louis Alvarez	4	American	[x]	
Daniel Bernoulli	4	Italian	x	
Marie Currie	4	French		x
Cecilia Gaposchkin	4	Polish		x
L. Rayleigh	4	English	x	
Henry Becquerel	3	French	x	
Niels Bohr	3	Danish	x	
Jocelyn Bell-Burnell	3	American		x
John Dalton	3	English	x	
Edmund Halley	3	British	x	
Democritus	2	Greek	x	
Grace Murray Hopper	2	American		x
Henry Mosely	2	English	x	

<> Denotes African-American
{} Denotes Asian-American
[] Denotes Hispanic-American
// Denotes Native-American

TABLE XIII CONTINUED

Written Representation Review of Physical Science Textbooks by Individual Results. Physical Science. (1990). Scott and Foresman. pp. 1-627.

Categories: Scientist, Text Entry, Country, Male and Female.

Scientist	Text Entry	Country	Male	Female
Walter Alvarez	1	American	[x]	
Solomon A Berson	1	American	x	
Robert Boyle	1	English	x	
Guion Bluford	1	American	<x>	
James Chadwick	1	British	x	
Anthony Carlisle	1	English	x	
Nicholson Carlisle	1	English	x	
Henry Cavendish	1	English	x	
Copernicus	1	Greek	x	
Pierre Currie	1	French	x	
Michael Faraday	1	British	x	
Benjamin Franklin	1	American	x	
Werner Heisenberg	1	German	x	
James Henry	1	American	x	
Joseph Henry	1	British	x	
Matthew Henson	1	American	<x>	
Heinch Hertz	1	German	x	
Perrie Lavoisier	1	French	x	
James Maxwell	1	Scottish	x	
Thomas Newcomen	1	English	x	
John Newlands	1	English	x	
Christian Oersted	1	Danish	x	
Robert E. Peary	1	American	x	
A A Penzias	1	American	[x]	
Dick Ratan	1	American	x	
Richard Truly	1	American	x	

< > Denotes African-American
{ } Denotes Asian-American
[ ] Denotes Hispanic-American
/ / Denotes Native-American

TABLE XIII CONTINUED

Written Representation Review of Physical Science Textbooks by Individual Results. Physical Science. (1990). Scott and Foresman. pp. 1-627.

Categories: Scientist, Text Entry, Country, Male and Female.

Scientist	Text Entry	Country	Male	Female
Erwin Schroedinger	1	German	x	
R W Wilson	1	American	x	
Jeana Yeager	1	American		x

Total Entries: 258 Individuals 60

< > Denotes African-American { } Denotes Asian-American
[ ] Denotes Hispanic-American / / Denotes Native-American

Table XIII has a total of two hundred fifty-eight entries identified. Sixty individuals were identified by scientist, country, male, female, and ethnicity.

TABLE XIV

Written Representation Review of Physical Science Textbooks Scientist by Country Results. Physical Science. (1990). Scott and Foresman. pp. 1-627.

Categories: Country, Total, Male and Female.

Country	Total	Male	Female
American	23	16	7
English	12	12	0
German	5	5	0
French	5	4	1
British	4	4	0
Greek	3	3	0
Danish	2	2	0
Italian	2	2	0
Dutch	1	1	0
Polish	1	0	1
Russian	1	1	0
Total:	60	51	9

Table XIV has a total of eleven different countries identified. A total of fifty-one males were identified, while nine females were identified.

TABLE XV

Written Representation Review of Physical Science Textbooks by American Scientist Ethnicity Results. Scott and Foresman. (1990). pp. 1-627. Categories: Ethnicity, Total, Male and Female.

Ethnicity	Total	Male	Female
African-American	3	2	1
Asian-American	0	0	0
Caucasian	16	11	5
Hispanic-American	4	4	0
Native-American	0	0	0
Total:	23	17	6

Table XV represents the written representation for American scientist ethnicity. Total representation of African-Americans are males three and one female.

TABLE XVI

Visual Representation of Physical Science Textbooks Individual Ethnicity Results. Physical Science. (1990). Scott and Foresman. pp. 1-627.

Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	3	2	1
Asian-American	5	3	2
Caucasian	62	22	40
Hispanic-American	2	0	2
Native-American	0	0	0
Total:	72	27	45

Table XVII represents visual representation of individuals in physical science textbooks. A total of seventy-two individuals were identified. Three African-Americans were identified, two males and one female.

TABLE XVII

Visual Representation of Physical Science Textbooks Scientist By Country

Results. Physical Science. (1990). Scott and Foresman. pp. 1-627.

Categories: Country, Total, Male and Female.

Country	Total	Male	Female
American	15	12	3
British	1	1	0
Dutch	1	1	0
English	1	0	1
French	2	1	1
German	1	1	0
Greek	1	1	0
Italian	1	1	0
Total:	23	18	5

Table XVII represents the visual representation of scientist by their country. A total of eight different countries were identified. Twelve male and three female American scientist were identified.

TABLE XVIII

Visual Representation of Physical Science Textbooks American Scientist Ethnicity Results. Physical Science. (1990). Scott and Foresman. pp. 1-627. Categories: Ethnicity, Total, Male and Female.

Ethnicity	Total	Male	Female
African-American	2	1	1
Asian-American	0	0	0
Caucasian	11	8	3
Hispanic-American	2	2	0
Native-American	0	0	0
Total:	15	11	4

Table VI represents the visual ethnicity of American scientist. One female and one male African-American scientist were identified.

TABLE XIX

Written Review of Physical Science Textbooks Individual Results. Physical Science. (1989). Harcourt, Brace, and Jovanovich. pp. 1-601. Categories: Scientist, Text Entry, Country, Male and Female.

Scientist	Text Entry	Country	Male	Female
Isaac Newton	21	British	x	
Galilee Galileo	15	Italian		x
Ephram Fischback	17	American	x	
Thomas Young	12	English	x	
Bradford Smith	10	American	x	
Francis Bacon	9	English	x	
Friedrich Wuhler	9	German	x	
Nicolus Copernicus	7	Polish	x	
Antoine Lavoiser	8	French	x	
Nicolus Copernicus	7	Polish	x	
Linus Pauling	7	American	x	
Ernest Rutherford	7	British	x	
Rosalyn Yalow	7	American	x	
Jean Bennett	5	American		x
Anders Celsius	5	Swedish	x	
Marie Currie	5	French		x
John Dalton	5	British	x	
Benjamin Thompson	5	American	x	
Rachel Carson	4	American	x	
Thomas Edison	4	American	x	
Gladys Emerson	4	American		x
G. D. Ferhienheit	4	German	x	
Hans Geiger	4	German	x	
Lise Mertner	4	Austrian	x	
J. J. Thompson	4	British	x	
Neil Armstrong	3	American	x	
Alexander Bell	3	American	x	
Perrie Currie	3	French	x	
Edwin Aldrin Jr	2	American	x	

<> Denotes African-American
{} Denotes Asian-American
[] Denotes Hispanic-American
// Denotes Native-American

TABLE XIX CONTINUED

Written Review of Physical Science Textbooks Individual Results. Physical Science. (1989). Harcourt, Brace, and Jovanovich. pp. 1-601. Categories: Scientist, Text Entry, Country, Male and Female.

Scientist	Text Entry	Country	Male	Female
Henri Becquerel	2	French	x	
Neils Bohr	2	Danish	x	
Humphrey Davy	2	English	x	
Democritus	2	Greek	x	
Yuri Gagarin	2	Russian	x	
John Glenn	2	American	x	
Steven Hawking	2	British	x	
Larry Hench	2	American	x	
James P Joule	2	English	x	
Charles Ketting	2	American	x	
Dimtri Mendeleev	2	Russian	x	
James Newcombe	2	British	x	
Hans Oersted	2	Danish	x	
Charles Parson	2	British	x	
Olaus Roemer	2	Danish	x	
Thomas Savory	2	British	x	
Richard Terrile	2	American	x	
Fernando Tuscany	2	Italian	x	
James Watt	2	British	x	
William Anders	1	American	x	
Aristachus	1	Greek	x	
Guion Bluford	1	American	<x>	
Robert Brown	1	British	x	
Frederic Currie	1	French	x	
Irene Currie	1	French		x
Albert Einstein	1	American	x	
Queen Elizabeth	1	English		x
Otto Hahn	1	German	x	
Martin Hall	1	American	x	
Werner Heisenberg	1	German	x	

<> Denotes African-American
{ }Denotes Asian-American
[ ] Denotes Hispanic-American
/ / Denotes Native-American

TABLE XIX CONTINUED

Written Review of Physical Science Textbooks Individual Results. Physical Science. (1989). Harcourt, Brace, and Jovanovich. pp. 1-601. Categories: Scientist, Text Entry, Country, Male and Female.

Scientist	Text Entry	Country	Male	Female
King Henry VIII	1	English	x	
P. L. T. Hercoult	1	French	x	
William Herschel	1	American	x	
Christian Huygens	1	Dutch	x	
King James	1	English	x	
Thomas Jefferson	1	American	x	
Leucippus	1	Greek	x	
James Lovell Jr.	1	American	x	
J. Robert Mayer	1	German	x	
Charles Messier	1	French	x	
Sally Ride	1	American		x
Alan Sheppard	1	American	x	
Valentia Tereshkove	1	Russian		x
Taylor Wang	1	American	{x}	
Total Entries:	266	Individuals:	72	

<> Denotes African-American {}Denotes Asian-American
[] Denotes Hispanic-American // Denotes Native-American

Table XIX has a total of two hundred sixty-six entries identified. Seventy-two individuals were identified by scientist, country, male, female, and ethnicity.

TABLE XX

Written Review of Physical Science Textbooks Scientist by Country Results.

Physical Science. (1989). Harcourt, Brace, and Jovanovich. pp. 1-601.

Categories: Country, Male, and Female

Country	Total	Male	Female
American	26	22	4
Austrian	1	0	1
British	10	10	0
Danish	3	3	0
Dutch	1	1	0
English	4	4	0
French	8	6	2
German	6	6	0
Greek	3	3	0
Italian	2	2	0
Polish	1	1	0
Russian	3	2	1
Swedish	1	1	0
Other	3	2	1
Total:	72	63	9

Table XX has a total of twelve different countries identified and one other category. A total of seventy-two were identified, sixty-three males and nine females.

TABLE XXI

Written Review of Physical Science Textbooks By American Scientist Ethnicity Results. Physical Science. (1989). Harcourt, Brace, and Jovanovich. pp. 1-601. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian-American	1	1	0
Caucasian	25	21	4
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	26	22	4

Table XXI represents the written representation for American scientist ethnicity. Total representation of African-Americans are males none and females none.

TABLE XXII

Visual Representation of Physical Science Textbooks Individuals Ethnicity Results. (1989). Harcourt, Brace, and Javonvich. pp. 1-601 Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	48	25	23
Asian	16	8	8
Caucasian	177	99	78
Hispanic-American	3	3	0
Native-American	0	0	0
Total:	244	135	109

Table XXXII represents visual representation of individuals in physical science textbooks. A total of two hundred forty-four individuals were identified. Forty-eight African-Americans were identified, twenty-five males and twenty-three females.

TABLE XXIII

Visual Review of Physical Science Textbooks Scientist by Country Results. (1989). Harcourt, Brace, and Javonvich. pp. 1-601. Country, Total, Male, and Female

Country	Total	Male	Female
American	18	10	8
Austrian	1	0	1
British	1	1	0
English	3	3	0
French	1	0	1
German	1	1	0
Italian	2	2	0
Polish	1	1	0
Russian	1	1	0
Total:	29	19	10

Table XXIII represents the visual representation of scientist by their country. A total of nine different countries were identified. Ten male and eight female American scientist were identified.

TABLE XXIV

Visual Review of Physical Science Textbooks American Scientist Ethnicity Results. (1989). Harcourt, Brace, and Javonvich. pp. 1-601. Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	2	1	1
Asian-American	0	0	0
Caucasian	16	9	7
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	18	10	8

Table XXIV represents the visual ethnicity of American scientist. One female and one male African-American scientist were identified.

TABLE XXV

Written Review of Physical Science Textbooks by Individual Results. (1988). Silver, Burnett, and Ginn. pp. 1-592. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Isaac Newton	39	British	x	
Ernest Rutherford	12	N. Zealand	x	
Neils Bohr	8	Danish	x	
Archimedes	7	Greek	x	
Chien-Shiung Wu	7	American		{x}
J. J. Thompson	7	British	x	
John Dalton	6	English	x	
Shirley Ann Jackson	6	American		<x>
Stephen Hawking	6	British	x	
Dimtri Mendileev	6	Russian	x	
Grace Murray	6	American		x
Crookes ?	5	?	x	
George S. Ohm	5	German	x	
Blaise Pascal	5	French	x	
Daniel Bernoulli	4	Italian	x	
Frank Chang-Daiz	4	American	[x]	
Democitus	4	Greek	x	
Enrico Fermi	4	Italian	x	
Hans Geiger	4	German	x	
Joseph Nagyvary	3	?	x	
James Charles	2	French	x	
Albert Einstein	2	American	x	
Michael Faraday	2	English	x	
Erwin Schrodinger	2	Austrian	x	
Henri Becquerrel	1	French	x	
Robert Boyle	1	British	x	

<> Denotes African-American
{} Denotes Asian-American
[] Denotes Hispanic-American
// Denotes Native-American

TABLE XXV CONTINUED

Written Review of Physical Science Textbooks by Individual Results. (1988). Silver, Burnett, and Ginn. pp. 1-592. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
James Chadwick	1	N. Zealand	x	
Marie Currie	1	French	x	
Perrie Currie	1	French	x	
Thomas Edison	1	American	x	
Benjamin Franklin	1	American	x	
Galilee Galileo	1	Italian	x	
Guarneridel Gesir	1	Italian	x	
Lise Meinter	1	French	x	
Henry Moseley	1	British	x	
Antonio Stradivai	1	Italian	x	
Thomas Young	1	English	x	
Total Entries:	176	Individuals:	37	

<> Denotes African-American
{ }Denotes Asian-American
[ ] Denotes Hispanic-American
/ / Denotes Native-American

Table XXV has a total of one hundred seventy-six entries identified. Thirty-seven individuals were identified by scientist, country, male, female, and ethnicity.

TABLE XXVI

Written Review of Physical Science Textbooks Scientist by Country Results. (1988). Silver, Burnett, and Ginn. pp. 1-592. Categories: Country, Total, Male, and Female

Country	Total	Male	Female
American	7	4	3
Austrian	1	1	0
British	5	5	0
Danish	1	1	0
English	3	3	0
French	5	4	1
German	2	2	0
Greek	2	2	0
Italian	5	5	0
New Zealand	2	2	0
Russian	1	1	0
Other	3	3	0
Total:	37	33	4

Table XXVI has a total of nine different countries identified. A total of thirty-three males were identified, while four females were identified

TABLE XXVII

Written Review of Physical Science Textbooks by American Scientist Results. (1988). Silver, Burnett, and Ginn. pp. 1-592. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	1	0	1
Asian-American	1	0	1
Caucasian	4	3	1
Hispanic-American	1	1	0
Native-American	0	0	0
Total:	7	4	3

Table XXVII represents the written representation for American scientist ethnicity. Total representation of African-Americans are males none and females one.

TABLE XXVIII

Visual Representation of Physical Science Textbooks by Individuals Ethnicity Results. (1988). Silver, Burnett, and Ginn. pp. 1-592 Categories: Ethnicity, African-American, Caucasian, Asian, Hispanic, Native-American, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	34	27	7
Asian-American	4	2	2
Caucasian	82	33	49
Hispanic-American	9	5	4
Native-American	0	0	0
Total:	129	67	62

Table XXVIII represents visual representation of individuals in physical science textbooks. A total of one twenty-nine individuals were identified. Thirty-seven African-Americans were identified, Twenty-seven males and seven females.

TABLE XXIX

Visual Review of Physical Science Textbooks Scientist by Country Results.

(1988). Silver, Burnett, and Ginn. pp. 1-592

Country	Total	Male	Female
American	7	4	3

Table XXIX is the visual representation of scientist by their country. A total of one different were identified. Seven male and three female American scientist were identified.

TABLE XXX

Visual Review of Physical Science Textbooks by American Scientist Ethnicity Results. (1988). Silver, Burnett, and Ginn. pp. 1-592, Categories: Ethnicity, Scientist Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	1	0	1
Asian-American	1	0	1
Caucasian	4	3	1
Hispanic-American	1	1	0
Native-American	0	0	0
Total:	7	4	3

Table XXX is the visual ethnicity of American scientist. One female and no male African-American scientist were identified.

TABLE XXXI

Written Review of Physical Science Textbooks Individual Results. Physical Science. (1988). Prentice-Hall. pp. 1-665. Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Isaac Newton	44	English	x	
Dimitri Mendeleev	32	Russian	x	
Paul MacCready	19	American	x	
Henri Becqueral	18	French	x	
Stephen Hawkins	17	British	x	
J. J. Thompson	17	English	x	
James Charles	15	English	x	
Stan Ovshinsky	15	American	x	
Ernest Rutherford	14	British	x	
Robert Boyle	13	English	x	
Shirley Ann Jackson	11	American		<x>
Daniel Bernoulli	10	Italian	x	
John Caulfield	10	American	x	
Archimedes	9	Greek	x	
John Dalton	9	English	x	
Galilei Galileo	9	Italian	x	
Hans Geiger	9	Danish	x	
Jennifer Isbister	9	American		x
Hans Christian Oersted	9	Danish	x	
Dick Ratan	9	American	x	
Benjamin Thompson	9	American	x	
Albert Michelson	8	American	x	
James Prescott Joule	7	British	x	
Marie Currie	6	French		x
Democretus	6	Greek	x	
Michael Faraday	6	English	x	
Alan MacDiamid	6	American	x	
Janna Yeager	5	American		x
Alexander G. Bell	4	American	x	
William Gilbert	4	British	x	

<> Denotes African-American
{} Denotes Asian-American
[] Denotes Hispanic-American
// Denotes Native-American

TABLE XXXI CONTINUED

Written Review of Physical Science Textbooks Individual Results. Physical Science. (1988). Prentice-Hall. pp. 1-665. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Dennis Gobor	4	American	x	
Jeffrey Moseley	4	British	x	
Aristotle	3	Greek	x	
Pierre Currie	3	French	x	
Ettore Forini	3	French	x	
Hellmut Fritzsche	3	American	x	
Herman Hollereth	3	American	x	
Masatoshi Koshiba	3	American	{x}	
Ellen Richards	3	American		x
Larry Sulak	3	American	x	
Orville Wright	3	American	x	
Chuck Yeager	3	American	x	
Neils Bohr	2	Danish	x	
Richard Doyle	2	American	x	
Albert Einstein	2	American	x	
Richard Feyman	2	American	x	
Ephrain Fishbach	2	American	x	
Joseph Henry	2	American	x	
James Watt	2	British	x	
Aristotle	1	Greek	x	
Andre' Ampere	1	French	x	
Samuel Aronson	1	American	x	
James Bond	1	British	f (fiction)	
Leonardo Di Vinci	1	Italian	x	
Dwight D. Eisenhower	1	American	o	
Sheldon Glashov	1	American	x	
Henry Gwyn	1	British	x	
Alan Heiger	1	American	x	
Jerry Ross	1	American	x	
Aaron Safer	1	American	x	
Harrison Schmitt	1	American	x	

< > Denotes African-American
{ } Denotes Asian-American
[ ] Denotes Hispanic-American
/ / Denotes Native-American

TABLE XXXI CONTINUED

Written Review of Physical Science Textbooks Individual Results. Physical Science. (1988). Prentice-Hall. pp. 1-665

Scientist	Text Entry	Country	Male	Female
Sherwood Spring	1	American	x	
Adali E. Stevenson	1	American	o	
Daniel Sudarsky	1	American	x	
Carrick Talmadge	1	American	x	
Nikola Tesla	1	Italian	x	
Wilbur Wright	1	American	x	

Total Entries: 429 Individuals: 67

<> Denotes African-American {} Denotes Asian-American
[] Denotes Hispanic-American // Denotes Native-American

Table XXXI has a total of four hundred and eleven entries identified. Sixty-seven individuals are identified by scientist, country, male, female, and ethnicity. Two were non-scientist.

TABLE XXXII

Written Review of Physical Science Textbooks Scientist By Country Results. Physical Science (1988). Prentice-Hall. pp. 1-665. Categories: Country, Total, Male, and Female

Country	Total	Male	Female
American	34	30	4
British	8	8	0
Danish	3	3	0
English	6	6	0
French	5	4	1
Greek	4	4	0
Italian	4	4	0
Russian	1	1	0
Other	2	2	0
Total:	67	62	5

Table XXXII has a total of eight different countries identified. Sixty-seven individuals were identified. Sixty-five were scientist, while two were not.

TABLE XXXIII

Written Review of Physical Science Textbooks American Scientist Ethnicity Results. Physical Science. (1988). Prentice-Hall. pp. 1-665. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	1	0	1
Asian-American	1	0	1
Caucasian	32	30	2
Hispanic	0	0	0
Native-American	0	0	0
Total:	34	30	4

Table XXXIII represents the written representation for American scientist ethnicity. Total number of African-American scientist are thirty-four scientist. Total representation of African-Americans are males none and females one.

TABLE XXXIV

Visual Representation of Physical Science Textbooks by Individual Ethnicity Results. Physical Science. (1988). Prentice Hall. pp. 1-665. Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	36	22	14
Asian	10	10	0
Caucasian	144	52	92
Hispanic	6	6	0
Native-American	0	0	0
Total:	196	90	106

Table XXXIV represents visual representation of individuals in physical science textbooks. A total of one hundred ninety-six individuals were identified. Thirty-six African-Americans were identified, twenty-two males and fourteen females.

TABLE XXXV

Visual Review of Physical Science Textbooks Scientist by Country Results. Physical Science. (1988). Prentice-Hall. pp. 1-665. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
American	19	14	5
British	2	2	0
French	1	0	1
Russian	1	1	0
Total:	23	17	6

Table XXXV represents the visual representation of scientist by their country. A total of four different countries were identified. Fourteen male and five female American scientist were identified.

TABLE XXXVI

Visual Review of Physical Science Textbooks by American Scientist Results. Physical Science. (1988). Prentice-Hall. pp. 1-665. Categories: Ethnicity, Scientist Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	1	0	1
Asian-American	2	2	0
Caucasian	15	11	4
Hispanic-American	1	1	0
Native-American	0	0	0
Total:	19	14	5

Table XXXVI represents the visual ethnicity of nineteen American scientist. One female and no male African-American scientist were identified.

TABLE XXXVII

Written Representation Review of Physical Science Textbooks Individual Results.

Modern Physical Science. (1983). Holt, Rhinehart, and Winston. pp. 1-545.

Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Benjamin Thompson	18	American	x	
Thomas Edison	16	American	x	
Marie Currie	13	French		x
Joseph Priestly	13	English	x	
Louis Pasteur	11	French	x	
Galileo Galilei	11	Italian	x	
Luigi Galvani	11	Italian	x	
Alessandro Volta	10	Italian	x	
Micheal Faraday	8	English	x	
Johann Kepler	8	German	x	
Olaus Roemer	8	Danish	x	
Archimedes	7	Greek	x	
Antonine Lavoisier	7	French	x	
Svante Arrhenius	6	Swedish	x	
William Crookes	5	Britain	x	
Charles Goodyear	5	American	x	
Robert Boyle	4	English	x	
George W. Carver	4	American	<x>	
Humphrey Davy	4	English	x	
Dmitri Mendeleev	4	Russian	x	
Robert A. Moog	4	American	x	
Ernst Rutherford	4	English	x	
Torricelli	4	Italian	x	
Chester Carlson	3	American	x	
John Dalton	3	English	x	
Dorothy Hodge-King	3	British		x
John Newlands	3	English	x	
Max Plank	3	German	x	

< > Denotes African-American { } Denotes Asian-American
[ ] Denotes Hispanic-American / / Denotes Native-American

TABLE XXXVII CONTINUED

Written Representation Review of Physical Science Textbooks Individual Results.

(1983). Modern Physical Science. Holt, Rhinehart, and Winston. pp. 1-545.

Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Henri Becquerel	2	French	x	
Daniel Bernoulli	2	Italian	x	
John Fleming	2	American	x	
Christian Huygens	2	Danish	x	
Wilhelm Roenten	2	German	x	
Buzz Aldrin	1	American	x	
Neil Armstrong	1	American	x	
Leo Backelanel	1	American	x	
Tycho Brache	1	Danish	x	
Pierre Currie	1	French	x	
Lee DeForest	1	American	x	
Democritus	1	Greek	x	
Edwin Drake	1	American	x	
Alexander Fleming	1	American	x	
Noah	1		x	
King Edward II	1	English	x	
Enrico Fermi	1	Italian	x	
Otto von Guericke	1	German	x	
Otto Hahn	1	German	x	
Charles M. Hall	1	American	x	
John Hyatt	1	American	x	
King Henry	1	English	x	
William F. Libby	1	English	x	
John Moseley	1	English	x	
Emilo Segie	1	Italian	x	
Total Entries:	230	Individuals:	53	

< >	Denotes African-American	{ }	Denotes Asian-American
[ ]	Denotes Hispanic-American	/ /	Denotes Native-American

Table XXXVII has a total of two hundred thirty entries identified. Fifty-three individuals were identified by scientist, country, male, female, and ethnicity.

TABLE XXXVIII

Written Representation Review of Physical Science Textbooks Scientist By Country Results. (1983). Modern Physical Science. Holt, Rhinehart, and Winston. pp. 1-545. Categories: Country, Total, Male Female.

Country	Total	Male	Female
American	15	15	0
British	2	1	1
Danish	3	3	0
English	11	11	0
French	5	4	1
German	5	5	0
Greek	2	2	0
Italian	7	7	0
Russian	1	1	0
Swedish	1	1	0
Other	1	1	0
Total:	53	51	2

Table XXXVIII has a total of nine different countries identified. A total of Fifty-three males were identified, while two females were identified.

TABLE XXXIX

Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results. (1983). Modern Physical Science. Holt, Rhinehart, and Winston. pp. 1-545. Categories: Ethnicity, Total, Male, Female.

Ethnicity	Total	Male	Female
African-American	1	1	0
Asian-American	0	0	0
Caucasian	14	14	0
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	15	15	0

Table XXXIX represents the written representation for American scientist ethnicity. Total representation of African-Americans are males none and females none.

TABLE XL

Visual Representation of Physical Science Textbooks Individual Ethnicity Results. Modern Physical Science. (1983). Holt, Rhinehart, and Winston. pp. 1-545. Categories: Ethnicity Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	10	3	7
Asian	2	1	1
Caucasian	36	24	12
Hispanic	1	1	0
Native-American	0	0	0
Total:	49	29	20

Table XL represents the written representation for American scientist ethnicity. Total representation of African-Americans are males three and females seven.

TABLE XLI

Visual Representation of Physical Science Textbooks Scientist by Country Results. Modern Physical Science. (1983). Holt, Rhinehart, and Winston. pp. 1-545. Categories: Country, Total, Male, and Female

Country	Total	Male	Female
American	5	5	0
British	1	0	1
Danish	1	1	0
English	1	0	1
French	2	2	0
Greek	3	3	0
Swedish	1	1	0
Total:	14	12	2

Table XLI represents the visual representation of scientist by their country. A total of seven different countries were identified. Five male and no female American scientist were identified.

TABLE XLII

Visual Representation of Physical Science Textbooks by American Scientist Ethnicity Results. Modern Physical Science. (1983). Holt, Rhinehart, and Winston. pp. 1-545. Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	1	1	0
Asian-American	0	0	0
Caucasian	4	4	0
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	5	5	0

Table XLII represents the visual ethnicity of American scientist. No female and one male African-American scientist were identified.

TABLE XLIII

Written Representation Review of Physical Science Textbooks Individual Results.

Physical Science. (1983). Scott Foresman. pp. 1-475. Categories: Scientist, Text Entry, Country, Male, and Female

Scientist	Text Entry	Country	Male	Female
Isaac Newton	29	English	x	
Albert Einstein	18	American	x	
Charles Goodyear	6	American	x	
Galileo Galilei	5	Italian	x	
Johannes Kepler	5	Dutch	x	
Dmitri Mendeleev	5	Russian	x	
Christian Doppler	4	Dutch	x	
Lord Rayleigh	4	English	x	
Ernest Rutherford	4	English	x	
Niels Bohr	3	English	x	
Micheal Faraday	3	English	x	
Wallace C. Sabine	3	American	x	
Aristotle	2	Greek	x	
Nicolaus Copernicus	2	Dutch	x	
John Dalton	2	English	x	
J. J. Thompson	2	English	x	
Henri Becquerel	1	French	x	
James Chadwick	1	English	x	
Democritus	1	Greek	x	
Werner Heisenberg	1	German	x	
Joseph Henry	1	English	x	
E. O. Lawrence	1	American	x	
Louis Pasteur	1	French	x	
Robert E. Perry	1	American	x	
Henry Moseley	1	English	x	
Heike K. Onnes	1	Dutch	x	
Erwin Schroedinger	1	German	x	
Leonardo da Vincis	1	Italian	x	
Jules Verne	1	English	x	
Total Entries:	110	Individuals:	29	

Table XLIII has a total of one hundred ten entries identified. Twenty-nine individuals were identified by scientist, country, male, female, and ethnicity.

< >	Denotes African-American	{ }	Denotes Asian-American
[ ]	Denotes Hispanic-American	/ /	Denotes Native-American

TABLE XLIV

Written Representation Review of Physical Science Textbooks Scientist By Country. Physical Science. (1983). Scott Foresman. pp. 1-475 Categories: Country, Total, Male, and Female

Country	Total	Male	Female
American	5	5	0
Dutch	4	4	0
English	11	11	0
French	2	2	0
German	2	2	0
Greek	2	2	0
Italian	2	2	0
Russian	2	2	0
Total:	29	29	0

Table XLIV has a total of eight different countries identified. A total of twenty-nine males were identified, while no females were identified.

TABLE XLV

Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results. Physical Science. (1983). Scott Foresman. pp. 1-475. Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian-American	0	0	0
Caucasian	5	5	0
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	5	5	0

Table XLV represents the written representation for American scientist ethnicity. Total representation of African-Americans are males none and females one.

TABLE XLVI

Visual Representation of Physical Science Textbooks Individual Ethnicity Results. Physical Science. (1983). Scott Foresman. pp. 1-475. Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	22	11	11
Asian	2	1	1
Caucasian	88	40	48
Hispanic	3	2	1
Native-American	0	0	0
Total:	115	54	61

Table XLVI represents visual representation of individuals in physical science textbooks. A total of one hundred fifteen individuals were identified. Twenty-two African-Americans were identified, eleven males and eleven females.

TABLE XLVII

Visual Representation of Physical Science Textbooks Scientist By Country

Results. Physical Science. (1983). Scott Foresman. pp. 1-475. Categories: Country, Total, Male, and Female

Country	Total	Male	Female
American	1	1	0
Total:	1	1	0

Table XLVII represents the visual representation of scientist by their country. A total of one different country was identified. One male and no female American scientist were identified.

TABLE XLVIII

Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results. Physical Science. (1983). Scott Foresman. pp. 1-475.

Categories: Country, Total, Male, and Female

Country	Total	Male	Female
African-American	0	0	0
Asian-American	0	0	0
Caucasian	1	1	0
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	1	1	0

Table XLVIII represents the visual ethnicity of American scientist. No female and no male African-American scientist were identified.

TABLE XLIX

Written Representation Review of Physical Science Textbooks Individual Results. Focus on Physical Science. (1981). Merrill. pp. 1-505. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Groggier Geiger	5	Dutch	x	
Galilee Galeleo	4	Italian	x	
Paula Moyer	4	American		x
Frederick G. Esho	3	American	x	
Nickey Marnmovich	3	American	x	
Dmitri Mendeleev	3	Russian	x	
Isaac Newton	3	English	x	
Robert Boyle	2	English	x	
James Charles	2	French	x	
Marie Currie	2	French		x
Pierre Currie	2	French	x	
Rudolph Diesel	2	German	x	
Thomas Young	2	English	x	
Alexander G. Bell	1	American	x	
Henry Becquerrel	1	French	x	
Neils Bohr	1	English	x	
John Dalton	1	English	x	
Carolyn Fowler	1	American		<x>
Ann Robinson	1	American		x
J. J. Thompson	1	English	x	
Charles Van de Graff	1	American	x	
Alessandro Volta	1	French	x	
Total: Entries:	46	Individuals:	22	

< > Denotes African-American
{ } Denotes Asian-American
[ ] Denotes Hispanic-American
/ / Denotes Native-American

Table XLIX has a total of forty entries identified. Twenty-two individuals were identified by scientist, country, male, female, and ethnicity.

TABLE L

Written Representation Review of Physical Science Textbooks Scientist By Country Results. Focus on Physical Science. (1981). Merrill. pp. 1-505.

Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
American	7	4	3
Dutch	1	1	0
English	6	6	0
French	5	4	1
German	1	1	0
Italian	1	1	0
Russian	1	1	0
Total:	22	18	4

Table L has a total of seven different countries identified. A total of eighteen males were identified, while four females were identified.

TABLE LI

Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results. Focus on Physical Science. (1981). Merrill. pp. 1-505. Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	1	0	1
Asian-American	0	0	0
Caucasian	6	4	2
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	7	4	3

Table LI represents the written representation for American scientist ethnicity. Total representation of African-Americans are males none and females one.

TABLE LII

Visual Representation of Physical Science Textbooks Individual Ethnicity Results. Focus on Physical Science. (1981). Merrill. pp. 1-505. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	30	19	11
Asian	5	2	3
Caucasian	90	54	36
Hispanic	0	0	0
Native-American	0	0	0
Total:	125	75	50

Table LII represents visual representation of individuals in physical science textbooks. A total of one hundred twenty-five individuals were identified. Thirty African-Americans were identified, nineteen males and eleven females.

TABLE LIII

Visual Representation of Physical Science Textbooks Scientist By Country Ethnicity Results. Focus on Physical Science. (1981). Merrill. pp. 1-505.

Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
American	4	1	3
Total:	4	1	3

Table LIII represents the visual representation of scientist by their country. A total of one was identified. One male and three female American scientist were identified.

TABLE LIV

Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results. Focus on Physical Science. (1981). Merrill. pp. 1-505. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	1	0	1
Asian	0	0	0
Caucasian	3	1	2
Hispanic	0	0	0
Native-American	0	0	0
Total:	4	1	3

Table LIV represents the visual ethnicity of American scientist. One female and no male African-American scientist were identified.

TABLE LV

Written Representation Review of Physical Science Textbooks Individual Results.

Principles of Science: Book II. (1979). Merrill. pp. 1-503. Categories: Scientist, Text Entry, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Gregor Gieger	9	German	x	
Robert Koch	8	German	x	
Ptolemy	7	Greek	x	
Edward Jenner	6	American	x	
Baruch S. Blumberg	5	American	x	
Nicolaus Copernicus	5	Polish	x	
Carl Sagan	5	American	x	
Carol Clark	4	American		x
D. Carlton Gaddusek	4	American		x
Otto Loew	4	American	x	
Terri Pecoraro	4	American		x
William Beaumont	3	American	x	
Neils Bohr	3	Danish	x	
Alexander Fleming	3	British	x	
Donald Hollister	3	American	x	
Johanes Kepler	3	German	x	
Neil Armstrong	2	American	x	
Joseph Lister	2	British	x	
Albert Sabin	2	American	x	
Jonas Salk	2	American	x	
Lybos Kohoutek	2	Czech	x	
Rita Levi-Montalcini	2	American		x
Wilhelm Roentgen	2	German	x	
Edwin Aldrin	1	American	x	
Pau Choi	1	American	{x}	
Alick Isaac	1	British	x	

Total Entries: 103 Individuals: 26

< > Denotes African-American { } Denotes Asian-American
[ ] Denotes Hispanic-American / / Denotes Native-American

Table LV has a total of one hundred three entries identified. Twenty-six individuals were identified by scientist, country, male, female, and ethnicity.

TABLE LVI

Written Representation Review of Physical Science Textbooks By Country Results. Principles of Science: Book II. (1979). Merrill. pp. 1-503. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
American	15	11	4
British	3	3	0
Danish	1	1	0
German	4	4	0
Greek	1	1	0
Czech	1	1	0
Polish	1	1	0
Total:	26	22	4

Table LVI has a total of seven different countries identified. A total of twenty-two males were identified, while four females were identified.

TABLE LVII

Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results. Principles of Science: Book II. (1979). Merrill. pp. 1-503. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian-American	1	1	0
Caucasian	14	10	4
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	15	11	4

Table LVII represents the written representation for American scientist ethnicity. Total representation of African-Americans are males none and females none.

TABLE LVIII

Visual Representation of Physical Science Textbooks Individual Ethnicity Results. Principles of Science: Book II. (1979). Merrill. pp. 1-503. Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	41	30	11
Asian	8	5	3
Caucasian	68	34	34
Hispanic	4	3	1
Native-American	3	1	2
Total:	124	73	51

Table LXVIII represents visual representation of individuals in physical science textbooks. A total of one twenty-four individuals were identified. Forty-one African-Americans were identified, thirty males and eleven females.

TABLE LIX

Visual Representation of Physical Science Textbooks Scientist By Country

Results. Principles of Science: Book II. (1979). Merrill. pp. 1-503. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
American	3	3	0
Total:	3	3	0

Table LIX represents the visual representation of scientist by their country. A total of one different was identified. Three males and no females American scientist were identified.

TABLE LX

Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results. Principles of Science: Book II. (1979). Merrill pp. 1-503. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian-American	0	0	0
Caucasian	3	3	0
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	3	3	0

Table LX represents the visual ethnicity of American scientist. One female and no male African-American scientist were identified.

TABLE LXI

Written Review of Physical Science Textbooks Individual Results. Focus on Physical Science. (1977). Merrill. pp. 1-479. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Isaac Newton	10	English	x	
Galilee Galileo	9	Italian	x	
Gwendelyn Veal-Albert	6	American		<x>
Blaise Pascal	6	French	x	
Paul Wergen	6	American	x	
Gregory Coppa	5	American	x	
John Dalton	5	English	x	
James Joule	5	British	x	
Murty Kannry	5	American	x	
Dimitri Mendeleev	5	Russian	x	
W. K. Roentgen	5	German	x	
Virginia Trimble	4	American		x
Dave Yates	4	American	x	
Aristotle	3	Greek	x	
Neils Bohr	3	Danish	x	
Henry Cavendish	3	English	x	
L. Hillis-Colinvaus	3	American		x
Hans Geiger	3	Danish	x	
Diana McSherry	3	American		x
Becky Schroeder	3	American		(x)
Chien Shing Wu	3	American		{x}
Henri Becquerrel	2	French	x	
Marie Currie	2	French	x	
Pierre Currie	2	French	x	
Betsy Ander-Johnson	1	American		x
Robert Boyle	1	British	x	
James Charles	1	British	x	

< > Denotes African-American
{ } Denotes Asian-American
[} Denotes Hispanic-American
/ / Denotes Native-American

TABLE LXI CONTINUED

Written Review of Physical Science Textbooks Individual Results. Focus on Physical Science. (1977). Merrill. pp. 1-479. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
John Cosgrove	1	American	x	
Tony Cupto	1	American	x	
Sylvia Gonzalez	1	American		[x]
Victor Hernandez	1	American	[x]	
Charles Gay-Lussac	1	French	x	
Henry Moseley	1	British	x	
Roberta Sahlin	1	American		x
Dale Shapiro	1	American	x	
Alfreda Sigee	1	American		<x>
Dr. X. Rha	1	American		{x}
James Watt	1	English	x	
Alan White	1	American	x	
Total Entries:	125	Individuals:	40	

< > Denotes African-American { } Denotes Asian-American
[ ] Denotes Hispanic-American / / Denotes Native-American

Table LXI has a total of one hundred twenty-five entries identified. Forty individuals were identified by scientist, country, male, female, and ethnicity.

TABLE LXII

Written Review of Physical Science Textbooks Scientist by Country Ethnicity Results. Focus On Physical Science. (1977) Merrill. pp. 1-479. Categories: Country, Total, Male, and Female

Country	Total	Male	Female
American	21	9	12
British	4	4	0
Danish	2	2	0
English	4	4	0
French	5	4	1
Greek	1	1	0
Italian	1	1	0
Russian	1	1	0
German	1	1	0
Total:	40	27	13

Table LXII has a total of nine different countries identified. A total of twenty-five males were identified, while thirteen females were identified.

TABLE LXIII

Written Review of Physical Science Textbooks by American Scientist Ethnicity Results. Focus On Physical Science. (1977). Merrill. pp. 1-479. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	2	0	2
Asian-American	2	0	2
Caucasian	15	8	7
Hispanic-American	2	1	1
Native-American	0	0	0
Total:	21	9	12

Table LXIII represents the written representation for American scientist ethnicity. Total representation of African-Americans are males none and females two.

TABLE LXIV

Visual Representation of Physical Science Textbooks by Individual Ethnicity Results. Focus On Physical Science. (1977). Merrill. pp. 1-479. Categories: Ethnicity, Total, Male and Female.

Ethnicity	Total	Male	Female
African-American	19	6	13
Asian-American	8	6	2
Caucasian	79	35	44
Hispanic-American	4	2	2
Native-American	2	2	0
Total:	112	51	61

Table LXIV represents visual representation of individuals in physical science textbooks. A total of one hundred twelve individuals were identified. Nineteen African-Americans were identified, six males and thirteen females.

TABLE LXV

Visual Representation of Physical Science Textbooks Scientist by Country Results. Focus On Physical Science. (1977). Merrill. pp. 1-479. Categories: Country, Total, Male and Female.

Country	Total	Male	Female
American	21	9	12
Total:	21	9	12

Table LXV represents the visual representation of scientist by their country. A total of one country was identified. Nine male and twelve female American scientist were identified.

TABLE LXVI

Visual Review of Physical Science Textbook by American Scientist Ethnicity Results. Focus On Physical Science. (1977). Merrill. pp. 1-479. Categories: Ethnicity, Total, Male and Female.

Ethnicity	Total	Male	Female
African-American	2	1	1
Asian-American	0	0	0
Caucasian	16	7	9
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	18	8	10

Table LXVI, represents the visual ethnicity of American scientist. One female and one male African-American scientist were identified.

TABLE LXVII

Written Representation Review of Physical Science Textbooks Individual Results.

Our Physical Environment-The Sciences. (1973). Harper and Row. pp. 1-458.

Categories: Scientist, Text Entry, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Ptolemy	24	Egyptian	x	
Isaac Newton	24	English	x	
Nicolaus Copernicus	19	Polish	x	
Ernst Mack	17	Austrian	x	
Henri Becquerel	15	French	x	
Micheal Faraday	15	English	x	
John Dalton	13	English	x	
Joseph Priestly	12	English	x	
Olaus Roemer	12	Danish	x	
Konrad Roentgen	12	German	x	
Thomas Edison	11	American	x	
J. J. Thompson	11	English	x	
Robert J. Van De Graff	11	English	x	
Neils Bohr	10	Danish	x	
John Fleming	10	English	x	
Marie Currie	9	French	x	
Albert Einstein	8	American	x	
Dmitri Mendelev	8	Russian	x	
Lavoisier Antoine	7	French	x	
William Crookes	7	English	x	
Pierre Currie	7	French	x	
Heinrich Hertz	7	German	x	
Christian Huygens	7	Dutch	x	
Albert Michelson	7	American	x	
H. G. J. Moseley	7	English	x	
Hans C. Oersted	7	Danish	x	
Ernest F. F. Chladni	6	German	x	
Nicoli of Cursa	6	Finnish	x	

<> Denotes African-American
{} Denotes Asian-American
[] Denotes Hispanic-American
// Denotes Native-American

TABLE LXVII CONTINUED

Written Representation Review of Physical Science Textbooks Individual Results.

Our Physical Environment-The Sciences. (1973). Harper and Row. pp. 1-458.

Categories: Scientist, Text Entry, Male and Female.

Scientist	Text Entry	Country	Male	Female
Ernest Rutherford	6	British	x	
Aristotle	5	Greek	x	
Lee DeFrost	5	American	x	
Albert Einstien	5	American	x	
Donald A. Glaser	5	American	x	
George S. Ohms	5	German	x	
Galilio Galilei	4	Italian	x	
Hans Lippershey	4	Dutch	x	
Guglielmo Marconi	4	Italian	x	
Jean Perrin	4	French	x	
Ottotann	4	German	x	
Fritz Strassman	4	German	x	
Svante A. Arrhenius	3	Swedish	x	
Ben Franklin	3	American	x	
Robert H. Goddard	3	American	x	
Johann Kepler	3	Danish	x	
Lise Meitner	3	Austrian	x	
Ingenheusz	3	Dutch	x	
Edwin E. Aldrin	2	American	x	
Neil Armstrong	2	American	x	
Alexander G. Bell	2	American	x	
Daniel Bernoulli	2	Italian	x	
Charles A. de Coulomb	2	French	x	
Micheal Collins	2	American	x	
John Dalton	2	English	x	
Enrico Fermi	2	Italian	x	
James P. Gordon	2	American	x	
H. L. F. von Helmholz	2	German	x	
Werner K. Heisenberg	2	German	x	

< > Denotes African-American
{ } Denotes Asian-American
[ ] Denotes Hispanic-American
/ / Denotes Native-American

TABLE LXVII CONTINUED

Written Representation Review of Physical Science Textbooks Individual Results.

Our Physical Environment-The Sciences. (1973). Harper and Row. pp. 1-458.

Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
James Maxwell	2	Scottish	x	
Max Planck	2	German	x	
Albert L. Schouelow	2	American	x	
Frederich Soddy	2	English	x	
Charles H. Tourves	2	American	x	
James Watt	2	Sweden	x	
Norbert Wiener	2	American	x	
C. T. R. Wilson	2	American	x	
Herbert J. Zeiger	2	American	x	
Aristarchus	1	Greek	x	
Neils Bohr	1	Dutch	x	
James Chadwick	1	English	x	
Henry Cavendish	1	English	x	
Democritus	1	Greek	x	
Dwight D. Eisenhower	1	American	x	
Joseph Henry	1	American	x	
Gottfred Leibniz	1	German	x	
Martin Luther	1	German	x	
Thomas Young	1	English	x	
Total Entries:	437	Individuals:	75	

< >	Denotes African-American	{ }	Denotes Asian-American
[ ]	Denotes Hispanic-American	/ /	Denotes Native-American

Table LXVII has a total of four hundred thirty-seven entries identified. Seventy-five individuals were identified by scientist, country, male, female, and ethnicity.

TABLE LXVIII

Written Representation Review of Physical Science Textbooks Scientist By Country Results. Our Physical Environment-The Sciences. (1973). Harper and Row. pp. 1 - 458. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
American	19	19	0
Austrian	2	2	0
British	1	1	0
Danish	4	4	0
Dutch	4	4	0
Egyptian	1	1	0
English	15	15	0
Finnish	1	1	0
French	6	5	1
German	11	11	0

TABLE LXVIII CONTINUED

Written Representation Review of Physical Science Textbooks Scientist By Country Results. Our Physical Environment-The Sciences. (1973). Harper and Row. pp. 1 - 458. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
Greek	3	3	0
Italian	4	4	0
Polish	1	1	0
Russian	1	1	0
Scottish	1	1	0
Swedish	1	1	0
Total:	75	74	1

Table LXVIII has a total of sixteen different countries identified. A total of seventy-four males were identified and one female identified.

TABLE LXIX

Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results. Our Physical Environment-The Sciences. (1973). Harper and Row. pp. 1-458. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian-American	0	0	0
Caucasian	20	20	0
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	20	20	0

Table LXIX has a total of twenty individuals by ethnicity identified. A total of no males were identified and no females identified.

TABLE LXX

Visual Representation of Physical Science Textbooks Individual Ethnicity Results. Our Physical Environment-The Sciences. (1973). Harper and Row. pp. 1-458 Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	22	12	10
Asian	0	0	0
Caucasian	114	92	22
Hispanic-American	1	1	0
Native-American	0	0	0
Total:	137	105	32

Table LXX represents visual representation of individuals in physical science textbooks. A total of one thirty individuals were identified. Twenty-two African-Americans were identified, eleven males and eleven females.

TABLE LXXI

Visual Representation of Physical Science Textbooks Scientist By Country Results. Our Physical Environment-The Sciences. (1973). Harper and Row. pp. 1-458. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
American	11	11	0
Austrian	1	1	0
Danish	1	1	0
Dutch	1	1	0
English	7	7	0
Egypt	1	1	0
French	3	2	1
German	5	5	0
Scottish	1	1	0
Swedish	1	1	0
Total:	33	32	1

Table LXXI represents the visual representation of scientist by their country. A total of ten different countries were identified. Eleven male and no female American scientist were identified.

TABLE LXXII

Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results. Our Physical Environment-The Sciences. (1973). Harper and Row. pp. 1-458 Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian	0	0	0
Caucasian	11	11	0
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	11	11	0

Table LXXII represents the visual ethnicity of American scientist. No female and male African-American scientist were identified.

TABLE LXXIII

Written Representation Review of Physical Science Textbooks Individual Results.

Matter, Life, and Energy. (1972). Rand McNally and Company. pp. 1-602.

Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Ernst Rutherford	19	English	x	
Gregor Mendel	13	Austrian	x	
Charles Darwin	10	English	x	
John Dalton	9	English	x	
Isaac Newton	9	English	x	
Anders Celsus	8	Swedish	x	
Dmitri Mendeleev	8	Russian	x	
Ptolemy	8	Egyptian	x	
Robert Brown	6	Irish	x	
Nikolani Corpernicus	6	Polish	x	
Gabriel Fahrenheit	6	German	x	
Gregor Giegor	6	German	x	
Olaus Roemer	6	Danish	x	
Paul Dirac	5	American	x	
Galeleo Galilei	5	Italian	x	
Carl Linneas	5	Swedish	x	
John Newlands	5	English	x	
James Van Allen	5	American	x	
J. J. Rumford	5	American	x	
J. J. Thompson	5	English	x	
Lord Kelvin	4	English	x	
Hans Lippershey	4	Holland	x	
Joseph Priestly	4	English	x	
Theodore Terry	4	American	x	
Daniel Bernoulli	3	Italian	x	
Christian Huygen	3	Dutch	x	
Henry Mosely	3	English	x	

< > Denotes African-American
{ } Denotes Asian-American
[ ] Denotes Hispanic-American
/ / Denotes Native-American

TABLE LXXIII CONTINUED

Written Representation Review of Physical Science Textbooks Individual Results.

Matter, Life, and Energy. (1972). Rand McNally and Company. pp. 1-602.

Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Blaise Pascal	3	French	x	
Charles Anderson	2	American	x	
Henri Becquerel	2	French	x	
Marie Currie	2	French		x
Albert Einstein	2	American	x	
Ben Franklin	2	American	x	
H. Becker-Freyson	2	German	x	
Heinrich Hertz	2	German	x	
Inge Lehmann	2	Denmark	x	
Jacques Piccard	2	French	x	
John Newlands	2	English	x	
Henry Strommell	2	American	x	
W. Lloyd Aycock	1	American	x	
Herman Bondi	1	English	x	
Robert Boyle	1	English	x	
K. E. Bullen	1	American	x	
Kate Campbell	1	American		x
Charles Coulomb	1	French	x	
Townsend Cromwell	1	American	x	
Perrie Currie	1	French	x	
Democritus	1	Greek	x	
Empedocles	1	Greek	x	
Enrico Fermi	1	Italian	x	
T. N. Burke-Gaffney	1	American		x
George Gamov	1	American	x	
Donald Glaser	1	American	x	
John Glenn	1	American	x	
Thomas Gold	1	English	x	

< > Denotes African-American
{ } Denotes Asian-American
[ ] Denotes Hispanic-American
/ / Denotes Native-American

TABLE LXXIII CONTINUED

Written Representation Review of Physical Science Textbooks Individual Results.

Matter, Life, and Energy. (1972). Rand McNally and Company. pp. 1-602.

Categories: Scientist, Text Entry, Country, Male, Female

Scientist	Text Entry	Country	Male	Female
Fred Hoyle	1	English	x	
Theodore Igails	1	American	x	
Karl G. Jansky	1	American	x	
Bertha Klien	1	American		x
Arlingon Krause	1	American	x	
E. O. Lawrence	1	American	x	
George Lemarite	1	Belgian	x	
Macel Long	1	French	x	
Albert Michelson	1	American	x	
Hans Oersted	1	Danish	x	
George Ohms	1	German	x	
R. D. Oldham	1	English	x	
Louis Pasteur	1	French	x	
Auguste Piccard	1	French	x	
Charles Van de Graff	1	French	x	
Riccardo Versari	1	Italian	x	
C. R. Richter	1	German	x	
Clyde Tombaugh	1	American	x	
Don Walsh	1	American	x	
Edward White	1	American	x	
C. T. R. Wilson	1	Scottish	x	
Total Entries:	236	Individuals:	76	

<> Denotes African-American
{} Denotes Asian-American
[] Denotes Hispanic-American
// Denotes Native-American

Table LXXIII has a total of two hundred thirty-six entries identified. Seventy-six individuals were identified by scientist, country, male, female, and ethnicity.

TABLE LXXIV

Written Representation Review of Physical Science Textbooks Scientist By Country Results. Matter, Life, and Energy. (1972). Rand McNally and Company. pp. 1-602. Categories: Country, Total, Male, Female.

Country	Total	Male	Female
American	25	22	3
Austrian	1	1	0
Belgian	1	1	0
Danish	2	2	0
Denmark	1	1	0
Dutch	1	1	0
Egyptian	1	1	0
English	15	13	2
French	10	9	1
German	6	6	0
Greek	2	2	0
Holland	1	1	0
Irish	1	1	0
Italian	4	4	0

TABLE LXXIV CONTINUED

Written Representation Review of Physical Science Textbooks Scientist By Country Results. Matter, Life, and Energy. (1972). Rand McNally and Company. pp. 1-602: Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
Polish	1	1	0
Russian	1	1	0
Scottish	1	1	0
Swedish	2	2	0
Total:	76	72	4

Table LXXIV has a total of eighteen different countries identified. A total of seventy-two males were identified, while four females were identified.

TABLE LXXV

Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results. Matter, Life, and Energy. (1972). Rand McNally and Company. pp. 1-602. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian-American	0	0	0
Caucasian	13	13	0
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	13	13	0

Table LXXV represents the written representation of American scientist ethnicity. No African-American males or females were identified.

TABLE LXXVI

Visual Representation of Physical Science Textbooks Ethnicity Results. Matter, Life, and Energy. (1972). Rand McNally and Company. pp. 1-602 Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	10	8	2
Asian	1	1	0
Caucasian	31	28	3
Hispanic	0	0	0
Native-American	0	0	0
Total:	42	37	5

Table LXXVI represents visual representation of individuals in physical science textbooks. A total of forty-two individuals were identified. Ten African-Americans were identified, eight males and two females.

TABLE LXXVII

Visual Representation of Physical Science Textbooks Scientist By Country Results. Matter, Life, and Energy. (1972). Rand-McNally and Company. pp. 1-602 Categories: Country, Total, Male, and Female

Country	Total	Male	Female
American	1	1	0
English	2	2	0
Italian	2	2	0
Total:	5	5	0

Table LXXVII represents the visual representation of scientist by their country. A total of three different countries were identified. One male and no female American scientist were identified.

TABLE LXXVIII

Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results. Matter, Life, and Energy. (1972). Rand McNally and Company. pp. 1-602 Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian	0	0	0
Caucasian	1	1	0
Hispanic	0	0	0
Native-American	0	0	0
Total:	1	1	0

Table LXXVIII represents the visual ethnicity of American scientist. No female and male African-American scientist were identified.

TABLE LXXIX

Written Representation Review of Physical Science Textbooks Individual Results. Matter, Life, and Energy. (1967). Meredith Corporation. pp. 1-580. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Gregor Mendel	14	Austrian	x	
Anders Celsius	12	Swedish	x	
Isaac Newton	10	English	x	
Ernest Rutherford	9	N. Zealand	x	
Neils Bohr	8	Danish	x	
Gabriel Fahrenheit	8	German	x	
Ptolemy	8	Egypt	x	
Ben Franklin	7	American	x	
Galileo Galilei	7	Italian	x	
Lord Kelvin	7	British	x	
Ernst Rutherford	7	English	x	
Nikolaus Copernicus	6	Poland	x	
Democratus	6	Greek	x	
Paul Dirac	6	English	x	
C. Eijkman	6	Dutch	x	
Hans Geiger	6	German	x	
Samuel Kier	5	American	x	
Hans Lippershey	5	Holland	x	
James McConnell	5	American	x	
Dmitri Mendeleev	5	Russian	x	
R. D. Odom	5	American	x	
John Dalton	4	English	x	
Empedocles	4	Greek	x	
Louis Pasteur	4	French	x	
Theordore Terri	4	American	x	
Torricelli	4	Italian	x	
Henry Strommell	4	American	x	
Christian Doppler	3	Dutch	x	
Robert G. Dyrenforth	3	American	x	

< > Denotes African-American
[ ] Denotes Hispanic-American
{ } Denotes Asian-American
/ / Denotes Native-American

TABLE LXXIX CONTINUED

Written Representation Review of Physical Science Textbooks Individual Results. Matter, Life, and Energy. (1967). Meredith Corporation. pp. 1-580. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Beno Gutenberg	3	German	x	
Jan van Helmont	3	Belgian	x	
Inge Lehmann	3	Denmark	x	
Joseph Lister	3	English	x	
Henry Mosley	3	English	x	
Napoleon II	3	French	x	
Blaise Pascal	3	French	x	
James Phipps	3	English	x	
Edward Jenner	3	English	x	
Robert Thompson	3	American	x	
Francois Appert	2	French	x	
Archimedes	2	Greek	x	
F. H. C. Crick	2	English	x	
Marie Curie	2	French		x
Pierre Currie	2	French	x	
Edwin Drake	2	American	x	
Alexander Fleming	2	American	x	
John Glenn	2	American	x	
Donald A. Glenn	2	American	x	
Hartridge	2	English	x	
Christian Huygens	2	Dutch	x	
Lavoisier	2	French	x	
Albert Michelson	2	American	x	
John Newlands	2	English	x	
George S. Ohm	2	German	x	
R. A. F. Reomur	2	French	x	
Olaus Roemer	2	Danish	x	
Count Rumford	2	American	x	

< > Denotes African-American
{ } Denotes Asian-American
[ ] Denotes Hispanic-American
/ / Denotes Native-American

TABLE LXXIX CONTINUED

Written Representation Review of Physical Science Textbooks Individual Results.

Matter, Life, and Energy. (1967). Meredith Corporation. pp. 1-580

Scientist	Text Entry	Country	Male	Female
Jonas Salk	2	American	x	
Robert Van de Graff	2	English	x	
J. J. Thompson	2	English	x	
J. P. Watson	2	English	x	
Edwin White	2	American	x	
Carl Anderson	1	American	x	
W. L. Aycock	1	American	x	
Alexander G. Bell	1	American	x	
Henry Becquerel	1	French	x	
Hugo Bencoff	1	American	x	
Daniel Bernoulli	1	Italian	x	
Robert Boyle	1	English	x	
T. N. Burke-Gaffney	1	American	x	
K. E. Bullen	1	American	x	
Luther Burbank	1	American	x	
Kate Campbell	1	Australian		x
Enrico Fermi	1	Italian	x	
James Chadwick	1	English	x	
Ernest B. Chain	1	American	x	
Townsend Cromwell	1	American	x	
Coulomb	1	French	x	
Michael Faraday	1	English	x	
Howard W. Florey	1	American	x	
H. Becker-Freyseng	1	German	x	
Galambros	1	American	x	
Kahl G. Jansky	1	American	x	
Arlington Krause	1	American	x	
Griffin	1	American	x	
Charles M. Hall	1	American	x	
Robert Hooke	1	English	x	

<> Denotes African-American
{} Denotes Asian-American
[] Denotes Hispanic-American
// Denotes Native-American

TABLE LXXIX CONTINUED

Written Representation Review of Physical Science Textbooks Individual Results.

Matter, Life, and Energy. (1967). Meredith Corporation. pp. 1-580

Scientist	Text Entry	Country	Male	Female
Johann Jansen	1	Dutch	x	
Zacharrus Jansen	1	Dutch	x	
Theodore H. Ingalls	1	American	x	
E. O. Lawerence	1	American	x	
Marcel Long	1	French	x	
Auguste Piccard	1	French	x	
Jacques Piccard	1	French	x	
Hans C. Oersted	1	Danish	x	
C. F. Richter	1	American	x	
Wilhelm Roentgen	1	German	x	
Sabin	1	American	x	
Spallanzani	1	Italian	x	
John Swallow	1	American	x	
Riccardo Versari	1	Italian	x	
C. T. R. Wilson	1	Scotland	x	
Edwin Sasaki	1	American	{x}	

Total Entries: 299 Individuals: 103

< > Denotes African-American { } Denotes Asian-American
[ ] Denotes Hispanic-American / / Denotes Native-American

Table LXXIX has a total of two hundred ninety-nine entries identified. One hundred three individuals were identified by scientist, country, male, female, and ethnicity.

TABLE LXXX

Written Representation Review of Physical Science Textbooks Scientist by Country Results. Matter, Life, and Energy. (1967). Meredith Corporation. pp. 1-580. Categories: Country, Total, Male, and Female

Country	Total	Male	Female
American	37	37	0
Australian	1	0	1
Austrian	1	1	0
Belgian	1	1	0
British	1	1	0
Danish	3	3	0
Denmark	1	1	0
Dutch	5	5	0
Egypt	1	1	0
English	18	18	0
French	13	12	1
German	6	6	0
Greek	3	3	0
Holland	1	1	0
Italian	6	6	0

TABLE LXXX CONTINUED

Written Representation Review of Physical Science Textbooks Scientist by Country Results. Matter, Life, and Energy. (1967). Meredith Corporation. pp. 1-580. Country, Total, Male, and Female

Country	Total	Male	Female
New Zealand	1	1	0
Russian	1	1	0
Scotland	1	1	0
Swedish	1	1	0
Total:	103	101	2

Table LXXX has a total of nineteen different countries identified. A total of one hundred one males were identified, while two females were identified. A total number of Americans are thirty-seven males and no females.

TABLE LXXXI

Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results. Matter, Life, and Energy. (1967). Meredith Corporation. pp. 1-580. Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian-American	1	1	0
Caucasian	36	36	0
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	37	37	0

Table LXXXI represents the written representation of American scientist by ethnicity. A total of thirty-seven males were identified and no females .

TABLE LXXXII

Visual Review of Physical Science Textbooks Individual Ethnicity Results. Matter, Life, and Energy. (1967). Meredith Corporation. pp. 1-580. Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	11	10	1
Asian-American	1	1	0
Caucasian	45	41	4
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	57	52	5

Table LXXXII represents visual representation of individuals in physical science textbooks. A total of fifty-seven individuals were identified. Eleven African-Americans were identified, ten males, and one female.

TABLE LXXXIII

Visual Review of Physical Science Textbooks Scientist By Country Results. Matter, Life, and Energy. (1967). Meredith Corporation. pp. 1-580. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
American	3	3	0
Total:	3	3	0

Table LCXXXIII represents the visual representation of scientist by their country. A total of one was identified. Three male and no female American scientist were identified.

TABLE LXXXIV

Visual Review of Physical Science Textbooks By American Scientist Ethnicity Results. Matter, Life, and Energy. (1967). Meredith Corporation. pp. 1-580.

Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian-American	1	1	0
Caucasian	2	2	0
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	3	3	0

Table LXXXIV represents the visual ethnicity of American scientist. No female and male African-American scientist were identified.

TABLE LXXXV

Written Representation Review of Physical Science Textbooks Individual Results.

Introductory Physical Science. (1967). Prentice-Hall. pp. 1-222. Categrories:

Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Gregor Geiger	7	German	x	
Robert Boyle	6	English	x	
Humphrey Davy	6	English	x	
Henri Becquerrel	5	French	x	
Marie Curie	5	French		x
Joseph Proust	4	French	x	
Claude Berthollet	2	French	x	
Democritus	2	Greek	x	
Peirre Curie	2	French	x	
Antonie Lavoisier	2	French	x	
Robert W. Bausen	1	American	x	
C. O. Brewer	1	American	x	
John Dalton	1	English	x	
M. R. Hertz	1	German	x	
Total Entries:	46	Individuals:	15	

< >	Denotes African-American	{ }	Denotes Asian-American
[ ]	Denotes Hispanic-American	/ /	Denotes Native-American

Table LXXXV has a total of forty-six entries identified. Fifteen individuals were identified by scientist, country, male, female, and ethnicity.

TABLE LXXXVI

Written Representation Review of Physical Science Textbooks By Country

Results. Introductory Physical Science. (1967). Prentice-Hall. pp. 1-222.

Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
American	2	2	0
English	3	3	0
French	7	6	1
German	2	2	0
Greek	1	1	0
Total:	15	14	1

Table LXXXVI has a total of five different countries identified. A total of fourteen males and one female were identified.

TABLE LXXXVII

Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results. Prentice-Hall. pp. 1-222. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian-American	0	0	0
Caucasian	2	2	0
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	2	2	0

Table LXXXVII represents the written representation of American scientist by ethnicity. A total of two males and no females were indentified.

TABLE LXXXVIII

Visual Representation of Physical Science Textbooks Individual Ethnicity Results. Introductory Physical Science. (1967). Prentice-Hall. pp. 1-222.

Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian	0	0	0
Caucasian	1	1	0
Hispanic	0	0	0
Native-American	0	0	0
Total:	1	1	0

Table LXXXVIII represents visual representation of individuals in physical science textbooks. A total of one was identified. No African-Americans were identified.

TABLE LXXXIX

Visual Representation of Physical Science Textbooks By Country Results. Introductory Physical Science. (1967). Prentice-Hall. pp. 1-222. Categories: Country, Total, Male, and Female

Country	Total	Male	Female
None			

Table LXXXIX represents the visual representation of scientist by their country. A total of different countries were identified were none.

TABLE XC

Visual Representation of Physical Science Textbooks American Scientist Ethnicity Results. Introductory Physical Science. (1967). Prentice-Hall. pp. 1-222. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	None		
Asian-American	None		
Caucasian	None		
Hispanic-American	None		
Native-American	None		
Total:			

Table XC represents the visual ethnicity of American scientist. One female and no male African-American scientist were identified.

TABLE XCI

Written Representation Review of Physical Science Textbooks Individual Results. Physics for Our Times. (1958). MacGraw-Hill. pp. 1-590. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Galileo Galilei	25	Italian	x	
Blaise Pascal	9	French	x	
Isaac Newton	8	English	x	
Wilhelm Roentgen	8	German	x	
Gabriel Fahrenheit	7	German	x	
Archimedes	6	Greek	x	
Henri Becquerral	6	French	x	
Marie Curie	6	French		x
Thomas Edison	6	American	x	
George Ohms	6	German	x	
Robert Boyle	5	English	x	
Robert Van de Graff	5	English	x	
Aristotle	4	Greek	x	
Pierre Curie	4	French	x	
Joseph Frannhofer	4	German	x	
Heinrich Hertz	4	German	x	
Olaus Roemer	4	Dutch	x	
Michael Faraday	3	English	x	
Benjamin Franklin	3	American	x	
William Gilbert	3	English	x	
Otto von Gueicke	3	American	x	
Norman Lockyer	3	English	x	
Joseph Henry	3	American	x	
James Joule	3	English	x	
James Maxwell	3	Scottish	x	
Christian Oersted	3	Danish	x	
Ptolemy	3	Egyptian	x	
Wallace Sabine	3	American	x	

<> Denotes African-American
{} Denotes Asian-American
[] Denotes Hispanic-American
// Denotes Native-American

TABLE XCI CONTINUED

Written Representation Review of Physical Science Textbooks Individual Results. Physics for Our Times. (1958). MacGraw-Hill. pp. 1-590. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
C. T. R. Wilson	3	American	x	
James Wimshurst	3	English	x	
Charles W. Bebe	2	American	x	
Otis Barton	2	American	x	
Nikolaus Copernicus	2	Polish	x	
Pliny the Elder	2	Roman	x	
Queen Elizabeth	2	English		x
Albert Einstein	2	American	x	
John Fleming	2	English	x	
Robert Hooke	2	English	x	
Erst Larwence	2	American	x	
Heike K. Onnes	2	Holland	x	
Albert Michilson	2	American	x	
P. van Musschenbroek	2	Holland	x	
William Ramsey	2	English	x	
Thales	2	Greek	x	
J. J. Thompson	2	English	x	
Andre' M. Ampe're	1	French	x	
Charles D. Anderson	1	American	x	
Alexander G. Bell	1	American	x	
Daniel Bernoulli	1	Italian	x	
Robert Brown	1	American	x	
Arrhius Celsius	1	Swedish	x	
Christopher Columbus	1	Italian	x	
James Crookes	1	English	x	
Charles Coulomb	1	French	x	
Lee De Frost	1	American	x	
George Hale	1	American	x	
Charles Hall	1	American	x	

< > Denotes African-American
{ } Denotes Asian-American
[ ] Denotes Hispanic-American
/ / Denotes Native-American

TABLE XCI CONTINUED

Written Representation Review of Physical Science Textbooks Individual Results. Physics for Our Times. (1958). MacGraw-Hill. pp. 1-590. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
A. W. Hull	1	American	x	
Guglielmo Huygens	1	Dutch	x	
Lord Kelvin	1	English	x	
Edward Land	1	American	x	
L. Perries	1	French	x	
Auguste Piccard	1	French	x	
Jacques Piccard	1	French	x	
Marco Polo	1	Italian	x	
Alessardro Volta	1	Italian	x	
Neil H. William	1	American	x	
Harold Urey	1	American	x	

Total Entries: 209 Individuals: 68

< >	Denotes African-American	{ }	Denotes Asian-American
[ ]	Denotes Hispanic-American	/ /	Denotes Native-American

Table XCI has a total of two hundred nine entries identified. Sixty-eight individuals were identified by scientist, country, male, female, and ethnicity.

TABLE XCII

Written Representation Review of Physical Science Textbooks Scientist by Country Results. Physics for Our Times. (1958). MacGraw-Hill. pp. 1-590.

Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
American	21	21	0
Danish	1	1	1
Dutch	2	2	2
Egyptian	1	1	1
English	15	14	1
French	9	8	1
German	5	5	0
Greek	3	3	0
Holland	1	1	0
Italian	5	5	0

TABLE XCII CONTINUED

Written Representation Review of Physical Science Textbooks Scientist by Country Results. Physics for Our Times. (1958). MacGraw-Hill. pp. 1-590.

Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
Roman	1	1	0
Scottish	1	1	0
Swedish	1	1	0
Total:	68	66	2

Table XCII has a total of thirteen different countries identified. A total of sixty-six males were identified, while two females were identified.

TABLE XCIII

Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results. Physics for Our Times. (1958). MacGraw-Hill. pp. 1-590. Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian-American	0	0	0
Caucasian	21	21	0
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	21	21	0

Table XCIII represents the written representation of American scientist by ethnicity. A total of twenty males were identified and no female identified.

TABLE XCIV

Visual Representation of Physical Science Textbooks Individual Ethnicity Results. Physics for Our Times. (1958). McGraw-Hill. pp. 1-590. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian	0	0	0
Caucasian	29	22	7
Hispanic	0	0	0
Native-American	0	0	0
Total:	29	22	7

Table XCIV represents visual representation of individuals in physical science textbooks. A total of twenty-nine individuals were identified. No African-Americans females or males were identified.

TABLE XCV

Visual Representation of Physical Science Textbooks Scientist by Country Results. Physics for Our Times. (1958). McGraw-Hill. pp. 1-590. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
None			
Total:			

Table XCV represents the visual representation of scientist by their country. No countries were identified.

TABLE XCVI

Visual Representation of Physical Science Textbooks American Scientist Results. Physics for Our Times. (1958). McGraw-Hill. pp. 1-590. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
None			
Total:			

Table XCVI represents the visual ethnicity of American scientist. No American scientist were identified.

TABLE XCVII

Written Representation Review of Physical Science Textbooks Individual Results. Science Problems for Junior High School: Book One. (1957). Scott Foresman and Company. pp. 1-367. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Galileo Galilei	10	Italian	x	
Aristole	7	Greek	x	
Carl Linneaus	5	English	x	
Peter Artedi	3	Italian	x	
Robert Hooke	3	English	x	
Van Leewenhoek	2	Dutch	x	
Christopher Columbus	1	Italian	x	
Queen Elizabeth I	1	English	x	
William Gilbert	1	English	x	
Michael Faraday	1	English	x	
Davy Humphrey	1	English	x	
Hans Lippershey	1	Dutch	x	
Matthias Schleiden	1	German	x	
Theodor Schwann	1	German	x	
Janssen Zacharias	1	Dutch	x	
Total Entries:	39	Individuals:	15	

< >	Denotes African-American	{ }	Denotes Asian-American
[ ]	Denotes Hispanic-American	/ /	Denotes Native-American

Table XCVII has a total of thirty-nine entries identified. Fifteen individuals were identified by scientist, country, male, female, and ethnicity.

TABLE XCVIII

Written Representation Review of Physical Science Textbooks By Country Results. Science Problems for Junior High School: Book One. (1957). Scott Foresman and Company. pp. 1-367. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
Dutch	3	3	0
English	6	6	0
German	2	2	0
Greek	1	1	0
Italian	3	3	0
Total:	15	15	0

Table XCVIII has a total of five different countries identified. A total of fifteen males were identified, while no females were identified.

TABLE XCIX

Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results. Science Problems for Junior High School: Book One. (1957). Scott Foresman and Company. pp. 1-367. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	None		
Asian-American	None		
Caucasian	None		
Hispanic-American	None		
Native-American	None		

Total:

Table TABLE XCIX represents the written representation of American scientist by ethnicity. No American scientist females or males were identified.

TABLE C

Visual Representation of Physical Science Textbooks Individual Ethnicity Results. Science Problems for Junior High School: Book One. (1957). Scott Foresman and Company. pp. 1-367. Categories: Ethnicity, Total, Male, and Female

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian	0	0	0
Caucasian	144	108	36
Hispanic	0	0	0
Native-American	0	0	0
Total:	144	108	36

Table C represents visual representation of individuals in physical science textbooks. A total of one hundred forty-four individuals were identified one hundred eight males and thirty-six females. No African-Americans were identified.

TABLE CI

Visual Representation of Physical Science Textbooks By Country Results. Science Problems for Junior High School: Book One. Scott (1957). Foresman and Company. pp. 1-367. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
Dutch	1	1	0
English	1	1	0
Total:	2	2	0

Table CI represents the visual representation of scientist by their country. A total of two different countries were identified. No female or male American scientist were identified.

TABLE CII

Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results. Science Problems for Junior High School: Book One. (1957). Scott Foresman and Company. pp. 1-367. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	None		
Asian-American	None		
Caucasian	None		
Hispanic-American	None		
Native-American	None		
Total:			

Table CII represents the visual ethnicity of American scientist. No female or male African-American scientist were identified.

TABLE CIII

Written Representation Review of Physical Science Textbooks Individual Results. Science Problems for Junior High School: Book Two. (1957). Scott Foresman and Company. pp. 1-432. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Archmedes	7	Greek	x	
Isaac Newton	2	English	x	
Benjamin Franklin	1	American	x	
Otto von Guericke	1	German	x	
Total Entries:	11	Individuals:	4	

< > Denotes African-American { } Denotes Asian-American
[ ] Denotes Hispanic-American / / Denotes Native-American

Table CIII has a total of eleven entries identified. Four individuals were identified by scientist, country, male, female, and ethnicity.

TABLE CIV

Written Representation Review of Physical Science Textbooks Scientist By Country Results. Science Problems for Junior High School: Book Two. (1957). Scott Foresman and Company. pp. 1-432. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
American	1	1	0
English	1	1	0
German	1	1	0
Greek	1	1	0
Total:	4	4	0

Table CIV has a total of four different countries identified. A total of four males were identified, while no females were identified.

TABLE CV

Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results. Science Problems for Junior High School: Book Two. (1957). Scott Foresman and Company. pp. 1-432. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian-American	0	0	0
Caucasian	1	1	0
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	1	1	0

Table CV represents the written representation of American scientist by ethnicity. A total of one male and no female identified were identified. No African-American females or males were identified.

TABLE CVI

Visual Representation of Physical Science Textbooks Individual Ethnicity Results. Science Problems for Junior High School: Book Two. (1957). Scott Foresman and Company. pp. 1-432. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian	0	0	0
Caucasian	95	72	23
Hispanic	0	0	0
Native-American	7	7	0
Total:	102	79	23

Table CVI represents visual representation of individuals in physical science textbooks ethnicity results. A total of one hundred two individuals were identified. Seven-nine males and twenty-three females were identified. No African-Americans were identified.

TABLE CVII

Visual Representation of Physical Science Textbooks Scientist By Country Results. Science Problems for Junior High School: Book Two. (1957). Scott Foresman and Company. pp. 1-432. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
None			
Total:			

Table CVII represents the visual representation of scientist by their country. No countries were identified. No female or male American scientist were identified.

TABLE CVIII

Visual Representation of Physical Science Textbooks By American Scientist Results. Science Problems for Junior High School: Book Two. (1957). Scott Foresman and Company. pp. 1-432. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	None		
Asian-American	None		
Caucasian	None		
Hispanic-American	None		
Native-American	None		
Total:			

Table CVIII represents the visual ethnicity of American scientist. None were identified.

TABLE CIX

Written Representation Review of Physical Science Textbooks Individual Results. Science Problems for Junior High School: Book Three. (1957). Scott Foresman and Company. pp. 1-493. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Rudoloph Diesel	18	German	x	
Gregor Mendel	6	Austrian	x	
Archimedes	5	Greek	x	
Thomas Edison	3	American	x	
Alexander Fleming	3	Scottish	x	
Edward Jenner	3	English	x	
Alessandro Volta	3	Italian	x	
Alexander G. Bell	2	American	x	
Charles Darwin	2	English	x	
Albert Einstein	2	American	x	
Michael Faraday	2	English	x	
Robert Koch	2	German	x	
Louis Pasteur	2	French	x	
Jonas Salk	2	American	x	
Charles Steinmetz	2	American	x	
Hero of Alexandria	1	Greek	x	
Andre' Ampe're	1	French	x	
Giovanni Branca	1	Italian	x	
Ernst Chain	1	German	x	
Howard Corley	1	English	x	
Gerhard Domagk	1	German	x	
Benjamin Franklin	1	American	x	

< > Denotes African-American
{ } Denotes Asian-American
[ ] Denotes Hispanic-American
/ / Denotes Native-American

TABLE CIX CONTINUED

Written Representation Review of Physical Science Textbooks Individual Results. Science Problems for Junior High School: Book Three. (1957). Scott Foresman and Company. pp. 1-493. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Robert Fulton	1	American	x	
Gastav de Laval	1	Swedish	x	
Luigi Galvani	1	American	x	
Joseph Henry	1	English	x	
Joseph Lister	1	English	x	
Guglielmo Marconi	1	Italian	x	
Eitenie Montgolfier	1	French	x	
Samuel F. B. Morse	1	American	x	
Isaac Newton	1	English	x	
Georg Ohm	1	German	x	
Nicholas Otto	1	German	x	
Charles Persons	1	English	x	
George Stephenson	1	English	x	
Nikola Tesla	1	German	x	
James Watt	1	English	x	
Orville Wright	1	American	x	
Wilbur Wright	1	American	x	
Total Entries:	81	Individuals:	39	

< > Denotes African-American
{ } Denotes Asian-American
[ ] Denotes Hispanic-American
/ / Denotes Native-American

Table CIX has a total of eighty-one entries identified. Thirty-nine individuals were identified by scientist, country, male, female, and ethnicity.

TABLE CX

Written Representation Review of Physical Science Textbooks Scientist By Country Results. Science Problems for Junior High School: Book Three. (1957). Scott Foresman and Company. pp. 1-493. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
American	11	11	0
Austrian	1	1	0
English	10	10	0
French	3	3	0
German	7	7	0
Greek	2	2	0
Italian	3	3	0

TABLE CX CONTINUED

Written Representation Review of Physical Science Textbooks Scientist By Country Results. Science Problems for Junior High School: Book Three. (1957). Scott Foresman and Company. pp. 1-493. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
Scottish	1	1	0
Swedish	1	1	0
Total:	39	39	0

Table CX has a total of nine different countries identified. A total of thirty-nine males were identified, while no females were identified.

TABLE CXI

Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results. Science Problems for Junior High School: Book Three. (1957). Scott Foresman and Company. pp. 1-493. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian	0	0	0
Caucasian	11	11	0
Hispanic	0	0	0
Native-American	0	0	0
Total:	11	11	0

Table CXI represents the written representation of American scientist by ethnicity. A total of eleven males were identified and none females identified.

TABLE CXII

Visual Representation of Physical Science Textbooks Individual Ethnicity Results. Science Problems for Junior High School: Book Three. Scott Foresman and Company. (1957). pp. 1-493. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian	0	0	0
Caucasian	160	113	47
Hispanic	0	0	0
Native-American	2	2	0
Total:	162	115	47

Table CXII represents visual representation of individuals in physical science textbooks ethnicity results. A total of one hundred sixty-two individuals were identified, one hundred fifteen males and forty seven males. No African-Americans males or females were identified.

TABLE CXIII

Visual Representation of Physical Science Textbooks Scientist By Country Results. Science Problems for Junior High School: Book Three. Scott Foresman and Company. (1957). pp. 1-493. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
American	1	1	0
French	1	1	0
Total:	2	2	0

Table CXIII represents the visual representation of scientist by their country. A total of two different countries were identified. One male and no female American scientist were identified.

TABLE CXIV

Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results. Science Problems for Junior High School: Book Three. Scott Foresman and Company. (1957). pp. 1-493. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
African-American	0	0	0
Asian-American	0	0	0
Caucasian	1	1	0
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	1	1	0

Table CXIV represents the visual ethnicity of American scientist. No female or male African-American scientist were identified.

TABLE CXV

Written Representation Review of Physical Science Textbooks Individual Results. Chemistry In Action. (1956). D. C. Heath and Company. pp. 1-545. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Joseph Gay-Lussac	10	French	x	
Joseph Priestly	9	English	x	
Svante Arrhenius	8	Swedish	x	
Henry Bessemer	6	English	x	
Robert Boyle	6	English	x	
John Dalton	6	English	x	
Henry Moseley	6	English	x	
Amadeo Avagadro	5	Italian	x	
Marie Currie	5	French		x
William Crookes	5	English	x	
Dimitri Mendeleev	5	Russian	x	
Isaac Newton	5	English	x	
J. J. Rutherford	5	English	x	
Jacques Charles	4	English	x	
Perrie Currie	4	French	x	
Neils Bohr	3	English	x	
Humphrey Davy	3	English	x	
Albert Einstein	3	American	x	
Thomas Graham	3	American	x	
Charles M. Hall	3	American	x	
John Newlands	3	American	x	
Carl W. Schiele	3	Swedish	x	
Edward Acheon	2	American	x	
Henry Cavendish	2	English	x	
Michael Faraday	2	English	x	
Edward Jenner	2	English	x	
Lord Kelvin	2	English	x	
Crawford Long	2	American	x	

<> Denotes African-American
{} Denotes Asian-American
[] Denotes Hispanic-American
// Denotes Native-American

TABLE CXV CONTINUED

Written Representation Review of Physical Science Textbooks Individual Results. Chemistry In Action. (1956). D. C. Heath and Company. pp. 1-545. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
Louis Pasteur	2	French	x	
Glenn Seaborg	2	American	x	
John Tydall	2	English	x	
Fredrick Wahler	2	German	x	
Carl D. Anderson	1	American	x	
Leo. H. Beckeland	1	American	x	
J. J. Berzelus	1	Swedish	x	
Joseph Black	1	American	x	
W. H. Caurathers	1	American	x	
James Chadwick	1	English	x	
F. G. Cotrell	1	American	x	
Albert Ghiorso	1	American	x	
Charles Goodyear	1	American	x	
Fritz Haker	1	German	x	
Van Helmont	1	German	x	
Paul Hercoult	1	French	x	
John Hyatt	1	American	x	
Irene Joliot	1	French		x
Jean Joliot	1	French	x	
J. G. Lipman	1	American	x	
Ernst Lawrence	1	American	x	
John Lawes	1	English	x	
Julius von Liebig	1	German	x	
Alfred Nobel	1	Swedish	x	
Robert Milkan	1	American	x	
Henri Morrison	1	French	x	
William Morrison	1	American	x	
Alonzo Phillips	1	American	x	

< > Denotes African-American
{ } Denotes Asian-American
[ ] Denotes Hispanic-American
/ / Denotes Native-American

TABLE CXV CONTINUED

Written Representation Review of Physical Science Textbooks Individual Results. Chemistry In Action. (1956). D. C. Heath and Company. pp. 1-545. Categories: Scientist, Text Entry, Country, Male, and Female.

Scientist	Text Entry	Country	Male	Female
J. J. Thompson	1	English	x	
Christian Schoberia	1	German	x	
James Simpson	1	American	x	
John Waller	1	German	x	
John Warren	1	American	x	
Horace Wells	1	American	x	
C. T. R. Wilson	1	English	x	
Fredrich Wohler	1	German	x	
Total Entries:	174	Individuals:	64	

< >	Denotes African-American	{ }	Denotes Asian-American
[ ]	Denotes Hispanic-American	/ /	Denotes Native-American

Table CXV has a total of one hundred seventy-four entries identified. Sixty-four individuals were identified by scientist, country, male, female, and ethnicity.

TABLE CXVI

Written Representation Review of Physical Science Textbooks Scientist By Country Results. Chemistry In Action. (1956). D. C. Heath and Company. pp. 1-545. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
American	23	23	0
English	20	20	0
French	8	6	2
German	7	7	0
Italian	1	1	0
Russian	1	1	0
Swedish	1	1	0
Total:	64	62	2

Table CXVI has a total of seven different countries identified. A total of sixty-three males and one female were identified. Twenty-three American scientist have been identified, twenty-two males and one female.

TABLE CXVII

Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results. Chemistry In Action. (1956). D. C. Heath and Company. pp. 1-545. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian-American	0	0	0
Caucasian	23	23	0
Hispanic-American	0	0	0
Native-American	0	0	0
Total:	23	23	0

Table CXVII represents the written representation of American scientist by ethnicity. A total of twenty males and no female scientist were identified.

TABLE CXVIII

Visual Representation of Physical Science Textbooks Individual Ethnicity Results. Chemistry In Action. D. C. Heath and Company. (1956). pp. 1-545.

Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	1	1	0
Asian	0	0	0
Caucasian	123	102	21
Hispanic	0	0	0
Native-American	0	0	0
Total:	124	103	21

Table CXVIII represents visual representation of individuals in physical science textbooks ethnicity results. A total of one twenty-four individuals were identified. One hundred three males and twenty-one females were identified. One African-American was identified, one male and no female.

TABLE CXIX

Visual Representation of Physical Science Textbooks Scientist By Country Results. Chemistry In Action. D. C. Heath and Company. (1956). pp. 1-545. Categories: Country, Total, Male, and Female.

Country	Total	Male	Female
American	2	2	0
English	2	2	0
French	3	2	1
Total:	7	6	1

Table CXIX represents the visual representation of scientist by their country. A total of three different countries were identified. Two male and no female American scientist were identified.

TABLE CXX

Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results. Chemistry In Action. D. C. Heath and Company. (1956). pp. 1-545. Categories: Ethnicity, Total, Male, and Female.

Ethnicity	Total	Male	Female
African-American	0	0	0
Asian	0	0	0
Caucasian	2	2	0
Hispanic	0	0	0
Native-American	0	0	0
Total:	2	2	0

Table CXX represents the visual ethnicity of American scientist. No female and male African-American scientist were identified.

TABLE CXXI

CATEGORIES: Publisher	Merrill	Addison-Wesley	Scott-Foresman	HBJ	Silver Burn.
Year	1993	1992	1990	1989	1988
CATEGORY I	Written Representation Review of Physical Science Textbooks Individual Results				
Pages	690	633	627	601	592
Total Text Entry	102	300	258	266	176
Total Individuals	38	50	60	72	37
CATEGORY II	Written Representation Review of Physical Science Textbooks Scientist By Country Results				
Total Scientist	38	50	60	72	37
Total Male	35	49	51	63	33
Total Female	3	1	9	9	4
CATEGORY III	Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results				
Total	9	10	23	26	7
Total Male	7	9	17	22	4
Total Female	2	1	6	4	3

TABLE CXXI CONTINUED

CATEGORIES:					
Publisher	Merrill	Addison-Wesley	Scott-Foresman	HBJ	Silver Burn.
Year	1993	1992	1990	1989	1988
CATEGORY IV	Visual Representation of Physical Science Textbooks Individual Ethnicity Results				
Total Individual	170	87	72	244	129
Total Male	83	59	27	135	67
Total Female	87	28	45	109	62
CATEGORY V	Visual Representation of Physical Science Textbooks Scientist By Country Results				
Total Scientist	9	9	23	29	7
Total Male	7	9	18	19	4
Total Female	2	0	5	10	3
CATEGORY VI	Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results				
Total American	3	3	15	18	7
Total Male	1	3	11	10	4
Total Female	2	0	4	8	3

TABLE CXXI CONTINUED

CATEGORIES:

Publisher	Prentice-Hall	Holt, Rhine Winston	Scott Foresman	Merrill	Merrill
Year	1988	1983	1983	1981	1979
CATEGORY I	Written Representation Review of Physical Science Textbooks Individual Results				
Pages	665	545	475	505	503
Total Text Entry	429	230	110	46	103
Total Individuals	67	53	29	22	26
CATEGORY II	Written Representation Review of Physical Science Textbooks Scientist By Country Results				
Total Scientist	67	53	29	22	26
Total Male	62	51	29	18	22
Total Female	5	2	0	4	4
CATEGORY III	Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results				
Total	34	15	5	7	15
Total Male	30	15	5	4	11
Total Female	4	0	0	3	4

TABLE CXXI CONTINUED

CATEGORIES:

Publisher	Prentice-Hall	Holt, Rhine Winston	Scott Foresman	Merrill	Merrill
Year	1988	1983	1983	1981	1979
CATEGORY IV	Visual Representation of Physical Science Textbooks Individual Ethnicity Results				
Total Individual	196	49	115	125	124
Total Male	90	29	54	75	73
Total Female	106	20	61	50	51
CATEGORY V	Visual Representation of Physical Science Textbooks Scientist By Country Results				
Total	23	14	1	4	3
Total Male	17	12	1	1	3
Total Female	6	2	0	3	0
CATEGORY VI	Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results				
Total	19	5	1	4	3
Total Male	14	5	1	1	3
Total Female	5	0	0	3	0

TABLE CXXI CONTINUED

CATEGORIES:

Publisher	Merrill	Harper-Row	Rand-McNally	Meredith	Prent. Hall
Year	1977	1973	1972	1967	1962
CATEGORY I	Written Representation Review of Physical Science Textbooks Individual Results				
Pages	479	458	602	580	222
Total Text Entry	125	437	236	299	46
Total Individuals	40	75	76	103	15
CATEGORY II	Written Representation Review of Physical Science Textbooks Scientist By Country Results				
Total Scientist	40	75	76	103	15
Total Male	27	74	72	101	14
Total Female	13	1	4	2	1
CATEGORY III	Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results				
Total American	21	20	13	37	2
Total Male	9	20	13	37	2
Total Female	12	0	0	0	0

TABLE CXXI CONTINUED

CATEGORIES:

Publisher	Merrill	Harper-Row	Rand-McNally	Meredith	Prent. Hall
Year	1977	1973	1972	1967	1962
CATEGORY IV	Visual Representation of Physical Science Textbooks Individual Ethnicity Results				
Total Individual	112	137	42	57	1
Total Male	51	105	37	52	1
Total Female	61	32	5	5	0
CATEGORY V	Visual Representation of Physical Science Textbooks Scientist By Country Results				
Total Scientist	21	33	5	3	0
Total Male	9	32	5	3	0
Total Female	12	1	0	0	0
CATEGORY VI	Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results				
Total American	18	11	1	3	0
Total Male	8	11	1	3	0
Total Female	10	0	0	0	0

TABLE CXXI CONTINUED

CATEGORIES:

Publisher	McGraw-Hill	1 Scott Foresman	2. Scott-Foresman	3. Scott-Foresman	D. C. Heath
Year	1958	1957	1957	1957	1956
CATEGORY I	Written Representation Review of Physical Science Textbooks Individual Results				
Pages	590	367	432	493	545
Total Text Entry	209	39	11	81	174
Total Individuals	68	15	4	39	64
CATEGORY II	Written Representation Review of Physical Science Textbooks Scientist By Country Results				
Total Scientist	68	15	4	39	64
Total Male	66	15	4	39	62
Total Female	2	0	0	0	2
CATEGORY III	Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results				
Total American	21	0	1	11	23
Total Male	21	0	1	11	23
Total Female	0	0	0	0	0

TABLE CXXI CONTINUED

CATEGORIES:

Publisher	McGraw-Hill	1 Scott Foresman	2. Scott-Foresman	3. Scott-Foresman	D. C. Heath
Year	1958	1957	1957	1957	1956
CATEGORY IV	Visual Representation of Physical Science Textbooks Individual Ethnicity Results				
Total Individual	29	144	102	162	124
Total Male	22	108	79	115	103
Total Female	7	36	23	47	21
CATEGORY V	Visual Representation of Physical Science Textbooks Scientist By Country Results				
Total Scientist	0	2	0	2	7
Total Male	0	2	0	2	6
Total Female	0	0	0	0	1
CATEGORY VI	Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results				
Total American	0	0	0	1	2
Total Male	0	0	0	1	2
Total Female	0	0	0	0	0

TABLE CXXII

CATEGORIES:	TOTALS
CATEGORY I	Written Representation Review of Physical Science Textbooks Individual Results
Publisher	20
Year	1993 TO 1956
Pages	10604
Total Text Entry	3577
Total Individuals	1036
CATEGORY II	Written Representation Review of Physical Science Textbooks Scientist By Country Results
Total Scientist	1036
Total Male	968
Total Female	68
CATEGORY III	Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results
Total	310
Total Male	265
Total Female	45

TABLE CXXII CONTINUED

CATEGORIES:	TOTALS
CATEGORY IV	Visual Representation of Physical Science Textbooks Individual Ethnicity Results
Total Individual	2218
Total Male	1363
Total Female	855
CATEGORY V	Visual Representation of Physical Science Textbooks Scientist By Country Results
Total Scientist	185
Total Male	142
Total Female	43
CATEGORY VI	Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results
Total American	114
Total Male	79
Total Female	35

TABLE CXXIII

CATEGORY III Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results

Publisher	Year	AA		AS		CAU		HA		NA	
		M	F	M	F	M	F	M	F	M	F
Merrill	1993	0	1	0	0	7	1	0	0	0	0
Addison-Wesley	1992	0	0	0	0	9	1	0	0	0	0
Scott-Foresman	1990	2	1	0	0	11	5	4	0	0	0
HBJ	1989	0	0	1	0	21	4	0	0	0	0
Silver-Burnnet	1988	0	1	0	1	3	1	1	0	0	0
Prentice-Hall	1983	0	1	0	1	30	2	0	0	0	0
HRW	1983	1	0	0	0	14	0	0	0	0	0
Scott-Foresman	1983	0	0	0	0	5	0	0	0	0	0
Merrill	1981	0	1	0	0	4	2	0	0	0	0
Merrill	1979	0	0	1	0	10	4	0	0	0	0
Merrill	1977	0	2	0	2	8	7	1	1	0	0
Harper-Row	1973	0	0	0	0	20	0	0	0	0	0
Rand-McNally	1972	0	0	0	0	13	0	0	0	0	0
Merrill	1967	0	0	1	0	36	0	0	0	0	0
Prentice-Hall	1962	0	0	0	0	2	0	0	0	0	0
McGraw-Hill	1958	0	0	0	0	21	0	0	0	0	0
1. Scott-Foresman	1957	0	0	0	0	0	0	0	0	0	0
2. Scott-Foresman	1957	0	0	0	0	1	0	0	0	0	0
3. Scott-Foresman	1957	0	0	0	0	11	0	0	0	0	0
D. C. Heath	1956	0	0	0	0	23	0	0	0	0	0
	Total:	3	6	3	4	249	27	6	1	0	0

TABLE CXXIV

CATEGORY IV Visual Representation of Physical Science Textbooks
Individual Ethnicity Results

Publisher	Year	AA		AS		CAU		HA		NA	
		M	F	M	F	M	F	M	F	M	F
Merrill	1993	24	18	2	10	54	54	2	4	1	1
Addison-Wesley	1992	11	9	8	8	40	11	0	0	0	1
Scott-Foresman	1990	2	1	3	2	22	8	0	2	0	0
HBJ	1989	25	23	8	8	99	78	3	0	0	0
Silver-Burnnet	1988	27	7	2	2	33	49	5	4	0	0
Prentice-Hall	1983	22	14	10	0	52	92	6	0	0	0
HRW	1983	3	7	1	1	24	12	1	0	0	0
Scott-Foresman	1983	11	11	1	1	40	48	2	1	0	0
Merrill	1981	19	11	2	3	54	36	0	0	0	0
Merrill	1979	30	11	5	3	34	34	3	1	1	2
Merrill	1977	6	13	6	2	35	44	2	2	2	0
Harper-Row	1973	12	1	0	0	92	22	1	0	0	0
Rand-McNally	1972	8	2	2	0	28	3	0	0	0	0
Merrill	1967	10	0	0	0	41	4	0	0	0	0
Prentice-Hall	1962	0	0	0	0	1	0	0	0	0	0
McGraw-Hill	1958	0	0	0	0	22	7	0	0	0	0
1. Scott-Foresman	1957	0	0	0	0	108	0	0	0	0	0
2. Scott-Foresman	1957	0	0	0	0	72	23	0	0	7	0
3. Scott-Foresman	1957	0	0	0	0	113	47	0	0	2	0
D. C. Heath	1956	1	0	0	0	102	21	0	0	0	0
	Total:	211	129	50	40	1066	661	25	14	13	4

TABLE CXXV

CATEGORY VI Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results

Publisher	Year	AA		AS		CAU		HA		NA	
		M	F	M	F	M	F	M	F	M	F
Merrill	1993	0	0	0	0	1	1	0	0	0	0
Addison-Wesley	1992	0	0	0	0	3	3	0	0	0	0
Scott-Foresman	1990	1	1	0	0	8	3	2	0	0	0
HBJ	1989	1	1	0	0	9	7	0	0	0	0
Silver-Burnnet	1988	0	1	0	1	3	1	1	0	0	0
Prentice-Hall	1983	0	1	2	0	11	4	1	0	0	0
HRW	1983	1	0	0	0	14	0	0	0	0	0
Scott-Foresman	1983	0	0	0	0	1	0	0	0	0	0
Merrill	1981	0	1	0	0	1	2	0	0	0	0
Merrill	1979	0	0	0	0	3	4	0	0	0	0
Merrill	1977	1	1	0	0	7	9	0	0	0	0
Harper-Row	1973	0	0	0	0	11	0	0	0	0	0
Rand-McNally	1972	0	0	0	0	1	0	0	0	0	0
Merrill	1967	0	0	1	0	2	0	0	0	0	0
Prentice-Hall	1962	0	0	0	0	0	0	0	0	0	0
McGraw-Hill	1958	0	0	0	0	0	0	0	0	0	0
1. Scott-Foresman	1957	0	0	0	0	0	0	0	0	0	0
2. Scott-Foresman	1957	0	0	0	0	0	0	0	0	0	0
3. Scott-Foresman	1957	0	0	0	0	1	0	0	0	0	0
D. C. Heath	1956	0	0	0	0	2	0	0	0	0	0
	Total:	4	6	3	1	68	30	4	0	0	0

TABLE CXXVI

PER CENTAGES BY ETHNICITY

CATEGORY III	Absolute Frequency	Absolute Frequency	Relative Frequency	Relative Frequency
Ethnicity	Female	Male	Female	Male
African-American	6	3	14.00%	1.15%
Asian-American	4	3	9.30%	1.15%
Caucasian	27	249	62.70%	95.40%
Hispanic	6	6	14.00%	2.30%
Native-American	0	0	0.00%	0.00%
	N=43	N=261		

Category IV	Absolute Frequency	Absolute Frequency	Relative Frequency	Relative Frequency
Ethnicity	Female	Male	Female	Male
African-American	129	211	10.05%	22.69%
Asian-American	50	40	3.90%	4.30%
Caucasian	1066	661	83.09%	71.08%
Hispanic	25	14	1.95%	1.50%
Native-American	13	4	1.01%	0.43%
	N=1283	N=930		

CATEGORY VI	Absolute Frequency	Absolute Frequency	Relative Frequency	Relative Frequency
Ethnicity	Female	Male	Female	Male
African-American	6	4	16.20%	5.06%
Asian-American	1	3	2.70%	3.80%
Caucasian	30	68	81.10%	86.08%
Hispanic	0	4	0.00%	5.06%
Native-American	0	0	0.00%	0.00%
	N=37	N=79		

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter presents the summary, findings, conclusions, implications, and recommendations that are for future research for the number of visual representations of African-American males in physical science textbooks. Since textbooks are design to be self-paced by materials such as, highly complex illustrations, photographs, and drawings they may be effective in facilitating student learning. Authors who carefully design these textbooks visual content of African-American males may benefit the student's awareness of science as career choices.

Physical science textbooks are excellent informational resources for learners to accomplish their intended science objectives. However, in terms of visual information, as well as written information there are needs for the attractiveness and anesthetics of textbooks. Careful consideration for the learner's attributes such as age or grade level, IQ, preference, sex, race, and ethnic background are important.

Summary

The study is designed to determine the quantitative visual relationship between textbooks adoption years 1954 to 1994 in Oklahoma for African-American males. The study is also designed to further determine whether there are visual and written relationships between male, female, ethnicity, countries, and scientist in physical science textbooks over a thirty-eight year span.

A review of the data analysis reveals during the thirty-eight year span three patterns of thought to this problem arises: (1) the total number of African-American male individuals written representation are less than African-American females, (2) the total number of African-American male scientists visually represented are less than African-American females, and (3) the total number of African-American male and female representation by ethnicity compared to other select ethnic groups varies with each decade.

Findings

The physical science textbooks visual and written analyses indicates that European Caucasian males as stereotypes for scientist. Very little facts are presented for cultural diversity by textbook authors. Therefore, diverse students who read and view these textbooks may become self-conscious and negative toward themselves when there are little or no contribution by their ethnic group. The treatment of culture, the physically challenged, sex and race fair curriculum language are just a few implications that are found in some science textbooks. In table CXXV, the totals for categories III, IV, and VI totals shows significant differences in ethnicity representation.

The Chi-square for category III, indicates a predicted calculated Chi-square frequency of (S = 19.671), where the actual Chi-square frequency at the 95 percentile equals, (S = 36.4). The Chi-square for category IV, indicates a predicted calculated Chi-square frequency of (S = 3.11898), where the actual Chi-square frequency at the 95 percentile equals (S = 5.99). The Chi-square for category VI, indicates a predicted calculated Chi-square frequency of (S = 7.7685), where the actual Chi-square frequency at the 95 percentile equals, (S = 9.49). The n -value is equal to the twenty textbooks, where $n = (n - 1)$.

Therefore, all the hypotheses are not rejected for the representation of African-American males because all the Chi-square values are larger than the predicted values.

Conclusions

The analysis of twenty physical science textbooks reveals changes which occurs with different textbook companies that reflect the state school population. The majority of the textbooks viewed were Caucasian male European centered. The representation of women are little in all ethnic groups. These facts were also found in the number of scientist represented visually and written However, among African-American scientist there are more females represented than males in this study.

Throughout the decades of the fifties, sixties, seventies, eighties, and nineties, student population changes were occurring in the public school classrooms. There is a growing appreciation for cultural as well as gender diversity in the in schools. These changes are reflected by the census projecting an increase in the number of diverse groups in the United States population by the year 2000. Our schools are reflections of the United States population.

One must take note of a society that has become concerned with the sensitivity of diversity visually and written information in textbooks. Yet, mathematics and science subjects are still considered by many as "male dominant fields", in which diversity is merely an exception to the rule.

Implications

In and out of our schools young children are exposed to racist, cultural, and gender visual and written language in textbooks. By time children are two or

three years old they become aware of their cultural differences in gender and ethnic identity. Textbooks authors who are not sensitive to these issues will re-enforce these stereotypes. It is somewhat surprising to find that even today after the Brown Decision, little changes have occurred in textbook content. These attitudes are expressed over and over in books and in other media that gradually distort their [our] perceptions until stereotypes and myths about minorities and women are accepted as reality (Sparks, 1989, p. 143).

The textbooks visual representations of cultural diversity are important for student achievement. Textbook's represent a lifestyle that is whether one is from an affluent or non-affluent environment. Therefore, one must view the relationship between people and textbooks are sensitive issues. Conflicts may occur between the educator and student when textbooks are not reflecting the true heroes for them, because of the dominant culture at the time.

Recommendations

It is recommended that the quantitative visual representation data evaluate the number of African-American males in physical science textbooks be more reflective of the American populace. Furthermore, the relationship between numerical visual and written representations should be explored to determine the extent in which each are integrated into textbook content. This is not to say whether or not visual or written representations in textbooks is referring to the learners as a predict for their futures.

Textbook authors who are not sensitive to these changes, must be become more sensitive to student diversity, gender, and ethnicity in textbooks. African-Americans and other diverse groups are becoming sensitive to negative

representations of them in textbooks. Educators must be aware that there are hidden curricula toward ethnic groups.

The last recommendation for educators is when choosing to teach from textbooks, check the illustrations. Review how minorities are stereotyped in the textbook. Become aware the tokenism of classical minorities and if new ones have been or are being introduced. Look for how the roles of minorities and women are portrayed visually. Check the story line for the standards of minorities becoming successful or as problem solvers. Is the information accurately being stated.

Immigrants who came to participate in defining the images of American society are projected in our schools. More importantly, their exclusion from these images denies many African-American and other minorities contributions to history and their presence in society. For many African, Asian, Hispanics, and Native-Americans the textbook content carries a disturbing and distorted message that the material are not of a general value. The material is legitimized through the power of altering its image of American mainstream which continue to frustrate black identification with it. This further excuses whites and others of a huge ignorance of their own society. Instead of a society of assimilation it must be a society of inclusion and integration for students to experience their own creative diversity.

Resistance to status quo from teachers, parents and students results in changes that enhances students personal confront and control in classrooms, affecting each cognitive level. As the volume of classwork introduced in classroom activities become more non-academic the more it represents students values and self-esteem.

Teachers as "for the role of transformation intellectuals," can rethink, " the relationship of schooling to the social order" but become more inquiry critical and

democratic. Therefore, the advice for the teacher is one must "learn how to learn about students and their families," not as "solution" but as "general procedure".

The school curriculum threatens the cultural heritage of the tribe. Public school districts whose host community is generally homogeneous, locally controlled enables the development of their schools are to be fully reflective of prevailing values beliefs and behaviors. Teacher and administrator are selected by school board members which acts as the guardian agents of a close school and community.

Within the academic arena, controversy exists between teachers who see their subject matter as an invitation for intellectual engagement (null curriculum) and teachers who see it as an opportunity for developing "appropriate behavior" (traditional curriculum).

The clear issue here relates to the instrumental outcomes of schooling. A related issue is "Whose knowledge is most worthy?" The answer may lie within teacher conceptions of their subject meanings. The worth of a subject maybe plainly conveyed within its location on time tables- morning are reserved for worthier subjects - the time per week allotted to different subject; and it is also revealed by what we see designated as "examine able knowledge".

These disparate choices reveal the gulf differences between views of what literature should be taught in the classroom to students. Children arrive at school having learned ways of thinking about and perceiving matters from home. The school act as a agent to transforms its point of conceptualizing relationships between culture and science education into assimilation through censorship of cultural contributions.

Censorship epitomizes the extreme to which groups will go to bring forth curricular circumstances they dream culturally dangerous through art, literature, anthropology, etc. These are better know as the soft sciences. (As you know a

hard head makes a soft a--, well you fill in the word.) Censorship shapes a curriculum by dictation of inclusion and exclusion. The agents of censorship are community groups who act on their own or through their school board members as agents for suppressing unfitting books and classroom behavior. (Far Right)

Differential judgments about students that have had an bearing on curricular decisions derive not only from socio-economics, politics, race, class, sex, and gender, but also from student academic assessments topics of achievement, interest, and ability to only name a few. Outcome assessments, through tracking of students into a separate curriculum is designed by channeling instructional materials, pace, cognitive level of discussions, assignments, and testing for the school and its society. Teachers supporting tracking as a viable means of doing academic justice to students derails the diversity of creative intellectual abilities through self-imposed negativism.

The most damaging grounds for establishing a fit curriculum is one based on the judgment of an entire group's ability as inferior. For the most part, it is no longer socially acceptable to make such sweeping and condemning statements. Yet, think about what inequalities produced by social reproduction in schools as grounds for an expendable population. Is this the underlying notion to produce a future society of the haves and have not? Why would one state this question? Because for many years the hidden curriculum and dominant culture, transformation of skills were not past on to the next generation to take into the next millennium or post-industrial society (i.e., technology, information words and language, new wave energy and epoche'). The have nots were always being left out. Maybe a few slipped through the "cracks" however many of them were assimilate into the dominant culture. Those left had the world on their shoulder.

In the complex intersections of culture and curriculum, the purposes of ethnic maintenance, assimilation, economic opportunity, political pride and nation

building transformed (Remember, energy can not be either created or destroyed but transformed.) human energy into often conflicts because of encroaching treats upon the dominant traditional curriculum. These threats are the everso changing on the horizon because of population diversity and multiculturism. A new birth is occurring. The birth pains are long existing cultures who have been excluded through marginalization but, were inclusive in the curriculum, yet they were excluded in the canon text of knowledge.

The premise underlying curricular change is that educators can modify their practices. Yet most recommendations for redefining a prevailing culture-curriculum fit refer to school policy where some such fit already prevails as the status quo. And therefore educators, students and parents can learn to work in the art and craft of curriculum.

It is a hope that we do not get to a point in which we ask ourselves, "What do we do with those who are in the ghettoes?". Ghetto is defined as individuals whose acquired skills and thought processes, that are marginal at best, are equipped to use for survival in a post modern industrial technical information society. It was also proposed by the dominant society when slavery was being outlawed in the United States by a Constitutional Amendment. This same question was proposed to those who were in the World War II death camps controlled by the Nazi regimes.

It is also ironic, that this same question was proposed nearly two thousand years ago by Pilate a Roman governor,

> "Now at the feast he was accustomed to releasing one prisoner to them, whomever they requested. And there was one named Barabbas, *who was* chained with his fellow rebels; they had committed murder in the rebellion. Then the multitude, crying aloud, began to ask *him to do* just as he had always done for them.

But, Pilate answered and said to them, saying, "Do you want me to release to you the King of the Jews?" For he knew that the chief priests had handed Him over because of envy.

But the chief priests stirred up the crowd, so that he should rather release Barabbas to them. Pilate answered and said to them again, "What then do you want me to do *with Him* whom you call the King of the Jews?"

So they cried out again, "Crucify Him!"

(Mark, Chapter 15, Versus 6 - 13, Holy Bible, New King James Version, Thomas Nelson Publishers, Nashville, TN, 1991, pg. 987)

Now the question is being asked again with even more intensity!!! What will you decide?

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APPENDIX A

CHI SQUARE CALCULATIONS

CATEGORY III Written Representation Review of Physical Science Textbooks by American Scientist Ethnicity Results

(Chi-square Results)

	AA	AS	CAU	HA	NA	TOTAL
Females	6	4	27	1	0	38
Males	3	3	249	6	0	261
TOTAL	9	7	276	7	0	299

PREDICTED FREQUENCIES

	AA	AS	CAU	HA	NA	TOTAL
Females	1.143	0.889	35.052	0.889	0.00	0.127
Males	7.848	6.104	240.67	6.104	0.00	0.872

Calculations of Predicted Frequencies

$$S = \frac{(3 - 7.848)^2}{7.848} + \frac{(3 - 6.104)^2}{6.104} + \frac{(249 - 240.67)^2}{240.67} + \frac{(6 - 6.104)^2}{6.104} +$$

2.99 **1.578** **0.288** **0.0017**

$$\frac{(6 - 1.143)^2}{1.143} + \frac{(4 - 0.889)^2}{0.889} + \frac{(27 - 35.052)^2}{35.052} + \frac{(1 - 0.889)^2}{0.889} +$$

2.0639 **10.886** **1.8496** **0.0138**

S = 2.99 + 1.578 + 0.288 + 0.0017 + 2.0639 + 10.886 + 1.8496 + 0.0138

S = 19.671

Expected frequency 95 percentile level = 36.4 where n = 20 textbooks, (n - 1).

CATEGORY IV Visual Representation of Physical Science Textbooks Individual Ethnicity Results

(Chi-square Results)

	AA	AS	CAU	HA	NA	TOTAL
Females	129	40	661	14	4	848
Males	211	50	1066	25 39	13	1365
TOTAL	340	90	1727		17	22213

PREDICTED FREQUENCIES

	AA	AS	CAU	HA	NA	TOTAL
Females	130.2	34.47	661.44	14.937	6.511	0.383
Males	209.78	55.53	1065.55	24.063	10.489	0.617

Calculations of Predicted Frequencies

$$S = \frac{(211 - 20.78)^2}{20.78} + \frac{(50 - 55.53)^2}{55.53} + \frac{(1066 - 1065.55)^2}{1065.55} + \frac{(25 - 24.063)^2}{24.063} +$$

0.0071 **0.55** **0.00019** **0.0364**

$$\frac{(13 - 10.489)^2}{10.489} + \frac{(129 - 130.2)^2}{130.2} + \frac{(40 - 34.47)^2}{34.47} + \frac{(661 - 661.44)^2}{661.44} +$$

0.601 **0.011** **0.887** **0.00029**

$$\frac{(14 - 14.937)^2}{14.937} + \frac{(4 - 6.511)^2}{6.511}$$

0.058 **0.968**

S = 0.0071 + 0.55 + 0.00019 + 0.0364 + 0.601 + 0.011 + 0.887 + 0.00029

S = 3.11898

Expected frequency 95 percentile level = 5.99 where n = 20 textbooks, (n - 1).

CATEGORY VI Visual Representation of Physical Science Textbooks by American Scientist Ethnicity Results

(Chi-square Results)

	AA	AS	CAU	HA	NA	TOTAL
Females	6	1	30	0	0	37
Males	4	3	68	4	0	79
TOTAL	10	4	98	4	0	116

PREDICTED FREQUENCIES

	AA	AS	CAU	HA	NA	TOTAL
Females	3.2	1.28	31.36	1.28	0.00	0.32
Males	6.8	2.72	66.64	2.72	0.00	0.68

Calculations of Predicted Frequencies

$$S = \frac{(4 - 6.8)^2}{6.8} + \frac{(3 - 2.72)^2}{2.72} + \frac{(68 - 66.64)^2}{66.64} + \frac{(4 - 2.72)^2}{2.72} + \frac{(6 - 3.2)^2}{3.2} +$$

1.15 **2.175** **0.0277** **0.6023** **2.45**

$$\frac{(1 - 1.128)^2}{1.128} + \frac{(30 - 31.36)^2}{31.36} + \frac{(0 - 1.28)^2}{1.28}$$

0.0245 **0.0589** **1.28**

S = 1.15 + 2.175 + 0.0277 + 0.6023 + 2.45 + 0.0245 + 0.0589 +1.28

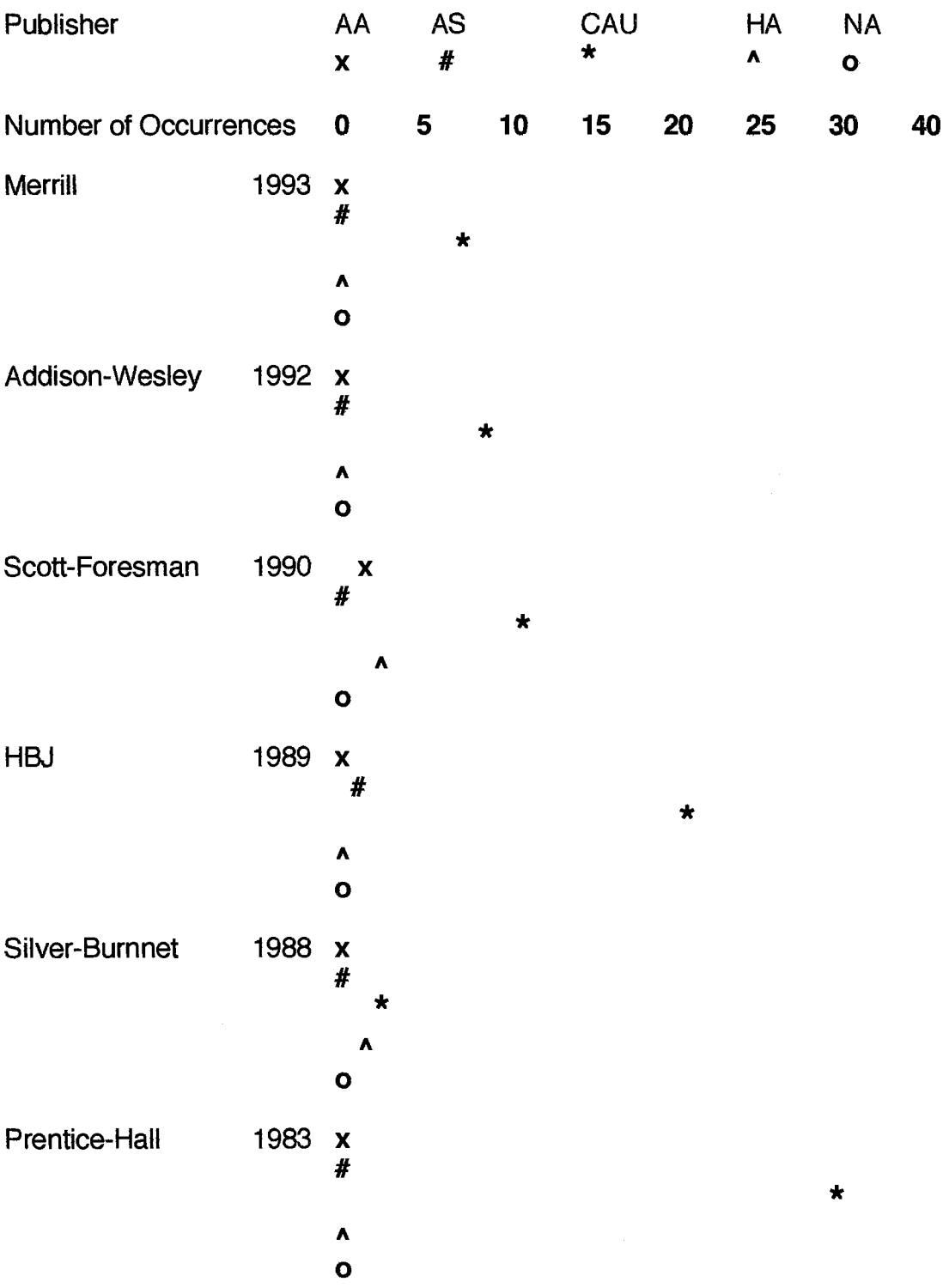
S = 7.769

Expected frequency 95 percentile level = 9.49 where n = 20 textbooks, (n - 1).

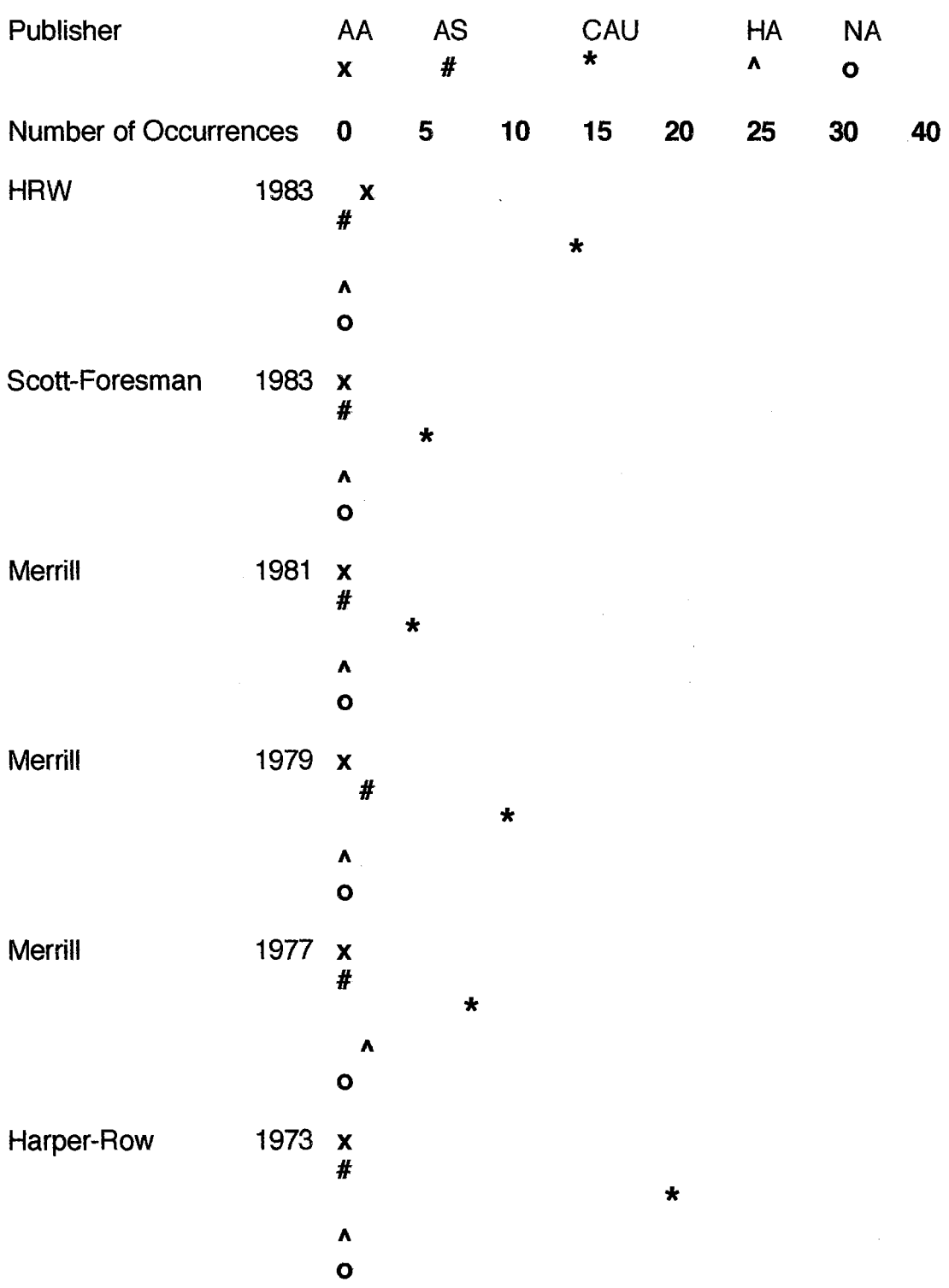
APPENDIX B

LINE GRAPH CATEGORIES III, IV, AND VI

CATEGORY III Written Representation of Review Physical Science Textbooks By American Scientist Ethnicity Results for Males



CATEGORY III Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results for Males



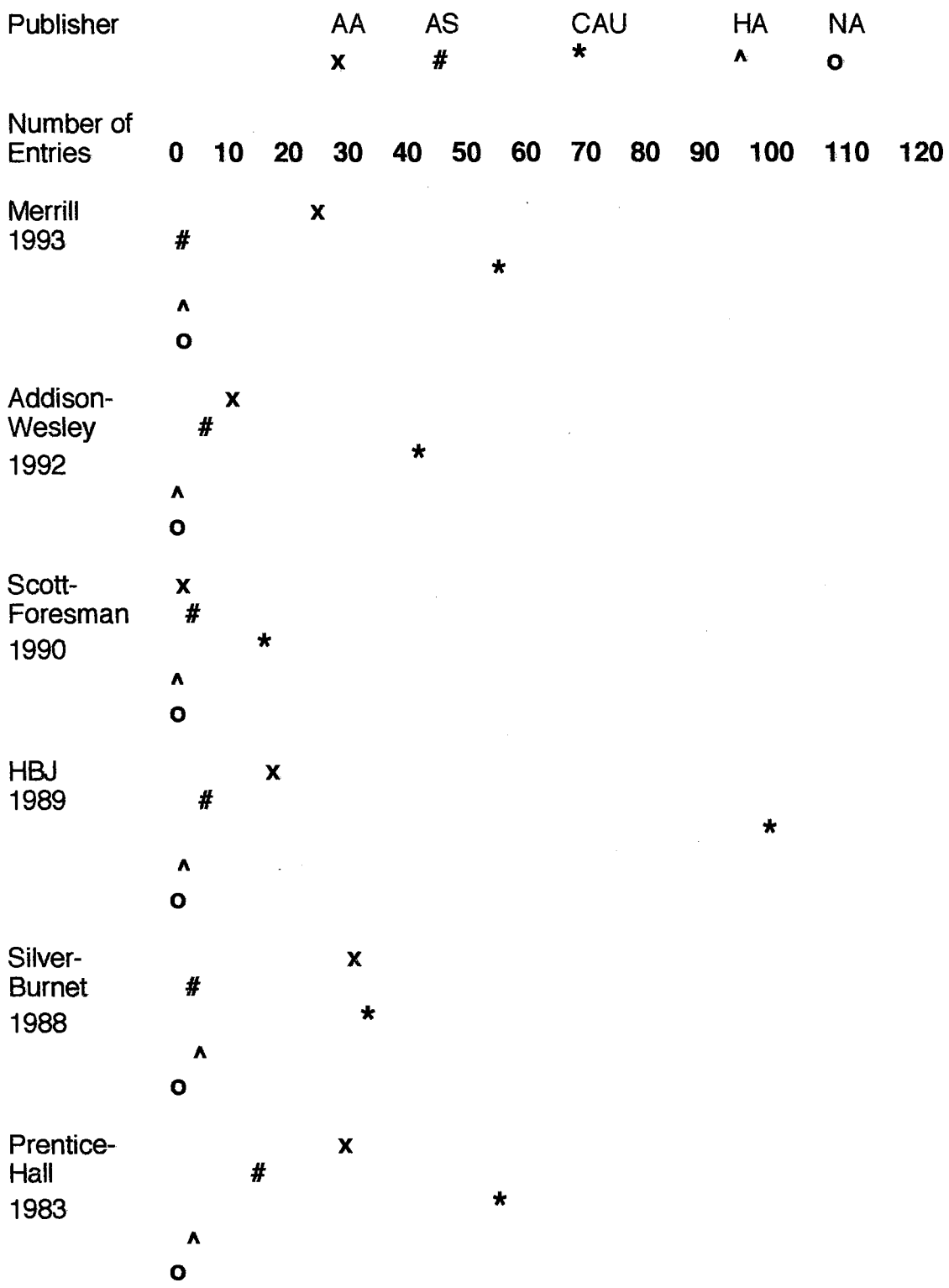
CATEGORY III Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results for Males

Publisher		AA x	AS #	CAU *	HA ^	NA o
Number of Occurrences		0 5 10 15 20 25 30 40				
Rand-McNally	1972	x # * ^ o				
Merrill	1967	x # * ^ o				
Prentice-Hall	1962	x # * ^ o				
McGraw-Hill	1958	x # * ^ o				
1. Scott-Foresman	1957	x # * ^ o				
2. Scott-Foresman	1957	x # * ^ o				

CATEGORY III Written Representation Review of Physical Science Textbooks By American Scientist Ethnicity Results for Males

Publisher		AA x	AS #		CAU *		HA ^	NA o	
Number of Occurrences		**0**	**5**	**10**	**15**	**20**	**25**	**30**	**40**
3. Scott-Foresman	1957	x #		*					
		^							
		o							
D. C. Heath	1956	x #					*		
		^							
		o							

CATEGORY IV Visual Representation of Physical Science Textbooks
Individual Ethnicity Results for Males



CATEGORY IV Visual Representation of Physical Science Textbooks
Individual Ethnicity Results for Males

Publisher		AA x	AS #	CAU *	HA ^	NA o
Number of Entries	0 10 20 30 40 50 60 70 80 90 100 110 120					
HRW 1983	x # * ^ o					
Scott-Foresman 1983	x # * ^ o					
Merrill 1981	x # * ^ o					
Merrill 1979	x # * ^ o					
Merrill 1977	x # * ^ o					
Harper-Row 1973	x # * ^ o					

CATEGORY IV Visual Representation of Physical Science Textbooks
Individual Ethnicity Results for Males

Publisher		AA x	AS #	CAU *	HA ^	NA o
Number of Entries	0 10 20 30 40 50 60 70 80 90 100 110 120					
Rand-McNally 1972	x # * ^ o					
Merrill 1967	x # * ^ o					
Prentice-Hall 1962	x # * ^ o					
McGraw-Hill 1958	x # * ^ o					
1. Scott-Foresman 1957	x # * ^ o					
2. Scott-Foresman 1957	x # * ^ o					

CATEGORY IV Visual Representation of Physical Science Textbooks
Individual Ethnicity Results for Males

Publisher		AA x	AS #	CAU *	HA ^	NA o
Number of Entries	0 10 20 30 40 50 60 70 80 90 100 110 120					
3. Scott-Foresman 1957	x # * ^ o					
D. C. Heath 1956	x # * ^ o					

CATEGORY VI Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results for Males

Publisher		AA x	AS #	CAU *	HA ^	NA o
Number of Occurrences		0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15				
Merrill	1993	x # * ^ o				
Addison-Wesley	1992	x # * ^ o				
Scott-Foresman	1990	x # * ^ o				
HBJ	1989	x # * ^ o				
Silver-Burnnet	1988	x # * ^ o				
Prentice-Hall	1983	x # * ^ o				

CATEGORY VI Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results for Males

Publisher		AA x	AS #	CAU *	HA ^	NA o
Number of Occurrences		0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15				
HRW	1983	x				*
Scott-Foresman	1983	x	*			
Merrill	1981	x	*			
Merrill	1979	x	*			
Merrill	1977	x		*		
Harper-Row	1973	x			*	

CATEGORY VI Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results for Males

Publisher		AA x	AS #	CAU *	HA ^	NA o
Number of Occurrences		0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15				
Rand-McNally	1972	x	#	*	^	o
Merrill	1967	x	#	*	^	o
Prentice-Hall	1962	x	#	*	^	o
McGraw-Hill	1958	x	#	*	^	o
1. Scott-Foresman	1957	x	#	*	^	o
2. Scott-Foresman	1957	x	#	*	^	o

CATEGORY VI Visual Representation of Physical Science Textbooks By American Scientist Ethnicity Results for Males

Publisher		AA x	AS #	CAU *	HA ^	NA o
Number of Occurrences		0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15				
3. Scott-Foresman	1957	x # * ^ o				
D. C. Heath	1956	x # * ^ o				

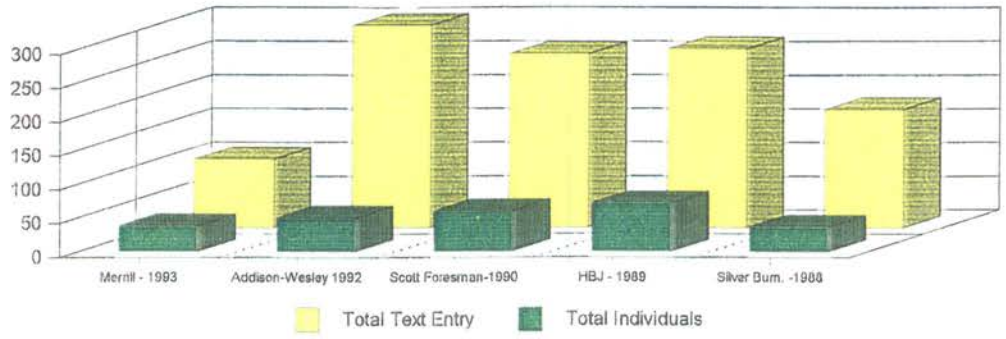
APPENDIX C

BAR GRAPHS CATEGORIES: I, II, III, IV, V, AND VI

Category 1

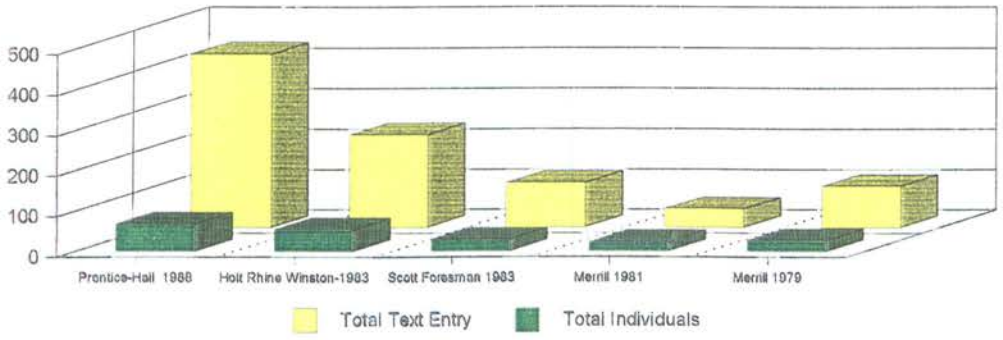
Written Representation Review of Physical Science Textbooks

Individual Results (A)

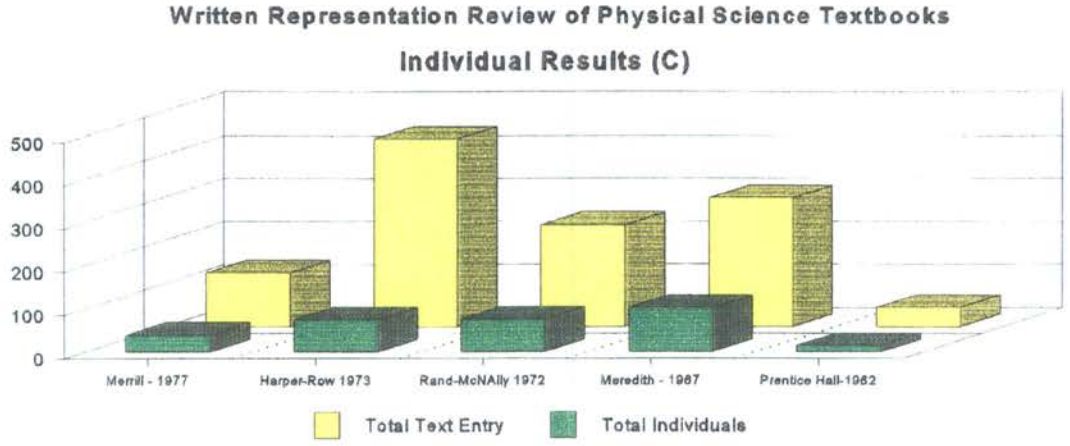


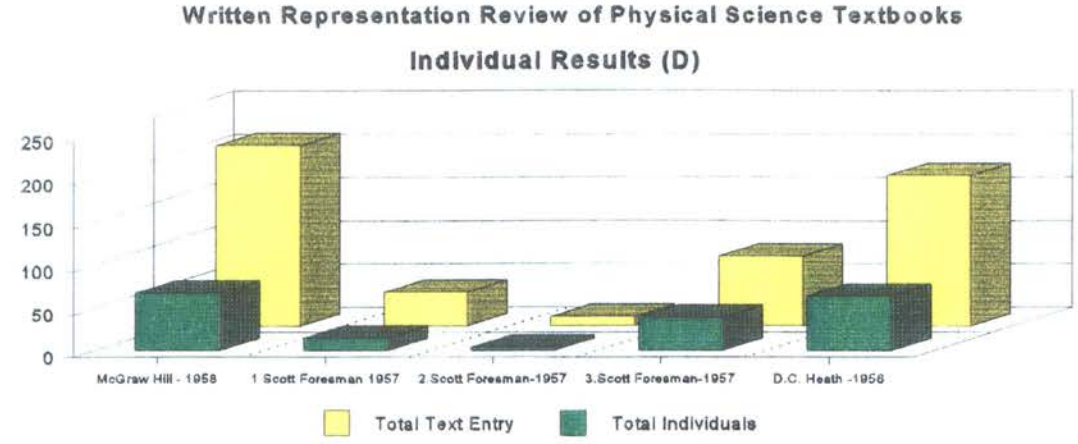
Written Representation Review of Physical Science Textbooks

Individual Results (B)

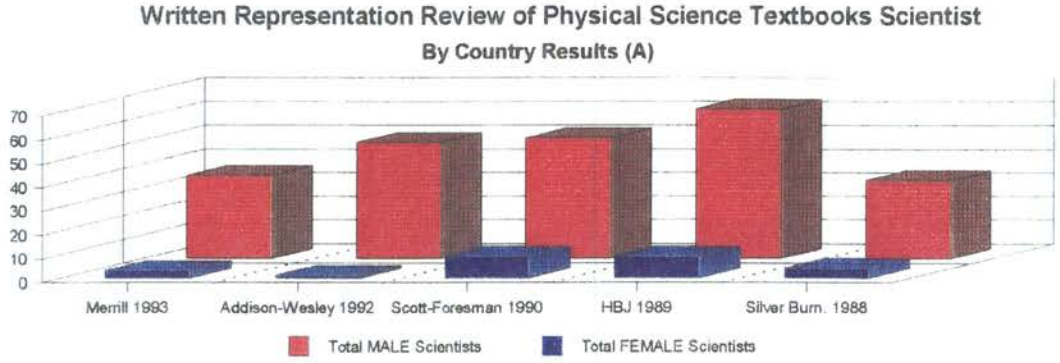


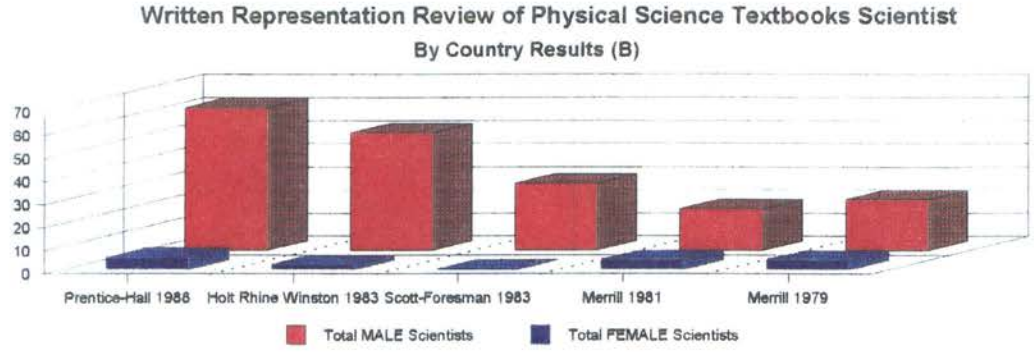
Category 1 (con't)



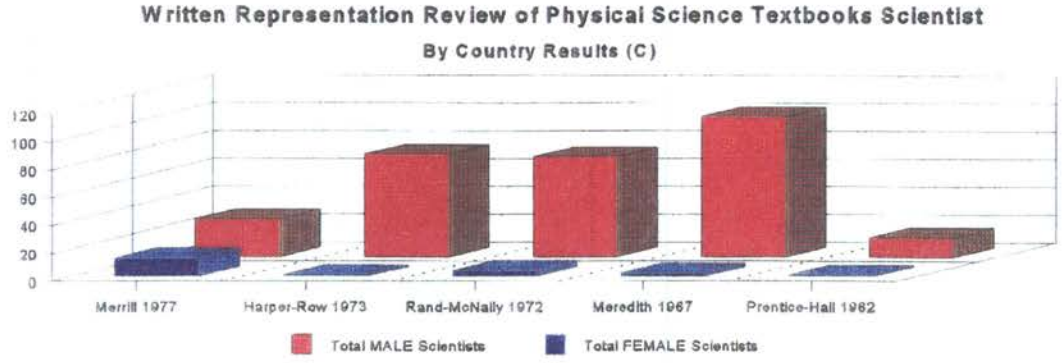


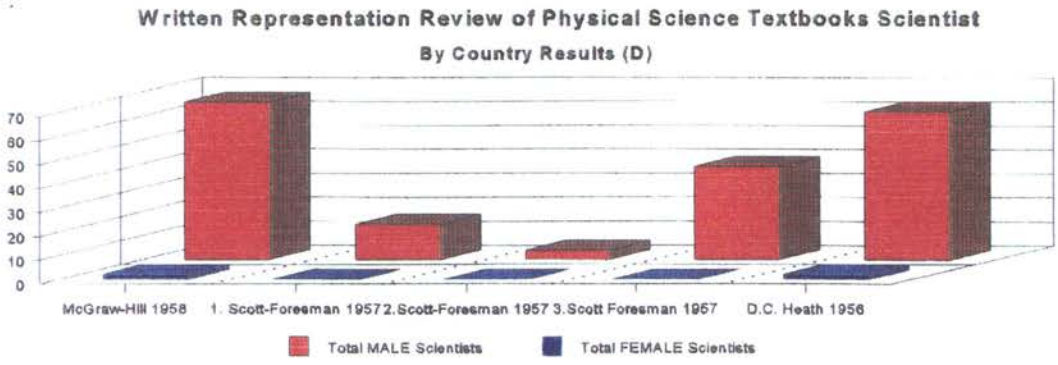
Category II


Written Representation Review of Physical Science Textbooks Scientist
By Country Results (A)
70
60
50
40
30
20
10
0
Merrill 1993
Addison-Wesley 1992
Scott-Foresman 1990
HBJ 1989
Silver Burn. 1988
Total MALE Scientists
Total FEMALE Scientists

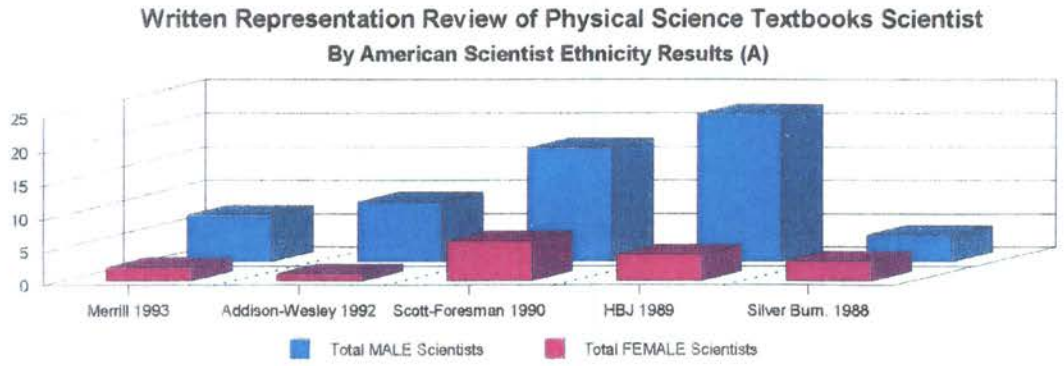

Written Representation Review of Physical Science Textbooks Scientist
By Country Results (B)
70
60
50
40
30
20
10
0
Prentice-Hall 1986
Holt Rhine Winston 1983
Scott-Foresman 1983
Merrill 1981
Merrill 1979
Total MALE Scientists
Total FEMALE Scientists

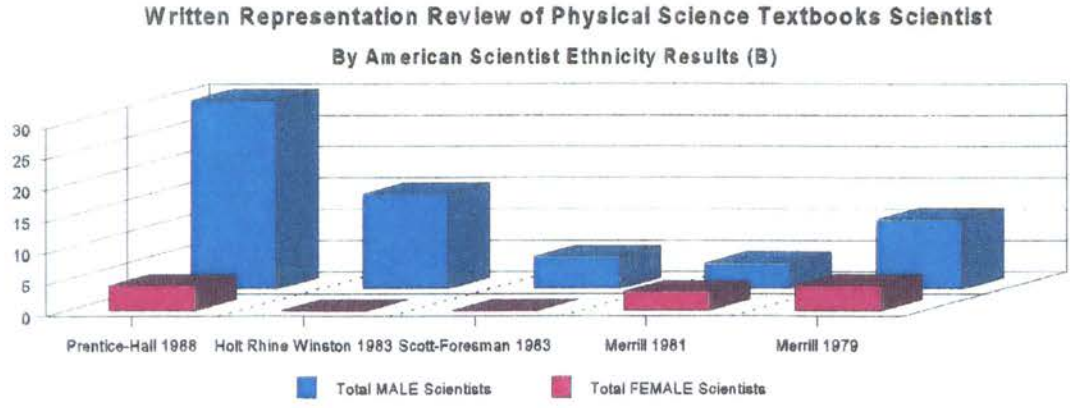
Category II (con't)





Category III





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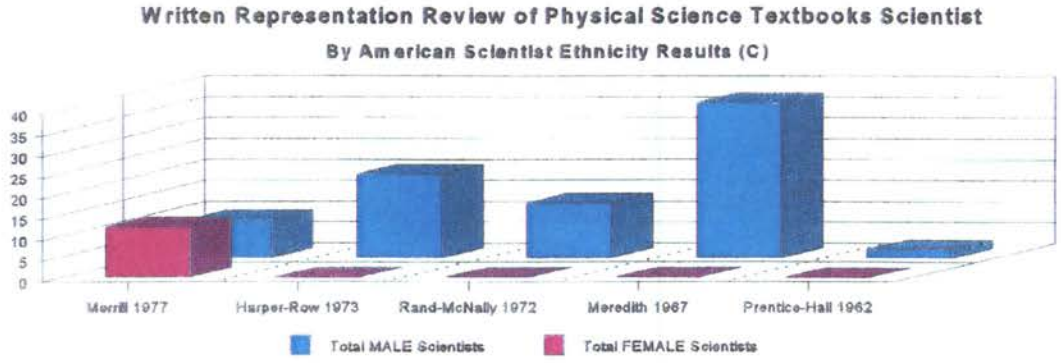
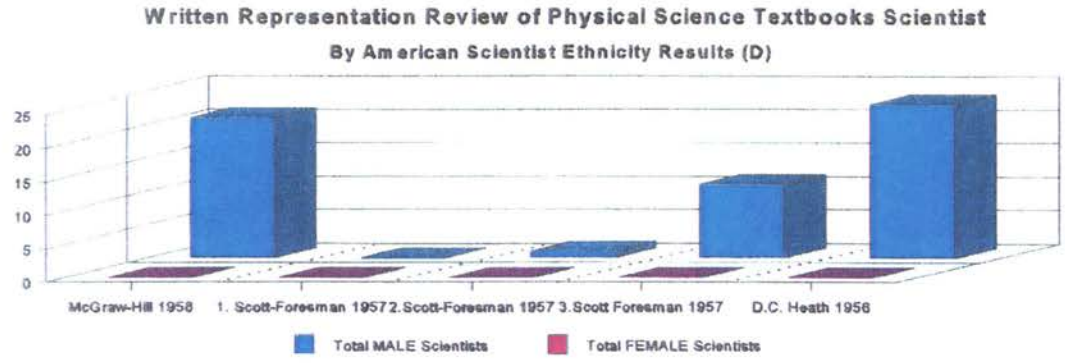
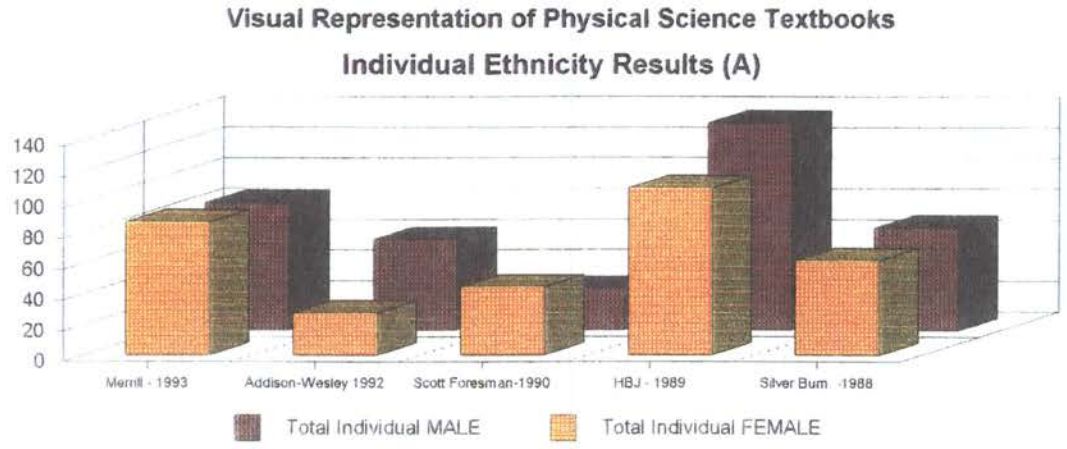
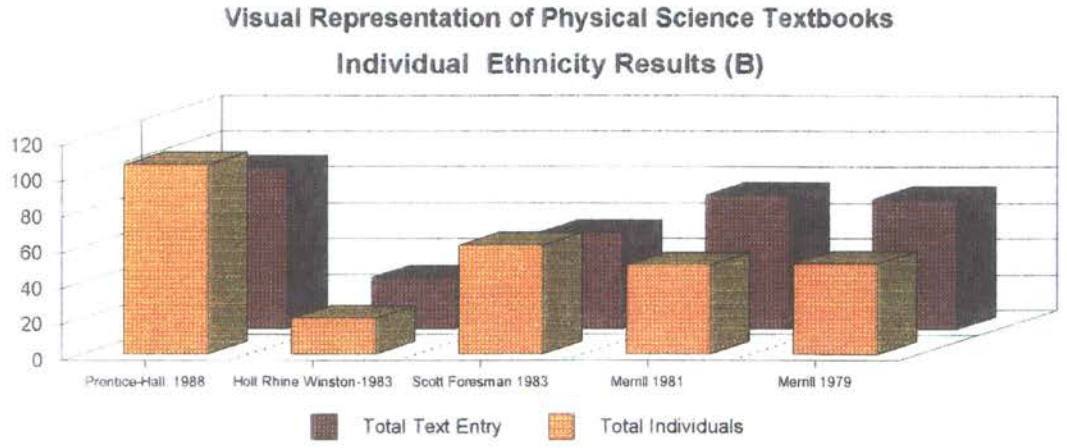


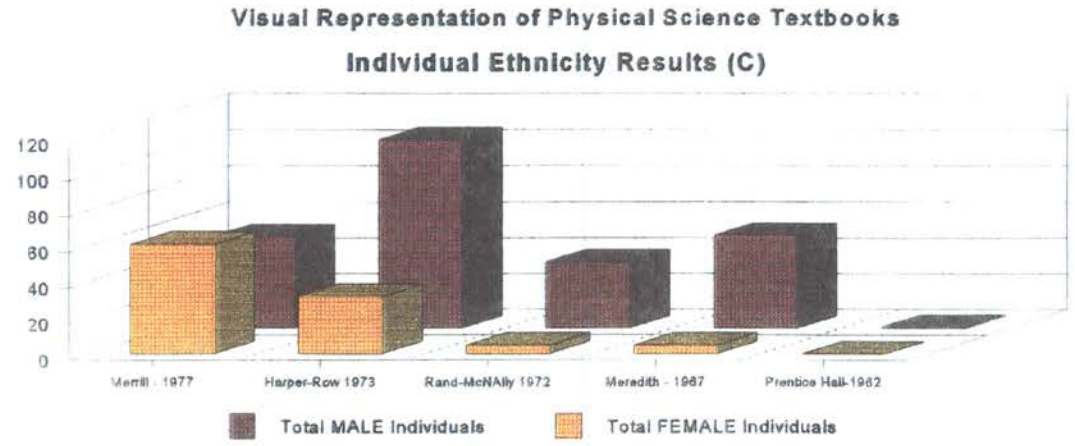


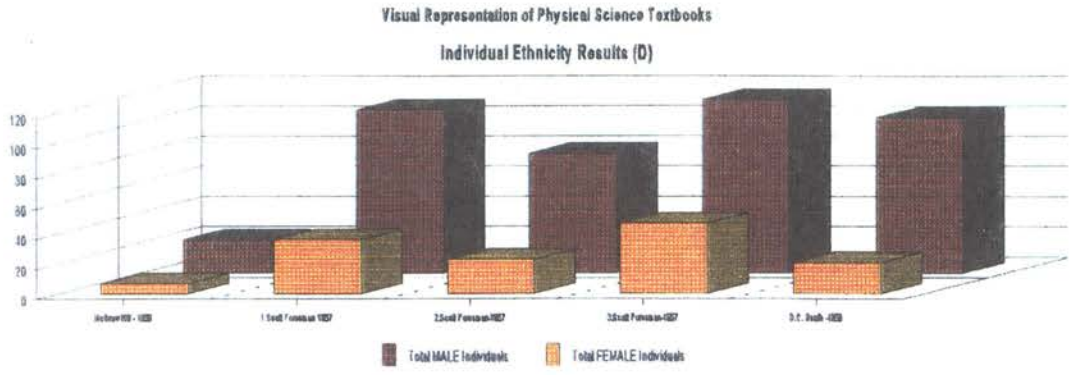
Category IV


Visual Representation of Physical Science Textbooks
Individual Ethnicity Results (A)
140
120
100
80
60
40
20
0
Merrill - 1993
Addison-Wesley 1992
Scott Foresman-1990
HBJ - 1989
Silver Burn -1988
Total Individual MALE
Total Individual FEMALE


Visual Representation of Physical Science Textbooks
Individual Ethnicity Results (B)
120
100
80
60
40
20
0
Prentice-Hall 1988
Holt Rhine Winston-1983
Scott Foresman 1983
Merrill 1981
Merrill 1979
Total Text Entry
Total Individuals

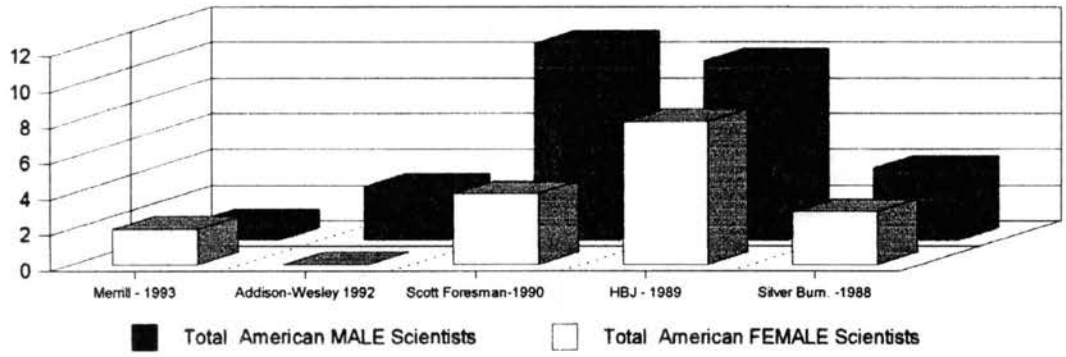
Category IV (cont.)



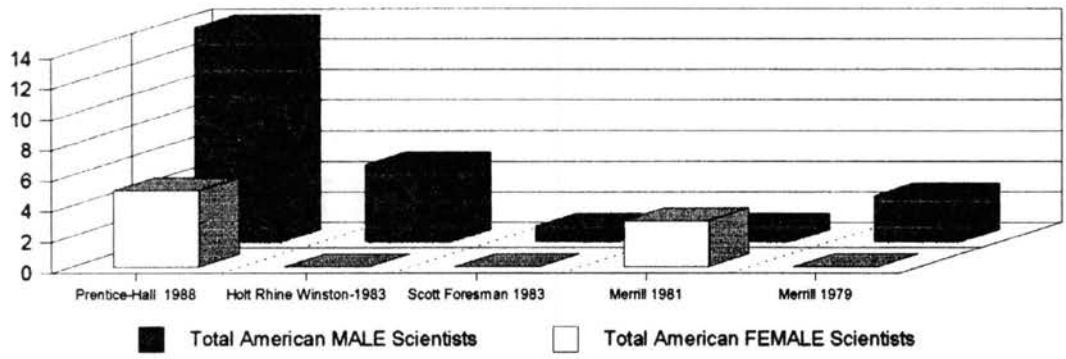


Category VI

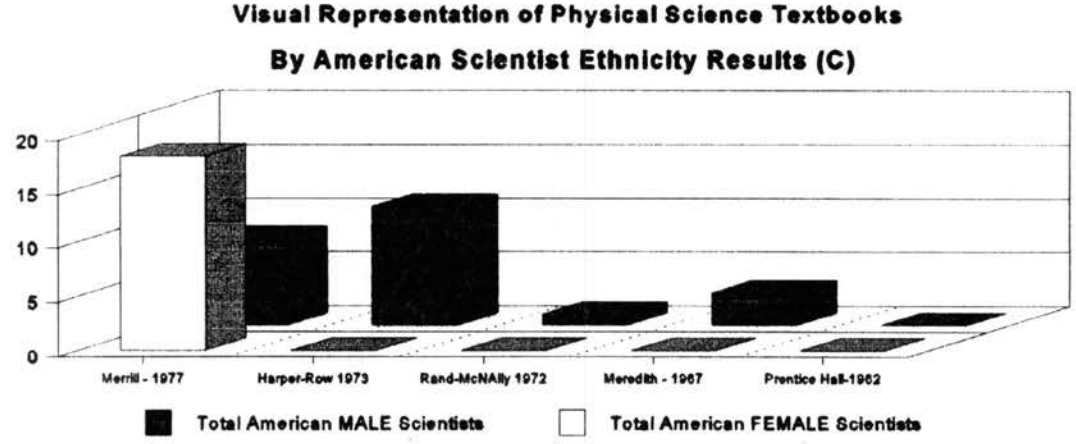
Visual Representation of Physical Science Textbooks
By American Scientist Ethnicity Results (A)

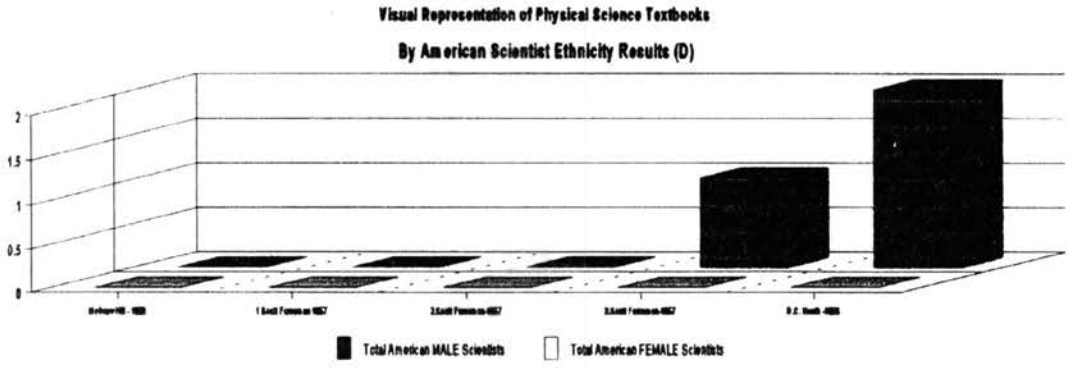


Visual Representation of Physical Science Textbooks
By American Scientist Ethnicity Results (B)



Category VI (cont.)

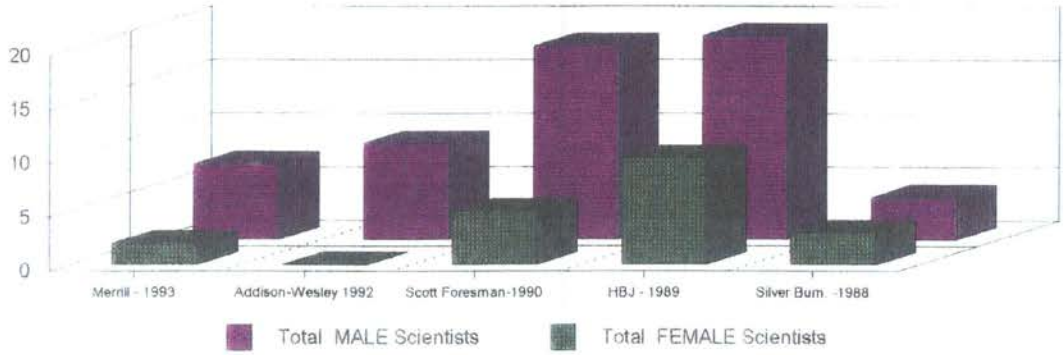




Category V

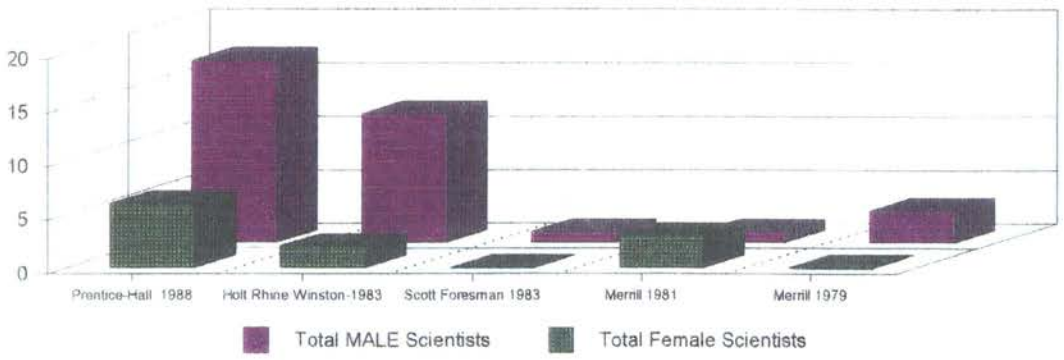
Visual Representation of Physical Science Textbooks

Scientist by Country Results (A)



Visual Representation of Physical Science Textbooks

Scientist by Country Results (B)



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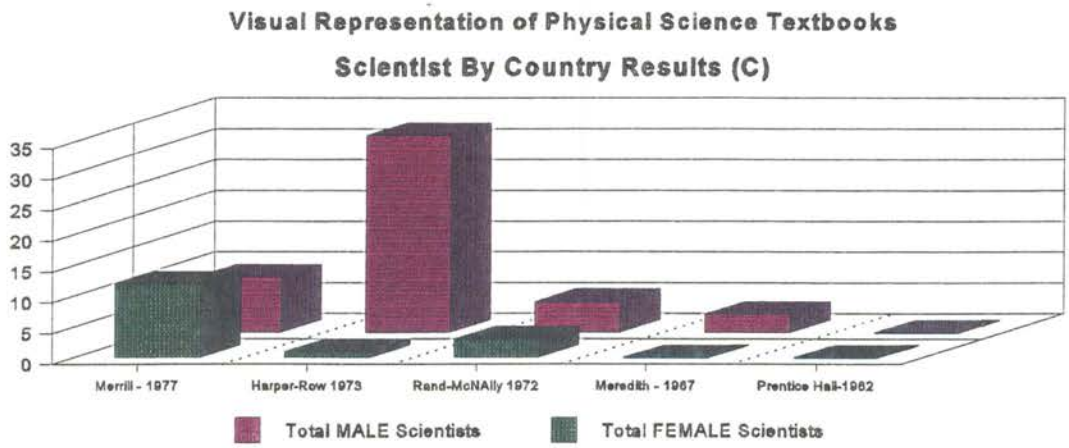

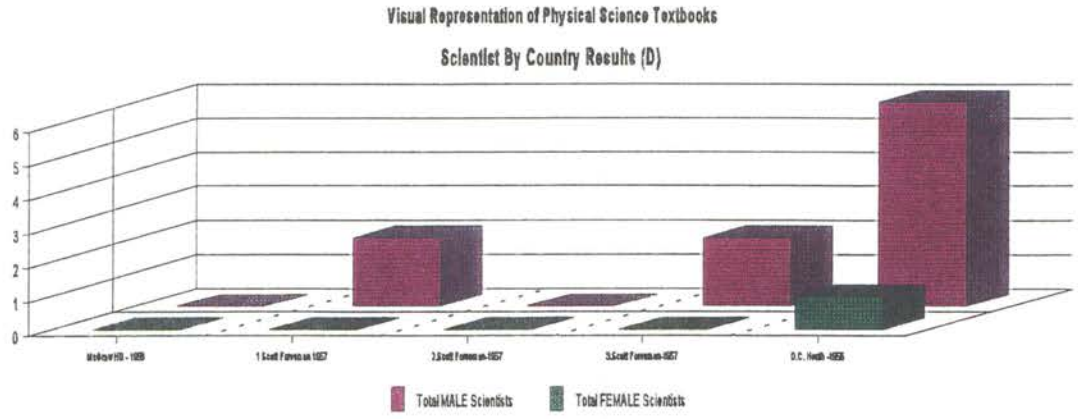

APPENDIX D

BOOK REFERENCES

BOOK REFERENCES

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APPENDIX E

INTERNAL REVIEW FORM

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 05-01-95 **IRB#:** ED-95-081

Proposal Title: AN HISTORICAL ANALYSIS OF PHYSICAL SCIENCE TEXTBOOKS AND AFRICAN-AMERICAN NINTH GRADE STUDENTS IN OKLAHOMA FROM 1954 TO 1994

Principal Investigator(s): Williams Reynolds, Randy F. Hunt

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING.
APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.
ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval are as follows:

Signature: _____ Date: May 4, 1995
Chair of Institutional Review Board

APPENDIX F

VITA

VITA

Randy Francis Scott Hunt

Candidate for the Degree of

Doctor of Education

Thesis: A CONTEXTUAL VISUAL AND WRITTEN ANALYSIS OF NINTH GRADE PHYSICAL SCIENCE TEXT-BOOKS AND THE REPRESENTATION OF AFRICAN-AMERICAN MALES IN OKLAHOMA FROM 1954 TO 1994

Major Field: Curriculum and Instruction

Biographical: Born in Seminole County, Wewoka, Oklahoma, the oldest twin son of Dewey and Repol Betty Hunt

Education: Graduated from Wewoka High School, Wewoka, OK, in May, 1978; received Bachelor of Science and Master of Science degrees from Central State University, now University of Central Oklahoma in 1983 and 1989 respectively; completed requirements for the Doctor of Education degree at Oklahoma State University in December, 1996.

Professional Experience: Secondary Education teacher in Physical Science, Earth Science, Biology and Zoology, Chickasha High School, Chickasha, Oklahoma, 1985-1987,; Middle School Science Education Teacher in Earth Science and Life Science, Lowell Middle School, San Antonio, Texas, 1987-1988; Junior High Secondary Education teacher in Algebra, Physical Science, Life Science, Western Heights Junior High School, Oklahoma City, Oklahoma, 1988-1990; Secondary Science Education teacher in Biology, Zoology, and Physical Science, Millwood High School, Oklahoma City, Oklahoma, 1990-1993; Aerospace Education Specialist for the National Aeronautics Space Administration, Washington, D. C., 1993 -1996; Presentations and Consultations throughout the United States for the National Aeronautics and Space Administration.