

UNDER THE MICROSCOPE

**UNDER THE MICROSCOPE:
GLOBALIZATION'S IMPACT ON EDUCATION
IN THE UNITED STATES**

by

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A Master's Thesis
Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science in Education
Curriculum and Instruction
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May 2016

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ABSTRACT

During the past two decades, an alarming trend has emerged in American education. Students in the United States are consistently plummeting in the global standings on international standardized assessments. Research suggests that scores on one such assessment, the PISA (Program for International Student Assessment), especially illustrate that students in the United States are continually falling behind those in other nations. Globalization and its relationship with instruction in the United States have also proven to be an important inquiry in regard to attempting to understand the current national education landscape.

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Main key words to be used to search for this work: (Please list at least two)

1. Globalization
2. PISA

Abstract: During the past two decades, an alarming trend has emerged in American education. Students in the United States are consistently plummeting in the global standings on international standardized assessments. Research suggests that scores on one such assessment, the PISA (Program for International Student Assessment), especially illustrate that students in the United States are continually falling behind those in other nations. Globalization and its relationship with instruction in the United States have also proven to be an important inquiry in regard to attempting to understand the current national education landscape.

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Chapter 1 – Introduction

During the past two decades, an alarming trend has emerged in American education. Students in the United States are consistently plummeting in the global standings on international standardized assessments. Two recent federal programs have sought to redesign the U.S. education system: *No Child Left Behind*, a 2001 law that attempted to use standards and accountability to push all students to proficient levels by 2014, and *Race to the Top*, an Obama administration initiative that has tried to incentivize improvement by offering competitive grants to states pursuing reform agendas (Mehta, 2013). This activity has generated progress in some areas, but it has not led to pervasive improvement.

Research suggests that scores on one such assessment, the PISA (Program for International Student Assessment), especially illustrate that students in the United States are continually falling behind those in other nations (Merry, 2013). In 2013, United States Secretary of Education, Arne Duncan, proclaimed that the PISA is an important, comparative snapshot of U.S. performance, because 15-year-old high school students take the assessment, worldwide. Duncan stated that the big picture of U.S. performance on the 2012 PISA was straightforward and stark: It was an indication of educational stagnation. That urgent reality needed to serve as a wake-up call against educational complacency and low expectations (Tienken, 2014).

The PISA is coordinated by the Organization for Economic Cooperation and Development (OECD). The problem that will be addressed in this research is the accuracy of the PISA, (and other international standardized assessments), in evaluating the American educational system. Some suggest that such assessments cannot be the sole

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evaluation of the current state of education in the United States (Tienken, 2013). Others advocate for improvement in the societal value of teachers, believing it will correlate with an enhancement in the quality of instruction in American classrooms, leading to improvement on international standardized assessments (Mehta, 2013). The question persists: are international standardized assessments a valid indication of the United States' place in the global educational world?

There have been numerous studies conducted to examine the competency of American students, relative to learners in foreign countries, as well as the accuracy of the PISA and other international assessments in evaluating the said competency of American students (Mehta, 2013; Stephens & Sen, 2014; Rutkowski, Rutkowski, & Plucker, 2014; Tienken, 2014). Mehta's work (2013) focused on a flawed foundation to the American educational system. The research asserted that there is too much emphasis on accountability, and not nearly enough focus on effective organizational structure. He asserted that schools, unlike more respected institutions in the United States, focus on holding their practitioners accountable, rather than on building effective foundations. Mehta stated that if the country implemented the needed processes to ensure skilled teaching—better recruitment, training, knowledge development, and school organization—teachers would come to be seen as experts, like those in other professions, such as law and medicine. The article ultimately asserted that the United States needs a more comprehensive and organized approach to educational improvement.

Standardized Assessment and Educational Policy Reform

Political leadership is often linked to academic achievement in the United States. Research has also been conducted to examine the progress—or lack thereof—made in

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educational reform during the initial years of the George W. Bush administration (Loveless, 2003). The researcher focuses on socioeconomic gaps, which make learning more difficult in less affluent areas of the United States of America. Furthermore, these gaps are paralleled with those between the United States and foreign countries, specifically in reading proficiency.

As the United States attempts to reclaim its standing amongst the global elite in education, there is pressure to mimic high-achieving nations, such as Singapore and China, in national education reform. Such action is cautioned by some researchers, as the diversity present within American classrooms creates a unique dynamic. America is not Singapore, and Singapore cannot be America. (Hong et al., 2014). Research also asserts that American schools are focused on the values of individuality, inclusiveness, and ingenuity—values that are not the focus of standardized assessments upon which student achievement is often measured (Tienken, 2014).

Several insights emerge when examining the United States' place in global educational rankings, based on international standardized assessment, such as the PISA. First, the diversity present in the United States of America makes it difficult for the country to compete with the PISA's high-ranking nations. Mehta (2013) affirmed that the leading countries on standardized international assessments are generally smaller and more racially homogenous than is the United States. Further research asserts that assessments such as the PISA actually illustrate more about educational disparities *within* countries, rather than between them. A common theme emerges throughout research: poverty plays an immense role in educational achievement, not only in the United States, but internationally, as well. In every country, more exposure to formal math content was

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related to better math performance, and almost every country showed a statistically significant relationship between student socioeconomic background and opportunity to learn (Schmidt & Burroughs, 2015). This fact is ignored by data accumulated from the PISA. Finally, one must evaluate the quality of the nation's educational reforms, as academic transformations and initiatives are often based, in part or wholly, on data from international standardized assessments.

Specifically, Schmidt

& Burroughs (2015) utilize data from the 2012 PISA in order to compare mathematics literacy, exposure to formal mathematics, exposure to applied mathematics, etc. between the United States and other participating countries. This data is presented in Table 1.

Table 1. 2012 PISA Results in OECD Countries and Select Non-OECD Countries and Regions

Country	Mathematics Literacy	Exposure to Formal Mathematics	Within-Country Variation in Formal Math	% OTL Variation Within-School for Formal Math	Exposure to Applied Mathematics	Exposure to Word Problems
OECD Countries						
Australia	504	1.7	134	80%	2	1.8
Austria	506	1.5	129	57	1.8	2.1
Belgium	515	1.8	141	72	1.9	1.9
Canada	518	2	100	89	2.1	2
Chile	423	1.7	92	75	2.1	2
Czech Republic	499	1.8	78	71	1.6	1.6
Denmark	500	1.6	98	88	2	1.9
Estonia	521	2	56	92	1.8	1.8
Finland	519	1.7	96	88	1.7	2.1
France	495	1.9	87	*	2	2.1
Germany	514	1.7	118	67	2	2
Greece	453	1.9	92	93	1.9	1.3
Hungary	477	2	80	72	1.9	2
Iceland	493	1.1	105	96	2	2.4
Ireland	501	1.5	100	91	1.9	1.8
Israel	466	1.8	111	80	1.8	1.7
Italy	485	1.8	107	68	1.8	1.7
Japan	536	2.1	61	72	1.7	1.6
Luxembourg	490	1.4	138	86	1.9	2
Mexico	413	1.8	117	82	2.2	1.8
Netherlands	523	1.5	123	68	2.1	1.6
New Zealand	500	1.5	139	83	2	1.6
Norway	489	*	*	*	1.8	1.8
OECD Average	494	1.7	100	80	1.9	1.9
Poland	518	1.8	82	92	2	2
Portugal	487	1.7	100	90	2.2	1.5
Slovak Republic	482	1.7	86	67	1.9	2
Slovenia	501	1.9	86	79	1.9	2.1
South Korea	554	2.1	74	74	1.8	1.7
Spain	484	1.9	119	88	2	2.2
Sweden	478	0.8	86	92	1.7	1.9
Switzerland	531	1.4	137	60	1.9	2.1
Turkey	448	1.9	83	85	2	1.3
United Kingdom	494	1.6	118	82	1.9	1.9
United States	481	2	113	90	2	1.8
Select Non-OECD Countries and Regions						
Brazil	391	1.4	139	72%	2	1.5
Chinese Taipei	560	2	89	82	1.7	1.5
Colombia	376	1.7	138	84	2.2	1.9
Hong Kong-China	561	1.8	111	93	1.8	1.4
Indonesia	375	1.6	91	82	2.3	1.9
Russian Federation	482	2.1	45	95	2	2
Shanghai-China	613	2.3	57	83	1.6	1.3
Singapore	573	2.2	113	83	2	1.6

SOURCE: PISA 2012 DATABASE, [HTTP://PISA2012.ACER.EDU.AU](http://PISA2012.ACER.EDU.AU).

*Norway did not provide OTL data and therefore was excluded from the analyses. Data from France do not permit within-school analysis.

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Merry (2013) compares data between the United States and Canada, in an attempt to trace American disparities on the PISA to early childhood reading skills.

Using standardized exams such as the PISA as the measurement of academic competency in the United States has, in fact, drawn a plethora of criticism. Rutkowski, Rutkowski, & Plucker (2014) affirmed that the PISA can only provide a snapshot of what a single age group of students knows about a limited set of topics, every three years. This research illuminates the gaps between the American educational system and PISA, and does a convincing job of connecting international assessment, American desperation, and money-hungry educational resource companies, such as McGraw-Hill Education CTB, (who is marketing a separate assessment—the OECD-Test—for American schools).

Competing in a Global Market

This research will attempt to address the gaps left from prior investigation. That is, can there be one factor identified as more influential than others in determining why the United States has fallen behind other nations on international standardized assessments? Is the United States truly enduring an educational crisis, at all, or do international assessments, such as the PISA, not accurately reflect the educational prowess of high-achieving countries, such as China and Singapore? Will the youth of the United States be able to compete in an ever-increasingly global market?

Furthermore, additional research is necessary to conclude whether assessments, such as the PISA, are indicators of gaps between nations or, perhaps more intriguingly, indicators of gaps within them. One must consider if the United States is truly meeting the educational needs of students in an increasingly diverse country, and an ever-globalized world. As an American educator in the 21st century, I must take personal stake

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in this matter. My task as a high school teacher is to prepare my students for societal functioning and to foster a spirit and an ability to compete, post-graduation.

The purpose of the present research is to determine whether or not international standardized assessments, such as the PISA, are valid indicators of the quality of American education. This inquiry will attempt to formulate a conclusion about the accuracy of the PISA and other standardized international assessments in evaluating the United States' position in the global educational ranks. Additionally, this research will attempt to assess the direction of American education as it pertains to preparing students to compete in a global market. Essentially, this research is an attempt to discover whether or not the United States is adequately competing on a global educational scale. This investigation will also attempt to address the foremost obstacles to improving the likelihood that American students will successfully compete with students in foreign countries. The methodology of this research will rely on an examination of prior research conducted by experts in the field, in an effort to formulate conclusions, and possibly, new questions.

There is a necessity to examine how the American education system has shifted—or failed to shift—in the global context, as well as how globalization will affect the future of American education. Research also will attempt to answer the question of whether or not teachers in the United States are adequately prepared to educate students in secondary classrooms. In researching what I believe to be one of the foremost concerns in American education, a variety of sources will be explored. From these inquiries, this research will attempt to formulate a conclusion about the accuracy of the PISA and other standardized international assessments in evaluating the United States' position in the global

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educational ranks. Additionally, this research will attempt to assess the direction of American education as it pertains to preparing students to compete in a global market. Essentially, this research will attempt to discover whether or not the United States is adequately competing on a global educational scale. If not, this investigation will attempt to address the foremost obstacles to improving the likelihood that American students will successfully compete with students in foreign countries. Through a review of literature, the findings surrounding this research problem will help to guide future research, as well as augment teacher understanding of the issue.

Chapter 2 – Review of Literature

A review of the literature indicates that the performance of students in the United States on standardized international assessments has declined. There have been numerous studies conducted to examine the competency of American students, relative to learners in foreign countries, as well as the accuracy of the PISA and other international assessments in evaluating the said competency of American students (Mehta, 2013; Stephens & Sen, 2014; Rutkowski, Rutkowski, & Plucker, 2014; Tienken, 2014). Many research endeavors have focused their attention on the necessity of American schools cultivating students that can compete on a global playing field. The objective of this review of literature is to establish patterns of findings relative to international standardized assessment and students in the United States.

Socio-economic Factors

American students have been meticulously compared to those in other nations. One of the earliest and most paramount studies of the ways in which students' in the United States perform in comparisons with their foreign counterparts comes from Tom Loveless, a senior fellow at the Brookings Institution in Washington, D.C. He examined the evolution of national educational reform during the initial years of the George W. Bush administration. He focused on socioeconomic gaps, which, he asserts, make learning more difficult in less affluent areas of the United States. For example, rural schools tend to achieve at higher levels than their urban counterparts, but enroll only 27% of the nation's students. The average rural school is quite small. It serves only 392 students, which is about 40% smaller than the average urban or suburban school. Rural schools also serve a much larger proportion of white students than urban or suburban

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schools. The black and Hispanic populations are sparse in rural schools. Only 8% of rural students are black and 7% are Hispanic, compared to 33% who are black and 24% who are Hispanic in urban schools. Compared to the typical urban school, the typical rural school also has a smaller proportion of students who qualify for free and reduced lunch, a measure of poverty (Loveless, 2003).

Poverty and reading aptitude are themes that emerge from the majority of research conducted on this topic. Furthermore, these gaps are paralleled with those between the United States and foreign countries, specifically in reading proficiency. In more recent research, the impact of poverty, coupled with the fact that such poverty is ignored by data accumulated from the PISA, is expanded upon. Milford, Ross, & Anderson (2010) also asserted that socioeconomic background of a student can predict how well he or she will perform on a standardized assessment. The research also addressed the importance of socioeconomics in predicting performance. Further research asserts that assessments such as the PISA actually illustrate more about educational disparities *within* countries, rather than between them (Schmidt & Burroughs, 2015). Merry's research (2013) illuminates flaws of the American educational system, serving students with comparatively greater academic challenges, resulting from poorer social conditions. A common theme emerges throughout research: poverty plays an immense role in educational achievement, not only in the United States, but internationally, as well. This fact—research suggests—is ignored by data accumulated from the PISA.

Decentralization

The highly decentralized landscape of education in the United States is also identified by research as having become difference between this country and high-

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achieving nations on international standardized assessments, such as Singapore (Hong, 2014; Mehta, 2013). Decentralization has limited the capability of the federal government to foster consistent teaching throughout the country. This is a problem, as federal programs are aimed at punishing educators and school districts for not meeting “high-level performance” standards, yet the United States has not built the system to achieve such performance levels. Specifically, Mehta (2013) found fault with two recent government initiatives, the 2001 *No Child Left Behind* law, created during George W. Bush’s first term as president, and the Obama administration’s 2008 *Race to the Top* plan. The article ultimately asserts that the United States needs a more comprehensive and organized approach to educational improvement. It also affirms that one must evaluate the quality of the nation’s educational reforms, as academic transformations and initiatives are often based, in part or wholly, on data from international standardized assessments.

The Effects of Globalization

Globalization and its relationship with instruction in the United States have also proven to be an important inquiry in regard to attempting to understand the current national education landscape. Agbaria (2009) examined the importance of comprehending the necessity to prepare citizens—particularly those of the United States—for the global age. Specifically, this article asked: what educational suggestions are proposed to prepare the students to meet the demands of globalized education? What educational proposals are aimed at preparing students to meet the demands of globalization? What perspectives, skills, and values are being emphasized in American schools? Globalization’s impact on education is also the focus of Spring (2008), which

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interpreted four major theoretical perspectives regarding globalization and education, including world culture, world systems, postcolonial, and culturalist. In relation to the inquiry question of the ways in which globalization is affecting American education, Spring discussed the contemporary emphasis on international testing, specifically identifying the Trends in Mathematics and Science Study (TIMSS) and the PISA. This study, like Agbaria's, asserted that globalization's effect on education involves interwoven global processes, such as the manner in which students are taught in classrooms. Zhou (2010) emphasized that globalization is one of the most powerful forces that is currently shaping the future world in which society's children will live. With this notion in mind, Zhou placed an emphasis on the importance of preparing teachers to be globally competent. Preparing students to live successfully in a globalized world has become a challenging issue in contemporary education.

The Origins and Criticisms of PISA

PISA is an international assessment that measures 15-year-old students' literacy in mathematics, reading, and science. First administered in 2000, PISA is given every three years. The results from the globally administered 2012 exam, taken by more than 500,000 students, were released in December 2013. This is the most recently released PISA data. Participating entities were the 34 OECD countries, including the United States, as well as 28 non-OECD countries. Also included were three jurisdictions in China: Hong Kong, Macao, and Shanghai (Schmidt & Burroughs, 2015).

Using the PISA as the measurement of academic competency in the United States has, in fact, drawn a plethora of criticism. Turgut (2013) affirmed that the ranking of the United States in major international tests such as the Trends in International Mathematics

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and Science Study (TIMSS), and the PISA is used as the foundation for the current educational reforms in the United States. The author asserted that using international test results as the ultimate indicator of a country's educational achievement might not be an appropriate decision. Turgut affirmed, “Before comparing the U.S. education system to high-performing countries and to their education systems, the United States, as a nation, needs to reach a consistent definition of success. Based on this national definition of success, possible differences in how other countries define success and what they prioritize in education should be considered” (p. 66). Furthermore, Turgut stated that replicating some aspects of high-achieving countries’ education systems or standards may not guarantee achievement for American public schools. Hong, Scholar, and Altoona (2014) stated that despite the educational crisis that many schools in the United States are facing, Americans should be cautious not to mimic another country's model within diverse classrooms. The research also asserts that American schools are focused on the values of individuality, inclusiveness, and ingenuity—traits not measured by international standardized assessments, such as the PISA. Rutkowski, Rutkowski, & Plucker (2014) describe principal aspects of the PISA design that American educators should consider before adjusting or modifying curricula to correlate with the assessment. Sjøberg (2015) is another recent study focused on the challenges and problems created by the PISA being used as a global measure of achievement. This research is primarily centered on the problems with national governments adapting new educational policies based on the idea that the PISA is a high-stakes test. Sjøberg asserts that in an effort to improve PISA scores, educators may be working in conflict with making courses interesting and stimulating for learners, especially in science classrooms. This research does an

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impressive job of connecting international assessment, American desperation for better results, and money-hungry educational resource companies, such as McGraw-Hill Education CTB, (which is marketing a separate assessment—the OECD-Test—for American schools).

Heterogeneity in American Schools

Loveless (2003) is also one of earliest inquiries to place an emphasis on the importance of recognizing the heterogeneous nature of American schools, versus the homogeneity of foreign competitors, which include many of the high-ranking nations on international standardized assessments, such as the PISA. In his research, Kieffer (2008) contrasted growth patterns in English reading between two groups—those who enter Kindergarten with proficiency in oral English, and those with limited English oral proficiency. This study illustrated the heterogeneous nature of American schools, as well as contrasts the United States with countries at the top of PISA score rankings, (e.g. Finland, Sweden, Singapore), which contain considerably less diversity.

Standardized international assessments, such as the PISA, have drawn criticism. The work of Loveless is used as the foundation of further research. Sean Cavanaugh identifies Loveless as an expert on American education, especially as it relates to the PISA. In his work, Cavanaugh (2009) cited Loveless as one who contends that the Program for International Student Assessment is flawed and inappropriate for gauging American schools on global standards. Cavanaugh mentioned Loveless' notion that the PISA surveys students' beliefs and attitudes about science, which reflect an “ideological bias, which undermines the test's credibility” (p. 7). Loveless is part of a cohort that argued that the PISA is not successful in attempting to truly evaluate the competency of

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American students. Rutkowski, Rutkowski, & Plucker (2014) illuminated the substantial gaps between the American educational system and what standardized international assessments, (such as the PISA), are attempting to measure. The researchers asserted that the PISA is “intentionally divorced from curricula and that the test is developed to serve many diverse populations,” illustrating that although PISA is a high-quality, well-developed instrument, it probably is not a great one for any particular country (p. 70).

Educational Structure in the United States

There is also research that supports the assertion that education in the United States needs to be improved. Flaws in the foundation of the American educational system are a central focus of several inquiries, including Mehta (2013). The research asserted that there is too much focus on accountability, and not enough emphasis on organizational structure. Mehta asserted that any attempt to reform American education would have to start with attracting better teachers, retaining them, and helping them develop their practice. The most remarkable finding of comparative international research is that the best-performing school systems draw their teachers from the top third of college graduates, whereas lower-ranking school systems do not. A recent McKinsey report found that most U.S. teachers come "from the bottom two-thirds of college classes, and, for many schools in poor neighborhoods, from the bottom third" (p. 110). Mehta also stated that education should pattern itself after professions such as law, medicine, and engineering—occupations with the aforementioned solid foundations. These fields set the bar extremely high, especially with regard to those who are allowed into the profession. High-ranking nations on international standardized assessments, Mehta affirmed, do a better job than does the United States at nurturing human capital,

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developing knowledge, and fostering growth in their educators. This is something, the author asserted, that has not been occurring, over the course of the past several decades, in American education. Merry (2013) examined the traditional view that American schools attract poorer teachers and lack the proper incentives. The research of Stotsky (2006) focused on the preparation and training of reading teachers and specialists. She reviewed teacher examinations that are used by over 35 states for licensure as a reading teacher, reading specialist, early childhood teacher, or special education teacher. This analysis was conducted in order to determine the extent to which professional teacher preparation programs may be accountable for teaching the aforementioned groups of educators what they need to know to successfully support or enhance the reading pedagogy. This is a relevant inquiry, as reading proficiency is identified as a crucial factor in the aptitude of students in the United States.

Conclusions

In conclusion, this literature review indicates that many factors influence the performance of students in the United States, and also, that there are multiple methods of evaluating the competency of American students in an ever-increasingly globalized world. Research suggests that poverty and reading proficiency are directly correlated. Prior inquiry also asserts that international standardized assessment, such as the PISA, create an apples to oranges approach to educational comparison between countries. Finally, this review of literature illustrates that there are complications created by federal government education initiatives, as the United States education system has become increasingly decentralized.

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The purpose of the present research is to determine the degree to which international standardized assessments, such as the PISA, are valid indicators of the quality of American education. This inquiry will attempt to formulate a conclusion about the accuracy of the PISA and other standardized international assessments in evaluating the United States' position in the global educational ranks. Additionally, this inquiry will address the direction of American education as it pertains to preparing students to compete in a global market. Essentially, this research will attempt to discover whether or not the United States is adequately competing on a global educational scale. If it is not, this investigation will attempt to address the foremost obstacles to improving the likelihood that American students will successfully compete with students in foreign countries. This is a qualitative-based inquiry, founded on the desire to understand the complexity in evaluating a heterogeneous country's—e.g. the United States of America's—academic standing amongst high-achieving homogeneous countries on international standardized assessments.

Next, this inquiry will engage in a qualitative examination of prior research in the field. In attempting to address the validity of standardized international assessments, mixed methods of research will be implemented.

Chapter 3 – Methods

In the previous reviews of literature, I have determined that the problem of international comparisons of students is that there are many variables to consider. That is, attempting to pinpoint one factor as being more influential than others in determining why the United States has fallen behind other nations on international standardized assessments, is a difficult task.

American students scores are consistently dropping in the global standings on international standardized assessments (Mehta, 2013). Scores on one such assessment, the PISA suggest that students in the United States are falling behind. The problem that will be addressed in the inquiry is the validity of this assessment in evaluating the American educational system, as several researchers propose that scores and rankings from PISA are not important (Tienken, 2014). In attempting to address the validity of the PISA, (and other international standardized assessments), I have implemented mixed methods of research. In the following chapter, I will describe research frameworks and settings, as well as the process of data collection and analysis for this inquiry.

Research Frameworks

The majority of the inquiry, however, fell under the qualitative research umbrella. The qualitative research framework that best fit this inquiry is a combination of field research and grounded theory. Johnson and Christensen (2014) discussed the implementation of the grounded theory as being advantageous in that the scope is general. That is, using this theory guarantees that the study will not be so specific that it only pertains to a small faction of people. As much of the debate on American education is subject to the opinion of scholars and policy-makers, alike, a qualitative approach is

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necessary to gain the insights of experts in the field. Subtleties and complexities about the research—particularly the diversity in American classrooms and the lack thereof in leading countries classrooms—are often missed by more quantitatively based inquiries. Additionally, data based on human experience is powerful and sometimes more compelling than quantitative data. Hong (2014) explicitly states that observers must go beyond a data-analysis approach when comparing the scores of students in the United States with students in the high-ranking country of Singapore.

A quantitative approach was, however, necessary in order to accumulate data on American student performance on international standardized assessments, in contrast to student performance abroad. That is, in order to evaluate the United States' place on the spectrum of global education, one must first be privy to the archival research data accumulated from international standardized assessments, such as the Program for International Student Assessment. This is precisely the purpose of archived research data, as it is collected, stored, and potentially used for reanalysis (Johnson & Christensen, 2014).

Research Setting

The selection process for this inquiry was based on relevance to the research question, as well as significance of findings. This inquiry involved the assessment of pre-existing research in the field, as well as socio-economic statistics and comparisons. There will be no research participants, as the students that have taken the PISA have already essentially filled that role. Instead, the performance of said-students will be evaluated, based on the conversations conducted with experts in the field.

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Due to increasing globalization and a more competitive global economy, nations are increasing participation in standardized international tests to assess their educational success, and compare their position to other countries. One of the major international assessments, (and the focus of this inquiry), is the PISA. Data from this assessment is meticulously collected and analyzed. Policymakers, therefore, perceive it as an objective and accurate tool with the ability to compare different countries, evaluate educational standards, and discuss potential needs for reform (Turgut, 2013). PISA is an international assessment that measures 15-year-old students' literacy in mathematics, reading, and science. First administered in 2000, PISA is given every three years. The results from the globally administered 2012 exam, taken by more than 500,000 students, were released in December 2013. This is the most recently released PISA data. Participating entities were the 34 OECD countries, including the United States, as well as 28 non-OECD countries. Also included were three jurisdictions in China: Hong Kong, Macao, and Shanghai (Schmidt & Burroughs, 2015).

In using a primarily qualitative framework when addressing this inquiry, the alternate approach—quantitative research—was largely rejected. This is not to say that data-driven studies on this topic are not valid; rather, purely quantitative methods did not answer the primary research question. Data based on human experience is prevalent and sometimes more compelling than quantitative data. The qualitative approach to inquiry delves deeper than merely assessing the United States, based on student math or reading scores on a single, standardized assessment.

Data Collection

Conducting this inquiry will require fragmenting the research question into several pieces. Answering the central question, that of whether standardized international assessments—specifically the PISA—are a valid indicator of the United States’ place in the global educational arena, is paramount. From here, the PISA must be evaluated on several levels. The overarching question concerning the PISA, is discerning *what* it actually measures. That is, does the PISA actually illustrate gaps between nations participating in the assessment? If the answer to this question is yes, why is the United States continually slipping in the international rankings, and how can the United States improve? If the answer is no, or if the data are inconclusive, why do the educational policymakers and others in charge of educational reform use the PISA as a benchmark for performance by students in the United States?

In order to make these determinations, the evaluation of the PISA must go deeper, still. Namely, what variables are present between participating countries, and does the PISA account for such variables? These factors include, amongst others, poverty, racial and/or ethnic homogeneity, and administrative motivation for testing. Data collection was conducted by searching for inquiry involving the PISA, globalization, and American education reform over the course of the past two decades. This process occurred during a five-month period, beginning in September of 2015 and concluding in January of 2016.

Data Analysis

One must look beyond data graphs and charts in attempting to assess whether or not the United States is truly meeting the educational needs of students in an increasingly

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diverse country, and an ever-globalized world. This calls for a qualitative approach, under which conversations with professionals in the field of education must be analyzed and discussed. On a quantitative level, one can see the data and rankings of United States students amidst other, high-ranking countries that are making incredible educational strides—e.g. China, Singapore, and South Korea. However, if we are truly attempting to understand *why* student scores in the United States are dropping, relative to other nations, dialogues with professionals must be evaluated. Furthermore, this allows for evaluation of international standardized assessments, themselves, when attempting to assess their validity as indicators of the quality of American education.

Conclusions

This process allowed the researcher to evaluate prior investigation of the PISA, as well as the assessment's place in the analysis of the American educational system. This allowed the inquiry arc to become more fully developed and focused on whether the United States is truly losing ground to international counterparts. In the next chapter, I will look to formulate conclusions on the validity of the PISA, based on the analysis of data gathered. These conclusions will include a summary of the data collected, as well as an attempt to bridge pieces that are missing in prior investigations.

Chapter 4 – Results

In previous chapters, prior research was reviewed in an attempt to investigate the history of the Program for International Student Assessment, as well as the examination's place in the analysis of the American educational system. This allowed the inquiry to develop and focus on whether the United States is truly losing ground in the international education arena.

Subsequent to analysis of prior research, this inquiry finds that international standardized assessments, such as the PISA, certainly illustrate significant information about a nation's educational progress. However, one must also recognize that such assessments cannot be the sole indicator of a country's scholastic development. When examining prior investigations on the problem, several key ideas continually surface. The paramount issue that continually presents itself, is that poverty is an extremely prevalent factor in a nation's educational achievement. Additionally, research indicates that standardized international assessments often do not accurately present the variation in student performance within countries. Furthermore, inquiry asserts that the United States *can* compete in an ever-globalized market, because international assessments cannot predict workforce competency.

Poverty

Schmidt & Burroughs (2015) suggested that the United States has systematically disadvantaged lower-income students. The research asserts that this deficit is created by the denial of strong mathematics content to the aforementioned students. However, the investigation also suggests that such deprivation is a global phenomenon. In most respects, the United States is not that different from other countries.

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Although educational policymakers and analysts have dismissed poverty as an excuse by educators for poor performance, the information in the PISA technical manuals supports the notion that socioeconomic factors have an impact. Tienken (2014) cited that poverty explains up to 46% of the PISA mathematics score in OECD countries, the United States being one of those countries. Furthermore, when analyzing the results from the PISA 2009 tests, the United States' rankings and scores changed when the data were disaggregated by poverty rates. Students in U.S. schools with less than 10% of the students in poverty ranked and scored at the top of the world. Correspondingly, wealthy regions of the United States are closely comparable with the high-scoring regions of the world. For example, the close PISA scores of the Italian Lombardy region (517) and Massachusetts (514) may fairly reflect their demographic similarities, in particular their relative wealth (Schmidt & Burroughs, 2015).

Further analysis revealed that educational opportunities related to the coverage of strong mathematics content vary widely in every country. Research illustrates that students from disadvantaged backgrounds are systematically exposed to weaker mathematics content, worsening educational inequality (Schmidt & Burroughs, 2015). The results of PISA confirm a growing body of research, indicating that the United States education system is not meeting international standards—not because students, parents, and instructors are not doing their best, but because the education system has not succeeded in ensuring equality of educational opportunity. The United States has one of the highest percentages of child poverty—roughly 22 percent—and one of the lowest levels of overall child well being in the industrialized world (Tienken, 2014).

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Schmidt & Burroughs (2015) also asserted that one of the key factors driving inequality in schools is inadequate opportunity to learn (OTL) mathematics. In the most recent PISA study, OTL is recognized as familiarity with and exposure to a small set of key mathematics topics. PISA also includes questions about a student's socioeconomic background. This allows for a study of inequalities in OTL and student poverty, and the relationship between them, in a much more detailed way—one that more fully represents the diversity in education within countries. Research illustrates that rather than mitigating the effects of poverty on OTL, many schools in the United States are intensifying them.

The 2012 PISA math scores and rankings from Massachusetts model what the scores of students from a less impoverished America might look like on the PISA tables. Students in Massachusetts scored 520 on the mathematics portion. That score moves the United States from 29th to 12th, internationally (Tienken, 2014). Additionally, if the scores of the non-representational Chinese cities that take PISA are removed—those of Hong Kong, Macao, and Shanghai—the United States moves into 9th place, hardly a crisis situation. The testing populations of the aforementioned cities do not accurately represent the country of China. At this point, the eight remaining countries that would still outrank the United States—including Switzerland, Netherlands, Japan, Korea, and Singapore—all have lower levels of child poverty than 15% (Tienken, 2014).

Further demonstration of standardized international assessment being an apples-to-oranges approach of comparison between countries is the fact that high school is not free in China, as it is in the United States. Only students whose parents can afford to pay tuition are in school at age 15, in China. That limits the testing pool severely, in cities such as Shanghai, Hong Kong, and Macao. Additionally, not all adolescents who live in

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Shanghai are allowed to attend high school there. Due to this reality, Tienken (2014) noted, we basically have the general-education Beverly Hills version of China, masquerading as the entire nation, taking the PISA. In most respects, the United States is not that different from other countries. This investigation suggests that the issues plaguing the United States are a global phenomenon.

Global Performance

The rankings of countries can be quite misleading. A different story emerges when the focus shifts to the patterns *within* the OECD countries. Schmidt & Burroughs (2015) found that most of the variation in student performance on the PISA was *within* countries rather than *between* them. In every country, greater exposure to formal math content was related to better math performance, and almost every country showed a statistically significant relationship between student socioeconomic background and OTL. That is, the issues identified in the United States are issues *everywhere*. PISA shows that what students are taught—the content of mathematics instruction—critically influences what they know. Affluent students in Japan may do better than affluent students in Germany, but the gap between richer and poorer students *within* either country is far greater than the gap *between* countries. PISA convincingly demonstrates that some countries do a much better job than others of making sure that all of their students have roughly equal access to rigorous mathematics content, which includes formal mathematics.

Tienken (2014) asserted that the scores and rankings from the PISA are not important and that they cannot give policy makers or educators meaningful insights into student readiness for the global economy. The research cited that, in fact, the OECD

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authors, themselves, explain that PISA results are due to a combination of variables, including but not limited to schooling, life experiences/home environment, poverty, access to early childhood programs, and health. The authors of the PISA technical manual also state their cautions about curriculum alignment and the influence on results. The PISA measures knowledge and skills for life and does not have an intense curricular focus. Additionally, the PISA rankings do not provide insights into authentic resilience, persistence, collaboration, cooperation, cultural awareness, strategizing, empathy, compassion, or divergent thinking. Rutkowski, Rutkowski, & Plucker (2014) affirmed that the PISA can only provide a snapshot of what a single age group of students knows about a limited set of topics, every three years. It is not a comprehensive, far-reaching view of all aspects of an educational system. Tienken (2014) also cited that large, multinational corporations employ over 23 million Americans, and account for over 19% of total employment, with 68% of the multinational workforce of U.S. parent companies coming from the United States. This data was made available by the 2012 U.S. Department of Commerce. There are no correlations among PISA rankings or scores and being prepared for employment in multinational corporations or entrepreneurial activities.

The work of Hong (2014) suggested that the United States should not attempt to mimic high-scoring PISA nations, specifically focusing on societal differences between the U.S. and Singapore. As of 2012, Singapore's Ministry of Education reported that it has 357 schools (Grades 1-13) with a total of 487,342 students. Dissimilarly, the United States consisted 50.1 million students, over 98,800 public schools, and more than 14,000 school districts. Hong asserted that it is ludicrous that U.S. educational policymakers would even contemplate comparing America to Singapore, or any other small Asian

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educational system.

Turgut (2013) cautioned that while international tests and their results can be revealing, they should not be considered the only and most precise tools to evaluate students' various skills, intelligences, and educational outcomes. The author cited Einstein's analogy: "if you judge a fish by its ability to climb a tree, it will live its whole life believing that it is stupid" (p. 72). Turgut advised that while analyzing other countries' test scores or educational systems, their social, cultural, educational, financial, and demographic factors should be carefully evaluated before attempting to draw conclusions. Again, the global educational standings of countries, based on standardized assessments, can be deceiving.

The Decentralization of American Education

The underlying issue in the United States is the decentralization of educational standards. There is a suggestion that international comparisons are unfair because of the greater diversity of American students and/or the greater commitment of the United States to the notion of equalizing educational opportunity for all students. The reality is that every OECD country participating in PISA or, for that matter, TIMSS (the Trends in International Mathematics and Science Study, another prominent international assessment) must meet very strict requirements in terms of student participation in order to be included.

The regionalization of educational structure in the United States has been accompanied by tremendous variation in educational standards across states, as well as major differences in the content of instruction across schools, even those in the same state (Schmidt & Burroughs, 2015). The United States is not one large education system.

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Rather, it is, at minimum, 50 self-directed educational structures. The same can be said about China, one of the high-ranking nations on standardized international assessments, such as the PISA. Shanghai is not a representation of Chinese education any more than Massachusetts represents the entire United States.

Educational policymakers offer the rebuttal that it is teacher quality, not poverty, decentralization, selection bias—or a multitude of other issues with the PISA—causing the United States to score so alarmingly low on PISA math. Mehta (2013) supports the notion that teacher preparatory programs in the United States need revamping. However, the PISA authors, themselves, have produced contradictory data. The PISA assessments include various surveys of students, teachers, and school principals. One such analysis reports on teachers' use of cognitive activation strategies, specifically when teaching math. Only four countries, Bulgaria, Jordan, Qatar, and the United Arab Emirates (UAE), score higher on the use of those effective teaching strategies (Tienken, 2014).

An additional survey cited by Tienken (2014) tracks the use of other effective teaching strategies. The United States ranks above the OECD average and near the absolute top of the following indicators: (a) The teacher sets clear goals for our learning; (b) The teacher asks me or my classmates to present our thinking or reasoning at some length; (c) The teacher asks questions to check whether we have understood what was taught; (d) At the beginning of a lesson, the teacher presents a short summary of the previous lesson; and (e) The teacher tells us what we have to learn. Rutkowski et al. (2014) emphasized that there is no association between participating students and their teachers. Such detachment limits the usefulness of PISA results for understanding the relationship between teaching and learning, and for making significant and consequential

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changes in pedagogy, classroom climate, or other areas.

Conclusions

In conclusion, research suggests that while international examinations and their results can be revealing, they should not be considered the only tool to assess students' various skills, intelligences, and educational accomplishments. The overriding issue that continually presents itself is that poverty is a prevailing factor in a nation's educational achievement.

In the final chapter, this inquiry will attempt to assess and interpret the implications of the aforementioned results. This will be done in effort to draw conclusion, as well as identify similarities and differences between this inquiry, and the previous research of others.

Chapter 5 – Discussion

Overview of Findings

This study was conducted in an effort to determine whether standardized international assessment scores are accurate depictions of a nation's educational progress. Research suggested that while international examinations and their results can be informative, they should not be considered the only tool to assess students' various abilities, intelligences, and educational achievements.

There are many factors in evaluating a country's scholastic development, including socioeconomics, the level of homogeneity, and the quality of instruction. The present findings illustrated that standardized international assessment, such as the Program for International Student Assessment (PISA), cannot accurately define a country's educational progress, and consequently, should not be the sole determinant of national education policy reform.

Poverty was identified by research as being an important factor in educational achievement. Loveless (2003) focused on socioeconomic gaps, which makes learning more difficult in less affluent areas of the United States of America. Furthermore, these gaps were paralleled with those between the United States and foreign countries, specifically in reading proficiency. Schmidt & Burroughs (2015) suggested that the United States has systematically disadvantaged lower-income students. Tienken (2014) affirmed that the United States has one of the highest percentages of child poverty and one of the lowest levels of overall child well-being in the industrialized world. This is essential data that the PISA ignores when illustrating that the United States has fallen behind other countries in educational achievement.

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Globalization and its relationship with instruction in the United States have also proven to be a repeated inquiry in regard to attempting to understand the current national education landscape. Agbaria (2009) examined the importance of comprehending the necessity to prepare citizens—particularly those of the United States—for a globalized economy. Hong (2014) suggested that the United States can and will be able to compete in a global market, regardless of scores and rankings on standardized international assessments, and should not attempt to mimic high-scoring PISA nations, specifically focusing on societal differences between the U.S. and Singapore. Rutkowski (2014) also discussed the factors that PISA cannot tell the United States about its education system. The research described the important aspects of the PISA design that American educators should consider before participating in the school-based version of the international assessment. This research was useful in determining the gaps between the American educational system and PISA, and connected international assessment, American desperation to compete, and profit-driven educational resource companies, such as McGraw-Hill Education CTB.

Significance of Findings

Current findings indicated that the underlying issue in the United States is the decentralization of educational standards. The regionalization of educational structure has been accompanied by tremendous variation in educational standards across states, as well as major differences in the content of instruction across schools, even those in the same state (Schmidt & Burroughs, 2015). The United States is, at minimum, 50 self-directed educational structures. This reality suggests that assessments such as the PISA cannot truly evaluate the entire United States education system. The rankings of countries can be

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quite misleading. A different story emerges when the focus shifts to the patterns *within* the OECD countries. Schmidt & Burroughs also found that most of the variation in student performance on the PISA was *within* countries rather than *between* them. Turgut (2013) cautioned that, while international tests and their results can be revealing, they should not be considered the only and most accurate tools to measure students' various skills, intelligences, and educational conclusions. Tienken (2014) noted that large, international businesses employ millions of Americans, and account for nearly 20% of total employment, with almost 70% of the multinational workforce of U.S. parent companies coming from the United States. This data suggested that there are no correlations among PISA rankings or scores and being prepared for employment in multinational corporations or commercial activities.

Limitations

The present results have limitations for several reasons. Paramount among these is that this research was conducted over the course of nine months. A more extensive period of research may have yielded more in-depth results. Additionally, results from the most recently conducted PISA have not been released, so the scores and rankings of nations may have changed since the most recent scholarship on the topic was published. The primary investigator was also conducting research while teaching full-time in a high school Social Studies classroom, and involved in numerous extra-curricular duties, limiting the amount of time that could be devoted towards research in the aforementioned time period.

Further Research

Expanding on this research, future inquiry should be made regarding the history of attempts to centralize education in the United States. Furthermore, it would be valuable to compare socioeconomic patterns between the United States and foreign countries. That is, how do wealthy regions of the United States perform, academically, compared to wealthy regions of China, Singapore, etc. The same comparisons could also be researched, regarding impoverished regions of the aforementioned nations. It would be especially interesting to learn if the work of Hong (2014) applied to multiple countries (more so than merely Singapore).

Conclusions

In summary, the purpose of the present research was to determine whether or not international standardized assessments, such as the PISA, are valid indicators of the quality of American education. This inquiry attempted to formulate a conclusion about the accuracy of the PISA and other standardized international assessments in evaluating the United States' position in the global educational ranks. This qualitative-based inquiry was founded on the desire to understand the complexity in evaluating a heterogeneous country's—i.e., the United States of America's—academic standing amongst high-achieving homogeneous countries on international standardized assessments.

Additionally, this research attempted to assess the direction of American education as it pertains to preparing students to compete in a global market. Essentially, this research was an attempt to discover whether the United States is adequately competing on a global educational scale. This investigation also attempted to address the

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foremost obstacles to improving the likelihood that American students will successfully compete with students in foreign countries.

These questions, among numerous others, challenge educators and policy-makers, alike. In the ever-globalized educational arena, students in the United States will continue to face comparisons with their international counterparts. Educational policy reforms must be carefully measured and implemented, with a variety of factors taken into consideration. Expanding on this research, future inquiry must be made regarding the centralization of education in the United States. This would likely be met with opposition from a number of states, but if we are truly attempting to make comparisons between the United States and homogenous foreign countries, our education policies must be uniform. Additionally, policymakers should use this research to attack the issue of poverty and its role in American education. If we are truly attempting to allow our youth to compete with their global competition, we must create a level playing field for them to do so.

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Appendices

Human Subjects Review Proposal

1. I, Ty Harper, am the investigator in this study. I am currently in my sixth year as an educator, and my experience includes teaching 7th Grade Social Studies, 8th grade Social Studies, 9th and 10th Grade Global History and Geography, 11th Grade United States History, 12th Grade Participation in Government and Economics, as well as an elective in sports history. I currently hold a Bachelor's Degree in American Studies from Saint John Fisher College, and a Bachelor's Degree in Adolescent Social Studies Education from SUNY Fredonia. I am also pursuing a Master's Degree in Curriculum and Instruction from SUNY Fredonia.
2. The procedures of the inquiry will largely fall under the qualitative research umbrella. As much of the debate on American education is subject to the opinion of scholars and policy-makers, alike, a qualitative approach is necessary to gain the insights of "experts" in the field. Subtleties and complexities about the research—particularly the diversity in American classrooms and the lack thereof in leading countries classrooms—are often missed by more quantitatively based inquiries. Additionally, data based on human experience is powerful and sometimes more compelling than quantitative data. The rationale for this study is simple. As an educator, I often wonder if the United States is meeting the educational needs of students in an increasingly diverse country, and an ever-globalized world. Furthermore, I would like to know whether or not international standardized assessments, such as the PISA, are valid indicators of the quality of American education.

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3. There will be no participants in my study. The data supplied for my research has been archived in historical research studies, which have centered on international scores and rankings on international assessments, specifically the PISA. The “participants” in this research were students from countries around the world who took the said-standardized international assessments.
 4. The instruments used to conduct this study are, again, archived historical studies. There will be no surveys or randomized experiments. Rather, it will involve the assessment of pre-existing research in the field, as well as socio-economic statistics and comparisons. There will be no research participants, as the students that have taken the PISA have already essentially filled that function. Instead, the performance of said-students will be evaluated, based on the conversations conducted with experts in the field.
 5. There will be no recruitment procedures and/or recruitment correspondence. Again, this investigation will involve the valuation of pre-existing research in the field, as well as socio-economic data and comparisons. There will be no recruitment of inquiry participants, as the students that have taken the PISA and other standardized international assessments have already essentially filled that role.
- 6a. In terms of ethical procedures, relating to potential risk to research subjects, there are none in my study. This is again, because of the fact that my inquiry relies on pre-existing research done in the field of international standardized assessment and its correlation to the quality of American education. The statistical data in this research is supplied by the results from past international standardized assessments. There is no risk for the students

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who have taken the exam(s), other than national public scrutiny of educational programs within their countries.

b. There are no necessary provisions for medical or professional intervention, because there are no research participants.

c. There is no necessity for maintenance of safety for subjects, because there are no research participants.

d. In researching what I believe to be one of the foremost concerns in American education, I will attempt to formulate a conclusion about the accuracy of the PISA and other standardized international assessments in evaluating the United States' position in the global educational ranks. Additionally, I will attempt to assess the direction of American education as it pertains to preparing students to compete in a global market. Essentially, I will attempt to discover whether or not the United States is adequately competing on a global educational scale. If not, I will attempt to address the foremost obstacles to improving the likelihood that American students will successfully compete with students in foreign countries. This study could potentially help to guide future research, as well as augment teacher understanding of the issue. These are the prospective benefits of this study.

7. There is no need for precautions to minimize risks for research subjects, as there are no research subjects.

8. There is no need to maintain the confidentiality of research subjects, as there are no research subjects.

**COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
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* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

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 • **Stage:** Stage 2 - Refresher Course

• **Report ID:** 12007540
 • **Completion Date:** 10/05/2015
 • **Expiration Date:** 10/04/2017
 • **Minimum Passing:** 80
 • **Reported Score*:** 100

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED
SBE Refresher 1 – Defining Research with Human Subjects (ID: 15029)	10/05/15
SBE Refresher 1 – Privacy and Confidentiality (ID: 15035)	10/05/15
SBE Refresher 1 – Assessing Risk (ID: 15034)	10/05/15
SBE Refresher 1 – Research with Children (ID: 15036)	10/05/15
SBE Refresher 1 – International Research (ID: 15028)	10/05/15
Biomed Refresher 1 - Instructions (ID: 960)	10/05/15
SBE Refresher 1 – History and Ethical Principles (ID: 936)	10/05/15
SBE Refresher 1 – Federal Regulations for Protecting Research Subjects (ID: 937)	10/05/15
SBE Refresher 1 – Informed Consent (ID: 938)	10/05/15
SBE Refresher 1 – Research with Prisoners (ID: 939)	10/05/15
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- **Stage:** Stage 2 - Refresher Course

- **Report ID:** 12007540
- **Report Date:** 05/02/2016
- **Current Score**:** 100

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT
SBE Refresher 1 – History and Ethical Principles (ID: 936)	10/05/15
Biomed Refresher 1 - Instructions (ID: 950)	10/05/15
SBE Refresher 1 – Federal Regulations for Protecting Research Subjects (ID: 937)	10/05/15
SBE Refresher 1 – Informed Consent (ID: 938)	10/05/15
SBE Refresher 1 – Research with Prisoners (ID: 939)	10/05/15
SBE Refresher 1 – Research in Educational Settings (ID: 940)	10/05/15
SBE Refresher 1 – Instructions (ID: 943)	10/05/15
SBE Refresher 1 – International Research (ID: 15028)	10/05/15
SBE Refresher 1 – Defining Research with Human Subjects (ID: 15029)	10/05/15
SBE Refresher 1 – Assessing Risk (ID: 15034)	10/05/15
SBE Refresher 1 – Privacy and Confidentiality (ID: 15035)	10/05/15
SBE Refresher 1 – Research with Children (ID: 15038)	10/05/15

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

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