

LET THE SEUSS LOOSE: THE LIMITATIONS
OF STANDARDIZED TESTING

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CAPSTONE ABSTRACT

Let the Seuss loose: The Limitations of Standardized Testing

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Modern education relies on standardized testing as a quantitative tool to validate the quality of education in the United States today. From as early as the 1800s standardized tests have been a part of the American fabric after they were first administered to immigrants trying to enter the United States, and as observed by W.J. Popham, “when the government administered the Army Alpha intelligence test to about 1.75 million U.S. Army recruits in an effort to identify the most suitable candidates for officer training programs” (47).

Since then, standardized testing has been employed to assess individual skill levels across a variety of social, industrial, and educational platforms. According to economist and author Peter Sacks, “the case against standardized mental testing may be as intellectually and ethically rigorous as any argument made about social policy in the past twenty years, but such testing continues to dominate the education system, carving further inroads into the employment arena as well, having been bolstered in recent years by conservative backlash advocating advancement by *merit*” (25).

This study will identify the impact standardized testing has on student education and describe the limitations on critical thinking found as a result of

performance testing in schools from elementary school to college. Specifically, it will speak to the phenomenon of a teach-to-test methodology that inhibits students' abilities to adequately apply critical thinking skills when facing real-life problems. This phenomenon, teach-to-test, is due to a major obstacle that educators face because they are forced, because of testing, to focus on specific topics in a fixed amount of time. Educators may not have enough time to teach students that more than one solution is available. It is here that the teach-to-test methodology does the most damage to students, as they rely on a singular approach when addressing problems.

Residual effects of a teach-to-test methodology include potential threats to higher education as standardized tests are often used to identify potential candidates for admission into colleges and universities. Furthermore, a reliance on standardized testing may inhibit students' ability to apply critical thinking skills in the workforce, where our future leaders will face new and challenging issues daily.

Lastly, this study will explore how using the literary works of Dr. Seuss can be a viable option to combat the teach-to-test methodology found in both the classroom and in the workforce as everyone will soon learn about the hidden messages that can be found in every Dr. Seuss story. Using literature that requires critical analysis to understand the entire text can help harness critical thinking skills that can be applied to learning both inside and outside of the classroom.

INTRODUCTION

This essay identifies the way that standardized testing is currently employed in classrooms ranging from kindergarten to college, the developmental deficiencies it may cause students, and the reasons that this topic should be important to everyone. This task will be accomplished by analyzing texts and academic journals that focus on early childhood education and learning outcomes of collegiate students who matriculated through the American educational system from the 1960s to present day, which can be referred to as the modern era of standardized testing in education. It is through this lens that everyone should be able to identify how the use of teach-to-test tactics for the purpose of passing standardized tests in school slows students' development, specifically when the need to apply critical thinking skills to negotiate through real life situations is required.

Lastly, this essay will offer a supplemental solution to help combat the teach-to-test methodology by analyzing research on how incorporating the literary works of Dr. Seuss into the classroom, at any age group that relies on standardized tests as a performance measurement, could help students master their critical thinking skills. A study using Dr. Seuss literature to build character development in school children by Dave Brown and Joe Varady found that all of Dr. Seuss's "books cover personal topics for advisory sessions, provide introductions to young adolescents' social and emotional concerns, offer opportunities for thematic unit development, and present issues that relate well to larger world beyond academic life" and "the topics discussed and Seuss's books provide opportunities for integrating Academic disciplines through the development of thematic units" (Brown and Varady 32).

Education currently relies on standardized testing as a quantitative tool to validate the quality of education in America today. Executive Director of the National Center for Fair and Open Testing (FairTest), Monty Neill, found that “in the last two decades, standardized multiple-choice tests have come to dominate the educational landscape in the U.S. from preschool to college, they have become the major criteria for a wide range of school decisions” (Neill and Medina 689). These decisions include the ability to matriculate, program acceptance, and more often than not, admittance into college.

In industry, as well, standardized testing is changing the way in which employers evaluate and determine the value of potential candidates. Anyone who is required to take a standardized test for the sake of validation should be made aware of how the outcome will classify him or her in the eyes of the test givers. Research by Peter Sacks found that “most Americans have taken standardized mental tests from the day they entered kindergarten. Test scores have told the gatekeepers of America’s meritocracy– educators, academic institutions, and employers– that one student is bright, the other is not bright, that one is worthy academically, the other less so. Some, with luck, are able to overcome the stigma of poor performance on mental tests. But others will not” (25). A major concern for students who are exposed to this type of educational learning, one that relies on standardized testing to validate knowledge, is that they are subject to a teach-to-test phenomenon where curricula are tailored for a single purpose, to pass the test. Again, according to Sacks, “the research over the past few years, especially at the K-12 level, one repeatedly finds evidence that traditional tests reinforce passive, rote learning of facts and formulas, all quite

contrary to the active, critical thinking skills many educators and employers now believe schools should be encouraging. Many suspect the tests are themselves powerful incentives for compartmentalized and superficial learning” 27). The danger here is that students may not receive as high quality of an education as they would in an open-format classroom, nor will students have the opportunity to harness their critical thinking skills due to time constraints imposed by the need to cover only the specific topics necessary to pass the required tests.

Critical thinking is the process by which an individual approaches a problem, synthesizes learned information, negotiates a strategy, and then deploys an action plan. Failure to acquire or hone critical thinking skills could create larger deficiencies for students both in school and in the workforce.

Boards of education and college admission teams use standardized testing as a tool to measure future successes. A 2007 article in *Science* magazine by Nathan Kuncel and Sarah Hezlet addressed how standardized testing was being used by “to forecast which students will be the most successful and obtain the greatest benefit from graduate education in disciplines ranging from medicine to the humanities and from physics to law” (Kuncel and Hezlet 1080). The reasoning for this action may be the result of a Western culture that breeds competition and rewards ability. Research completed by Marion Wilde found that the “*World Economic Forum* ranks the United States as number one out of 131 nations in global competitiveness, using primary and higher education as part of its calculations” (Wilde 2). “To some of us, the process of testing kindergarten children for promotion to first grade is both stupid and immoral. Yet people continue to do it, even though individually administered tests on five-

year-olds are not sufficiently reliable to generate much confidence in the placement decisions” (Bracey 732). Grants, scholarships, even financial aid can be affected by test results. In his book on ability, author D.A. Goslin argued “high achievement and the opportunity for rapid individual advancement based on ability as well as initiative and hard work have traditionally form the core of the set of values inherent in the ”American way of life” (Goslin 20).

Students vying for a specific job field understand that the right education can be the difference between getting hired and not. The result is that students may be more concerned with test results than they are in knowing they have the proper skill set to be effective at their job. This behavior by students and professionals alike is a result of a teach-to-test environment that reinforces learning methods that are concerned with performance results and not the acquisition of knowledge with the ability to apply critical thinking skills. Teach-to-test is where “teachers see the kind of intellectual activity required by previous test questions and prepare the students to meet these demands” (Madaus 40). Their teaching methods are purposely fixed on getting their students’ scores above a comparative threshold.

A single observation taken from this type of methodology is that students who are unsuccessful on standardized tests may find themselves unable to attend higher education programs because they do not meet the minimum criteria for admittance, despite the fact the potential candidate may be more than qualified in other ways to attend said program. Job candidates who are required to take pre-screening assessments also are at risk if they fail to possess basic skills that were not apart of the tests they encountered during their scholastic career. If the student suffers from

test-taking anxiety, or has an undisclosed learning disability, which according to a 2007 report from the U.S. Department of Education to Congress, affects “as many as 15% to 20% of Americans” (Wilde 4), they too may put their futures at risk.

Furthermore, some research suggests that standardized testing is biased against minorities, which would put those groups of students at a disadvantage for admissions as well.

It is important to understand how legislation, at both the state and national levels, affects the role of standardized testing in the classroom. Due in part largely to the educational-reform bill known as *The No Child Left Behind Act*, which guaranteed financial support to lower socio-economic status, or SES, school districts and improved measures of accountability for students’ progress, a competitive emphasis was created that allowed the results of standardized achievement tests to promote a teach-to-test environment. This is because the bill, signed into law on January 8, 2002 by former President George W. Bush, required individual states annual testing of their students in the subjects of math and reading from grades third to eighth. The law clearly supported the use of standardized testing as a quantitative method for evaluating the quality of education, although it prohibited a universal national assessment, which could be argued as a confounding stance to take on the part of the government. Naturally, if the amount of financial support were dependent on the results of test scores, it would be in the best interest of both educator and school district to ensure their test scores were higher than those of their competition. Furthermore, current legislation puts accountability on the educator and threatens sanctions if an observable improvement is not seen year over year. “When the

teacher's professional worth is estimated in terms of test success, teachers will corrupt the measured skills by reducing them to the level of strategies in which the examinee is drilled. Further, the expectations and deep-seated primary agenda of students and their parents for test success will further corrupt the process" (Madaus 40).

HISTORY

The need for ability testing can be traced back to the dawn of man. A hunter-gatherer society would clearly want the best hunters identified and put into the wild and not gathering food, which probably required a much lower skill set than hunting game. From this caveat it can be assumed that assessing and identifying the best candidates for school, industry, and leadership is paramount today. Sociologist David Goslin's research on the effects of standardized testing uncovered work by prominent American child psychologist, Florence Goodenough, whose work on the history of ability testing found, "that as early as the fourth century B.C., philosophers like Aristotle were attempting to discover the key to individual differences through physiological measurements" (qtd. in Goslin 20). Logically some type of assessment for individual ability is necessary to isolate who will be the best applicant for each position, or student for each program.

By the nineteenth century, through the emerging use of differential statistics, scientists were able to identify an observable difference in human characteristics that went far beyond the basics of height, weight, speed, etc. Statisticians could now identify, and group, people based on an observable difference in their individual intellectual ability. Let us welcome into the world the bell curve. The bell curve is a

symmetrical bell-shaped curve plotted on a graph that represents the distribution of values, frequencies, or probabilities of a data set. The tails of the bell curve represent the outlying data signals, or outliers, and the center of the curve is known as the mean, or the average, which is always the absolute mid-point of the bell curve, or the average signal found in a data set.

For use in differential statistics, the bell curve serves as a visual aid to easily identify how a data signal measures up against the entire set. “It now became possible to evaluate a test instrument in terms of its value as a predictor of some later performance such as academic achievement and also to evaluate responses to particular questions within the test in terms of their empirical correlation with the overall test score” (Goslin 24). When used to describe test scores, the mean score would be the average score produced by participants. If a score measured below the average, it would be plotted to the left of the mean based on its standard deviation, or distance from the mean. A signal greater than the average score would be plotted to the right of the mean, also based on its standard deviation. By using a normal distribution, or Gaussian function, pioneered by mathematician Carl Friedrich Gauss, data signals collected from test results could be plotted on a graph and could now describe performance measures of samples against large populations that scientists could then anticipate the expected results of performance tests.

At the beginning of the twentieth century a French psychologist by the name of Alfred Binet produced an ability test to measure individual intelligence after spending a great deal of time observing children in their natural environment, noting how each child approached tasks that contained varying amounts of difficulty. “Binet

and his colleague Theodore Simon had for some time been observing the developmental sequences of children in terms of the tasks which they were progressively able to handle. In 1905 Binet and Simon devised a scale for the measurement of intelligence in which, for the first time, the tasks were arranged in order of difficulty rather than according to similarity or dissimilarity” (Goslin 25). After American psychologist Henry Goddard translated Binet’s test from French to English in 1908 and distributed thousands of copies throughout the United States, “the Binet-Simon scale of intelligence, the forerunner of present-day individual intelligence tests,” (Goslin 25) went through major revisions by Lewis Terman, an American psychologist, in 1916. Terman wanted a quantifiable method established to classify developmentally disabled children, so he began a revision of Binet’s test that included research completed by William Stern in 1912.

The overhaul of Binet’s work by Terman would be known as the Stanford revision, and would ultimately change the name of the assessment to the Stanford-Binet IQ test. Intelligence quotient, or IQ, is the term German psychologist, William Stern, gave to the results of his research on intellectual ability, which he received through the use of intelligence testing. A person’s IQ is the result of calculating mental age, which is acquired from the result of a standardized intelligence test, divided by the person’s chronological age, and then multiplied by 100 to eliminate any fractional results. Despite having almost all new questions and a corresponding scoring method, “its fundamental conception was in the tradition of Binet’s original 1905 scale” (Goslin 25). The Stanford-Binet would become the first standardized test of intellectual ability, but it had a major drawback. The test was designed to assess

only individual ability, which required a trained professional for it to be administered. To measure the ability of a larger population the evolution of standardized testing would require group testing.

By 1918 Arthur Otis, an American psychologist who was educated at Stanford under Lewis Terman, devised a standardized test that could assess large groups of people at one time. Otis' research was eventually turned over to the United States Army who aptly named it the Army Alpha test, and used it to identify military candidates for specific job functions near the end of World War I. The Army Alpha test remained in service throughout World War II as a screening device, where it was used to identify enlisted soldiers for officer training, as well as specialized positions that required highly skilled candidates. As Goslin observes, "the major success of the Army Alpha the test as a predictor of performance paved the way for the introduction of group testing in education and in other areas where large numbers of individuals have to be classified quickly and it efficiently" (Goslin 28). With well-documented successes by the Army for identifying high and low aptitude candidates, deploying standardized achievement tests in the school system appeared to be an excellent method for ascertaining the same type of results with regard to student aptitude.

Standardized testing in schools gained momentum during the 1960s as the need increased for a quantifiable method to assess how well students were being educated. Following World War I, Goslin found "increasing concern with public education in the context of growing emphasis on the traditional American values of equality of opportunity and encouragement of high achievement, which lead to the growth of standardized achievement tests and further modifications of intelligence

tests for school counseling and guidance uses” (Goslin 27). This need to identify high potential candidates was mainly due to an increase in demand for skilled workers and business leaders in a rapidly developing corporate and financial world. With schools vying for an edge to solicit the best possible students, doing well on these tests meant a great deal to both student and educator.

A landmark event that further solidified the need for standardized testing in schools was the *Elementary and Secondary Education Act* (ESEA), which was signed into law by former President Lyndon B. Johnson on April 9, 1965. The bill intended not only to fund primary and secondary educational institutions but also to establish a system of accountability for educators. Johnson’s administration wanted to close the gap on student achievement by providing equal access to quality education for all American students. The bill specifically targeted its efforts on lower socioeconomic status families who without this financial assistance might not have an adequate opportunity to a quality education. The *ESEA* consists of six original titles and two amendments. Title one of the bill clearly detailed how the allocated funds were to be distributed as it gave priority to schools that were in obvious need of funds, those that were considered low-achieving, and to those schools that were committed to improving their education and test scores. Schools now had a motivating factor to perform well on standardized ability tests.

From this competitive environment a methodology of teaching students to do well on standardized tests was created. The tactic, teach-to-test, was meant to thoroughly educate a student on specific subjects that they will encounter when taking the tests. It may not seem like a terrible idea to teach students about the specific

subject matter that they will encounter on a test, but it has strong disadvantages despite its innocent appearance.

For example, if a test designed to measure a student's knowledge on algebra was taken, and the student has only learned specific topics he or she will encounter on the test, or was permitted to use a calculator containing the formulas found on the exam and he or she does well on the test, can everyone agree that the student thoroughly comprehends algebra? The answer to that question is not definitive. If the school district's test results come back above average compared to other districts, does that mean one district's students are more intelligent than another, or could it mean one school prepared better by only covering specific topics regularly found on the test? What the teach-to-test methodology does in the previous scenario is create a high-stakes test environment.

Research on high-stakes testing by author Alfie Kohn found, "when they (observers of test results) uncritically rely on standardized tests as indicators of how much progress has been made to close these (learning) gaps, they may be unaware of how much harm they are doing by legitimatizing and perpetuating a reliance on such testing--a reliance that ultimately damages low income and minority students most of all" (Kohn 252). School districts might, under false pretenses, be rewarded financially because of their test results. Schools in low-income or minority areas might not be receiving necessary funds because their district scored lower than another district who simply prepared better, or had better resources to coach students on how to pass state exams. Everyone should see the danger in a teach-to-test environment now, as it becomes a natural response to the intended desire for accountability.

By the time the 1980s began, major revisions were required to Johnson's bill. The signing of the *Education Consolidation and Improvement Act* (ECIA) into law in 1981 signaled the beginning of a shift in educational reform seeking to reduce the amount of federal regulation for *Title I* and to put a stronger focus on student achievement. In 1988 the *Hawkins-Stafford Elementary and Secondary School Improvement Act* further modified *Title I* by seeking to improve the quality of education for low-income students by raising classroom educational standards and increasing the need for students to acquire advanced rather than just basic skills. The last major upgrade to the *ESEA* was the 1994 *Improving America's Schools Act* (IASA). This amendment required school districts to include math and reading comprehension as standards for measuring student achievements.

In January of 2002, when former President George W. Bush signed into law the *No Child Left Behind Act of 2001*, the largest educational reform in American history since 1965 took place. The bill promised increased funding for low-income school districts, an increase in achievement scores for minorities, new standards of accountability for schools, and a significantly expanded role for standardized testing. Students in grades three through eight would require testing in both math and reading annually. Individual states would be responsible for implementing the necessary changes to the classroom to ensure their respective students successfully acquired the necessary skills to pass their standardized achievement tests that the federal government would help to finance. States would be required to report out their results to the public and show "adequate yearly progress," or A.Y.P. Failure for a school district to improve by the state's standards would result in the school district being

subject to corrective action by the state. With the possibility of receiving sanctions from the state, it is not difficult to comprehend why school districts would passively support a teach-to-test environment. This topic should be important to everyone because when teach-to-test learning is all that students know they may fail to acquire specific skill sets such as critical thinking skills that are necessary in negotiating real-life problems.

CURRENT EMPLOYMENT

Knowing some of the history behind standardized testing can close the gap on understanding their popularity. Despite a growing anti-testing movement, standardized tests are still heavily used in schools, government, and industry today. But what exactly is a standardized test? The term itself is quite broad as any test or assessment could fit into this definition with the proper parameters. For our purposes, the term, standardized test, will only refer to the large-scale assessments used in schools, government, and industry that seek to validate aptitude or subject matter. The reasoning behind this strategy is to focus on the deficiencies standardized testing creates as a result of an observable teach-to-test phenomenon.

According to the *Glossary of Education Reform*, a standardized test is any form of test that (1) requires all test takers to answer the same questions, or a selection of questions from common bank of answers, in the same way, and that (2) is scored in a “standard” or consistent manner, which makes it possible to compare the relative performance of individual students or groups of students (“Problems”). Standardized tests can be designed in a number of different ways. They might contain fill-in-the-blank, multiple-choice, mathematical, essay questions, or a combination of

styles. No matter the formatting style, all of the questions and answers of all of the tests being administered to a group must be identical to meet the criteria of being standardized. As Goslin writes, “Test standardization implies the establishment of specific and uniform conditions for administering the test, and uniform methods of interpreting the results. In addition to test questions that can be graded accurately by anyone regardless of his personal feelings or idiosyncrasies, standardization requires norms based on the test performances of a large number of individuals so that any particular score may be meaningfully interpreted” (24).

For reporting purposes, statistical analysis is often used to interpret large sample sizes to measure performance across populations. A bell curve, or standard distribution, graph would be a great tool to use for visual interpretation of data sets collected from the scores of achievement tests. Individual scores can then be compared to larger populations, such as when a student wants to know how he or she scored on their tests compared to the rest of the students in their school district, state, or even the country, if the test was administered that broadly. For example, a college student who is about to complete an undergraduate degree and is considering graduate study afterwards, the student might want to know what the average GRE, or Graduate Record Examination, score is of the school they are applying to. Most schools, both public and private, list their test results online.

Educational testing for students can be classified into two major groups: internal, meaning the assessments students will encounter during the school year, such as the PARCC exam or the ACT test and external, such as the SAT or GRE, which are issued by outside organizations. As stated earlier in the text, testing in the

United States begins for students when they reach kindergarten and continues through college. The number of tests students are required to take can surpass thirty before they even graduate high school. If a student's test results are found to be substandard, then their options for a college education may be at risk. According to Monty Neill and Noe Medina, who lobby against the validity of standardized testing, claim, "no test has sufficient reliability to warrant making decisions solely or primarily on the basis of test scores" (689). Anti-testing supporters question how these tests can validate whether or not a student actually grasps a concept or are they only memorizing information long enough to score well on a test and then mentally discard the information immediately after the exam is over. How can long-term knowledge or understanding be measured? Those are some of the fundamental questions brought up in an argument for and against the continuation of testing in schools.

Supporters for standardized testing argue that it is the only way to truly measure performance without bias. As the definition of standardized testing states, it is a test that is administered and scored in a consistent, or standard manner. The questions or problems are predetermined and so are the coinciding answers or solutions. The only deviation from this practice would be for written, or essay questions, which would require interpretation by an examiner as to what the person taking the assessment was trying to convey. Even during this process a specific set of guidelines, or rubric, is established to minimize human error.

Research by Peter Sacks found anti-testers urging school districts to find "alternatives to standardized testing, such as performance assessment(s)" (25) and

that is what they ought to focus their efforts on. Performance testing, according to Peter Sacks, “focus on what people can do and less on how well kindergarteners, high school students, and prospective teachers can take tests” (25). Unfortunately, unless federal and state legislations change their current approach to standardized achievement tests, we will remain “a nation of standardized-testing junkies” (25).

Lastly, make no mistake on how big a business standardized testing is. “After adjusting for inflation, sales of standardized tests to public schools more than doubled between 1960 and 1989, to \$100 million a year... some estimates of the number Americans spend on testing--a figure difficult to come by given the fragmented and often private nature of the testing industry—are as high as \$500 million annually” (25). Research on the amount of tests sold in America for use by students K-12 annually estimates it to be about 127 million copies. After learning this information everyone can see a financial reason why test makers do not want to see their products removed from current use. So long as standardized testing is in place to validate information, deficiencies will exist as a result.

DEVELOPMENTAL DEFICIENCIES

Teaching students to pass a specific test with a single approach method pigeonholes their learning potential and may only allow them to learn one way of overcoming a challenge where more options may exist. Again research by Peter Sacks found how “teachers testify standardized tests don’t accurately measure their students’ abilities and that widespread practices of “teaching to the test” render test scores virtually meaningless” (28). If test results are considered more important than teaching the required material, inevitably teachers will tailor their style of teaching to match that

of the potential content students will encounter on test day. “That’s a serious problem, striking at the very heart of results-based educational accountability” (Finn and Petrelli 22). When a teach-to-test approach is used, time becomes an important factor. Teachers need to get through the assigned material before test day and therefore streamline lesson plans trying to ensure that their students grasp the material long enough to pass their tests. If students do not do well on the test, they may find themselves falling behind, or labeled as an underachiever. “Meritocracy’s gatekeepers brand those who score poorly on standardized tests as somehow deficient, incapable” (Sacks 25). Over exposure to the teach-to-test method will only compound deficiencies.

For example, many community colleges provide remedial math courses where the curricula require the use of a calculator to solve algebraic problems. The use of technology by students should surprise no one, nor should the fact that many students, who feel they are not ready for a traditional four-year school, or lack the funds necessary to pay for tuition, begin their college careers at a community college. The remedial courses will prepare the student for higher-level algebra courses. The student matriculates to credit-bearing courses and continues to use a calculator because it was the only tool he or she had been taught to use. Now the student wants to transfer to a four-year school. Many four-year colleges and universities require standardized entrance exams for incoming and transfer students, based on their individual scholastic history, which include math as a basic skill. The four-year schools do not permit the use of a calculator when taking the skills assessment because they want to see that the incoming student possesses basic algebra skills. If

the student does not possess basic algebra skills without the use of a calculator, the results can be damaging. The student will not be permitted to use the only method they know how to solve algebra problems, which is a direct result of the teach-to-test method.

Research on remediation by Larry Juchartz found “at some schools, up to a third of incoming students require some form of remediation before they can begin the core general education course requirements for a certificate or university transfer credits” (336). Based on this information, it should probably come as no surprise to learn that the class most offered to undergraduate students at Rutgers University-Camden is remedial mathematics. The issue cited by department professors is that students arrive at the university without the necessary skill set to negotiate high-school-level algebra. A student who had been taught to rely solely on technology when encountering algebra problems will be seen as deficient if and when they fail to pass their basic skills assessment. Having to take remedial courses could put the student behind on their journey to graduation, not to mention the financial consequences that are associated with taking zero-credit courses. The student still pays the full tuition rate per credit, including associated fees, but the course itself does not count towards graduation.

Construct validity seeks to confirm that the method of measurement is actually measuring the desired result. For example, does the test really measure a student’s comprehension of the material? If it does, then how can an observer identify whether the student has only been taught one way to approach a problem? It is very possible that old solutions do not guarantee similar results in new problems.

“Teaching is directly and negatively influenced when the curriculum is driven by tests that lack construct validity” (Neill and Medina 691). In other words, if the test does not actually measure what the student should have learned, then teachers made a big mistake adjusting their teaching style to match what will be encountered on the exam, thus cheating students out of a quality education.

State boards of education mandate standardized testing as per their respective legislation, which are meant to serve as an objective method for gauging students’ comprehension of the required curricula. The tests also attempt to identify possible deficiencies in students and educators alike. Supporters for standardized testing claim that the tests enhance students’ motivation because they will want to do their best so that they can validate their understanding of the tested material. According to the *Standards for Educational and Psychological Testing*, “validity is the most fundamental consideration in developing an assessment: “The process of validation involves accumulating evidence to provide a sound scientific basis for the proposed score interpretations” (Dogan, Hauger, and Maliszewski 9). Opponents of standardized testing argue, “these objective instruments [the tests] often produce results that are inaccurate, inconsistent, and biased against minorities, females, and students from low-income families” (Neill and Medina 690). If standardized tests are biased against minority groups, then someone or something should call into question the validity of standardized testing. How can a test that is biased towards half its testing population produce reliable and valid results?

A reason that standardized tests are accused of being biased towards minorities and low-income households is that the students taking the tests are not

exposed to the broad subject content the same way that majority groups and higher-income families are. “Since knowledge and language are culture-bound, there is no reason to believe that a “culture-free” test can be constructed” (Neill and Medina 692). Consider an immigrant student who recently moved to America from a third-world country. If the student were taking a standardized achievement test that included algebra problems in word form and borrowed caveats that the student would never have encountered during his or her lifetime, such as calculating a golf handicap or the comparative rate of speed a positron emitter uses, how well would he or she measure up against a student who was exposed to the presented situations? Another example could be reading comprehension. How often would an ESL student, or one who uses English as a second language, encounter certain words that only exist in the English language? Internal and external exams alike include the use of slang in reading comprehension sections to appeal to the test taker. Just because the question and coinciding answer were “standardized” does not mean they are universal amongst its test takers, specifically when race, gender, or socioeconomic status are concerned.

When educators use the teach-to-test method their focus is on test content and their motivation is test results. Along with the obvious limitations associated with that style of teaching, teach-to-test limits the children who “go to school not just to learn basic academic skills, but also to develop a personal, intellectual, and social skills that’ll enable them to become happy, productive members of a democratic society” (Neill and Medina 693). If students are focused on test results they might miss out on the non-scholastic benefits of attending school.

Students' performance on standardized tests often dictates how their academic futures will go. If they are successful, meaning they achieve at an average or above average level, they should matriculate normally and have an opportunity to seek higher education. If they are unsuccessful, or below average, they might meet with more resistance in achieving higher educational goals, as they will be classified as less worthy of a candidate for admission. UCLA professor and psychologist, Dr. Eva Baker, argued in her dissertation on the quality of education that "studies point to standardized tests' narrowness of content, their lack of match with curricula and instruction, their neglect of higher order thinking skills, and the limited relevance and meaningfulness of their multiple-choice formats" (3). If Baker's opinion is true then students are showing up to college unprepared because they lack basic critical thinking skills necessary to approach the real-life problems that higher education looks to answer, as well as passively promoting a nation of potential underachievers.

Students and professionals who suffer from developmental disorders or disabilities, or who suffer from test-taking anxiety might be exploited by standardized testing. "Students with disabilities, in particular, are suffering as a result of traditional assessment practices, which have proven to be inaccurate and inconsistent, yet continue to be used in prediction, decision-making, and inferences about student performances and lifelong success" (Sacks 26). Avoidance strategies might develop in students who believe their self-efficacy for test taking to be low.

Given the fact that school districts receive funding based on their performance record, standardized testing may be around for a long time. "Rather than exerting a positive influence on student learning, testing may trivialize the learning and

instructional process, distort curricula, and usurp valuable instructional time” (Herman 197). A major obstacle for the anti-testing movement of standardized testing is that there are no quantitative options to replace current testing. Since a viable replacement does not currently exist, and current legislation threatens the status of teachers’ employment if their students do not produce acceptable test scores, it could be argued that the style of teach-to-test is not going anywhere anytime soon.

RECOMMENDATIONS

Author Peter Sacks summed up the value of relying on standardized tests to accurately predict the success of individuals who matriculate through the modern era of standardized testing when he said, “scoring high on a standardized test is a good predictor of one’s ability to score high on a standardized test” (27). To counteract some of the deficiencies that students face with when they are subject to the teach-to-test methodology, school districts could implement literary works that implore students’ critical thinking skills, such as books by the American literary author Dr. Seuss. AS observed by Brown and Varady, “Camouflaged behind a cast of comical characters in weird and wild worlds, valuable lessons for young adolescents that will allow them to probe and answer the questions that arise about their own growth processes” (32). This approach would aid students in harnessing their critical thinking skills by allowing them to locate the hidden meanings behind literature that was meant to entertain as much as it was meant to educate. Dave Brown also found that “teachers can use Dr. Seuss’s writings to raise issues in a non-threatening way” (28).

The ability to approach problems from different perspectives might also provide students the skill set they need to approach challenges more efficiently. Most

of Dr. Seuss's books are fairly short and could be read rather quickly before classroom learning began, which would help to combat the issue of a lack of time that educators face. Choosing to use Dr. Seuss for this recommendation was not random, nor was it just for popularity's sake. Every single literary work by Dr. Seuss contains an ulterior message, from one as simple as explore the world around you, to one as complex as understand the futility of nuclear war. Dr. Seuss authored forty-four books, along with twelve others under different pseudonyms that in total have sold more than 600 million copies worldwide.

It all started on Mulberry Street. That's where the magic, and the story of Dr. Seuss began. Theodore Seuss Geisel was born in Springfield, Massachusetts, to German immigrant parents, Theodor and Henrietta Geisel, in 1904. Dr. Seuss's father was a brewer of beer and a former soldier in the German army cavalry. Dr. Seuss was a very active child, who often used his imagination to spin wild tales of what he perceived to be the world around him. Drawing inspiration from the active Springfield community, which at a point in his youth included a community zoo run by his father, Dr. Seuss had plenty of interesting characters to stimulate his eager mind. Dr. Seuss has been credited with many achievements during his career including the Caldecott Honor Award, an Oscar, an Emmy, the Peabody award, and in 1984 a Lifetime Achievement Award by the Pulitzer Prize Committee for his work in children's literature.

Dr. Seuss's formal education came by way of Dartmouth College where he wrote and was editor-in-chief for campus magazine, the *Jack-O-Lantern*. After violating a school policy that required Theodor Geisel to abandon all extracurricular

activities he began signing his work under the pseudonym Dr. Seuss. After graduating Dartmouth in 1925, Dr. Seuss briefly attended the University of Oxford where he would meet his greatest muse; his soon-to-be wife, Helen Marion Palmer. While at Oxford, Dr. Seuss studied English literature, but spent most of his time doodling interesting characters.

After returning home from Oxford, Geisel spent most of his time working on advertising ideas and drafting news columns. He would launch his career off a cartoon ad for *The New Yorker* magazine, featuring a cartoon for *Flint* bug spray. While traveling on a European steam liner in 1936 with his wife Helen, Dr. Seuss again found inspiration for his work when he recognized a pattern of sounds coming from the steam engine's exhaust. The rhythmic pattern was similar to the rhythmic pattern found in the classic Christmas story, '*Twas the Night Before Christmas*. Dr. Seuss returned home and began writing rhymes that would follow an AABB or ABCB-style. The patterns Dr. Seuss heard on his voyage would ultimately be the basis for his first official children's book, *And to Think That I Saw It on Mulberry Street* (1937).

The book, a tribute to his father, exemplified Geisel's youth as it described a magical sequence of events that a boy envisioned while walking home down the famed main street of Springfield. *And to Think That I Saw It on Mulberry Street* embodied Dr. Seuss's imagination and flair for rhyming stories. Ironically, it would be rejected more than thirty times before *Vanguard Press* took a chance and made Dr. Seuss's dream of being an author a reality. It would be a launching point to a career that spawned more than sixty books over fifty years. Dr. Seuss would follow up with

four more books, including, *Horton Hatches the Egg*, before he joined in the fight against Hitler in World War II with the Army Signal Corps of America.

Through his involvement with the Army Signal Corps, Dr. Seuss had the opportunity to work with both Mel Blanc and Chuck Jones, who later created the Looney Tunes brand. Dr. Seuss credited Chuck Jones with introducing him to the art of animation while they collaborated on army propaganda projects, in the form of cartoons, aimed at instructing young GIs on the importance of basic military protocols, such as following orders and maintaining vigilance while on-duty. It was through this relationship that Dr. Seuss learned how to make his stories come to life with animation. Through the use of a dopy character named *FUBAR*, Jones and Seuss combined animation, music scores, and humorous rhymes to deliver important messages to the troops without losing their attention.

After the war, Theodor and Helen Geisel moved to La Jolla, California, where Dr. Seuss penned the majority of his work. Dr. Seuss helped to create the *Beginner Book* series with the assistance of Random House publishing in New York.

Dr. Seuss challenged himself to create children's books that would not only entertain his readers, but educate them as well, by providing his readers the opportunity to apply their critical thinking skills and discover the hidden moral-of-the-story or message that is in every story. For example, in the famed *The Cat in the Hat*, Dr. Seuss used only fifty-one words for the rhyming story that taught children the lesson of obedience. Seuss's iconic pen and ink drawings were simple, yet impactful in delivering a children's classic. In *The Butter Battle Book*, Dr. Seuss illustrated, in humorous terms, the futility of nuclear war. Each book by Seuss is

unique. Using any one of the sixty available could help to strengthen students' critical thinking skills and combat the teach-to-test methodology. Below are just a few examples of the hidden messages found in these classic literary stories.

The Cat in the Hat (1957), by far one of Seuss's greatest stories, is about a brother and sister who are left home alone by their mother on a rainy day and they "did nothing at all" (2). Then an unexpected visitor walks in and chaos ensues. This story is an example of how children's literature can work with dual purpose. Aside from the typical rhyming book that could be read for pleasure, *The Cat in the Hat*, when critically assessed, educates the reader on moral behavior and issues of integrity, a hidden message that requires some critical thought to identify.

The cat represents disobedience. He is chaos in motion well before Thing 1 and Thing 2 enter the house and make a bad situation worse. The children are given an opportunity to make a choice after the cat enters the house when their goldfish becomes the voice of reason. "He should not be here. He should not be about. He should not be here, when your mother is out!" (11). The children know they should not have a stranger in the house, but still the cat remains. The inability of the children to stop the cat allows the reader to question whether the children have a voice of authority or not. Rules are in place for a reason and they now chose to disobey them and consequences are sure to follow, as mother is about to return.

The cat cleans up his mess just before mother arrives home. All is well in the world until the moment Dr. Seuss, as the narrator, asks the question, "Should we tell her about it? Now, what should we do? Well... What would you do if your mother asked you?" (61). These lines, being the final in the text, allow the reader an

opportunity to think about how they would respond to mother if in a similar situation as Sally and her brother. This question allows the process of critical thinking to take place. “If I were Sally, what would *I* do?” The readers must use their imagination to insert themselves into the story, and then synthesize learned information, represented by how their parents would react to their choices, and finally, to consider how they would respond to the cat’s proposal. If given direction to read the story and only respond to set questions, such as those one would find in a standardized test, the student relies only on concrete thinking which tries to identify facts, names, and places. The reader is less likely to dive deeper into the story if further thought is not required.

The Butter Battle Book (1984) is the story of the Zooks and the Yooks who live on opposite sides of a long wall and have polar opposite perspectives on how to eat their toast and a conflict begins between the two groups of Zooks and Yooks. The Zooks eat their toast butter-side down and the Yooks eat theirs butter-side up. Their epic battle begins small, with a Zook firing a Seuss-like slingshot contraption on a Yook. The Yooks respond quickly, except they build a better slingshot weapon to use. Both cultures, Zooks and Yooks, take turns inventing bigger and more destructive weapons to use on each other. This literary work, written during the Cold War, was a direct comparison to the futility of nuclear war wherein the Zooks and the Yooks accurately depict the theory of mutually assured destruction, in which no matter who throws the first stone, but by the end, no one will survive to learn from their mistakes.

The manner of thinking for both societies could be critically analyzed and compared to the tension between capitalists and communists during the Cold War.

The initial dispute, over which side each culture buttered their toast on, could be seen just as trivial as the dispute over which style of government and economy, communist or capitalist, was more superior. Again everyone can see how a children's book can be utilized as a tool to harness critical thinking skills.

The Sneeches and Other Stories (1961) are about two fictional societies made up of typical Dr. Seuss-type characters called Sneeches. There are Star-belly Sneeches, ones who possess stars on their bellies, and plain-belly Sneeches, who are without stars on their bellies. Star-belly Sneeches believe themselves to be superior to plain-belly Sneeches and openly discriminate against them, that is, until a peculiar salesman by the name of named Sylvester McMonkey McBean, shows up and offers the plain-belly Sneeches an opportunity to be just like the Star-belly Sneeches. For a handsome fee McBean turns plain-belly Sneeches into Star-belly Sneeches, which in turn makes the Star-belly Sneeches feel less important because they are no longer unique.

The Star-belly Sneeches want their superiority back, so McBean offers them an opportunity to remove their stars, again for a handsome fee. When the transformation is complete, the former Star-belly Sneeches are now plain-belly Sneeches and find themselves discriminated against by the former plain-belly Sneeches now turned Star-belly Sneeches, because they do not possess the very thing that made them different in the first place. In a desperate move, the plain-belly Sneeches ask the salesman to put their stars back on. He agrees, but only after raising the price for the transformation. When complete, the Star-belly Sneeches brag that they have their stars back and are equal to the former plain-bellies, who are now Star-

Belly Sneeches. (*Yes, this can get confusing.*) In response, the former plain-bellies who have turned into Star-bellies, ask the salesman to remove their newly acquired stars and make them plain again. The salesman agrees, but at the newly raised price.

This cycle of star on, star off, repeats over and over as the Sneeches try to establish dominance over one another. Finally the Sneeches are left without a dollar to their names. They all remain as they started with some having stars on their bellies and others with plain-bellies. A satisfied Sylvester McMonkey McBean rides off with all their money as he looks to corrupt the next group of people who chase fads and think they can buy happiness.

This story teaches the reader about the issue of discrimination. Only a birthmark grouped the two societies of Sneeches as different. One could argue that this story is a metaphor for racial divide and how Sneeches, or humans, are not really that different from one another. Critical analysis of this story teaches the reader to appreciate what they have and to be comfortable in their own skin. It also allows the reader an opportunity to realize that superiority due to physical characteristics is just plain silly.

The list of literary works by Dr. Seuss that engage critical thinking can go on and on. *How the Grinch Stole Christmas* (1957) provides hope in humanity, as the Whos are readily willing to forgive the Grinch, despite how he has purposefully attempted to destroy their Christmas. It also highlights how capitalism promotes and glorifies holiday for profit. *Green Eggs and Ham* (1960) lets the reader know that it is acceptable to try something new and to not be so pessimistic because one could miss

out on new experiences if he or she always says no to opportunity. Variety is the spice of life, even if it is green.

Perhaps this author's favorite example of applying Dr. Seuss to facilitate imagination and learning is *And to Think I Saw it on Mulberry Street* (1937). It is the quintessential masterpiece that implores the reader to use imagination to believe in impossible things. *And to Think I Saw it on Mulberry Street* was Dr. Seuss's first official children's book. It exemplified the author's own youth as it described magical images a boy named Marco envisioned while walking down Mulberry Street in Springfield, Massachusetts, on his way home. Seuss wrote, "When I leave home to walk to school, Dad always says to me, "Marco, keep your eyelids up and see what you can see but when I tell him where I've been and what I think I've seen, he looks at me and sternly says, "Your eyesight is much too keen." And follows with, "Stop telling such outlandish tales. Stop turning minnows into whales" (12). *Mulberry Street* teaches the reader that it is acceptable to dream about wonderful things while still being responsible and following direction. The hidden lesson found at the end of *Mulberry Street* teaches the reader about the consequences of not following one's dreams. By conforming to father's request and not embellishing the images that Marco sees, Seuss ends the story with, "Dad looked at me sharply and pulled at his chin. He frowned at me sternly from there in his seat, "Was there nothing to look at... no people to greet? Did *nothing* excite you or make your heartbeat? Marco sadly responds, "Nothing," I said, growing red as a beet, "But a plain horse and wagon on Mulberry Street" (22).

For all of Dr. Seuss's successes, his first book was rejected more than thirty times before Vanguard Press took a chance on him and published it. Dr. Seuss spent a lifetime trying to draw out his imagination and introduce his ideas of engaging critical thinking by the early reader to the rest of the world. His antics and passion for exaggeration were no different than any typical child's and is fully displayed in *And to Think I Saw it on Mulberry Street*. What would have happened if Theodor Geisel had not engaged his own critical thinking skills and had never written a single rhyme?

Supplementing the classroom curriculum at any grade with any one, if not a combination of, Dr. Seuss stories could help students harness their critical thinking skills. Professor Larry Juchartz has already begun this approach in his English literature classroom at Mott Community College, with the expectation that students will foster cooperation and facilitate critical analysis for observable problems.

Professor Larry Juchartz teaches English literature at Mott Community College in Flint, Michigan where he has successfully implemented selected literary works by Dr. Seuss to engage the critical thinking skills of his students and claims that "it was not only well received, but often solicited by his students as a preferred method of discussion leading" (Juchartz 336). Professor Juchartz had previously used children's books in his literature courses to establish the point that literary value can come from anywhere, even silly children's books. Professor Juchartz used Dr. Seuss's *The Sneeches and Other Stories* (1961) in an upper level African-American literature course to illustrate how "class-based infighting among the general population allows business and government to profit from the rancor" (Juchartz 337). This type of educational approach, one that allows an open discussion that permits students the

ability to supplement personal experiences into analysis of the text, supports critical thinking skills, as opposed to the concrete learning strategies that focus directly on memorizing facts, dates, and places. Students are encouraged to dissect the text and ask how lessons of morality can be found.

For example, consider once more how *The Cat in the Hat* (1957) expresses obedience, but does it also convey the idea that children should or should not tell their parents everything? Depending on cultural standards that answer may vary. The story does, however, initiate critical thought, which would not be possible when simply teaching-to-test is the method of choice. Time is less of an issue because students are given some latitude to read and discuss the text, then they are collectively sharing ideas and experiences which can lead to a richer learning environment.

As professors Dave Brown and Joe Varady discovered, “teachers may believe that initiating values discussions would ultimately involve more instructional time that simply is not available, a willingness to engage in progressive alterations in instructional and curricular design will allow teachers more opportunities for dealing with critical concerns of young adolescents” (Brown and Varady 28), when they too began to include books by Dr. Seuss in their classroom study. They found “Seuss’s ability to address a meaningful and personal topics through the symbolism of his imaginary characters allows readers to examine the hidden agenda within many social and emotional issues” and “the concerns that are dressed by Dr. Seuss’s books are commonly experienced by young adolescents” (Brown and Varady 28).

Professors Brown and Varady observed the social problems that children today face in school that included self-image, discrimination, and the struggle for

identity to name a few examples. Exposing their students to books like *Gertrude McFuzz* (1950), *The Sneeches and Other Stories* (1961), and *Yertle the Turtle* (1950) they were able to introduce critical social issues into class discussions without creating additional anxiety for students who may identify negatively with the subject matter. “By examining the underlying structures of these stories, students may discover synonymous situations and possible solutions to some of their dilemmas” (Brown and Varady 29). The professors’ use of Seuss opened the door for students to apply critical thinking skills to sophisticated topics through the use of children’s books.

CONCLUSION

Standardized testing is the method most often used to gauge the quality of the American educational system. Currently there is no suitable replacement available despite a growing anti-testing movement that lobbies for achievement tests that use a more inclusive matrix to validate a student’s knowledge of subject matter. According to Peter Sacks, “With roots in intelligence testing that go back generations, the mental measurement establishment continues to define merit largely in terms of test taking and potential rather than actual performance” (25). This doesn’t mean that strategies to combat the teach-to-test methodology cannot be addressed.

As discussed earlier, incorporating literary works that challenge the student to see the message behind the story can help build critical thinking skills. It can harness cooperative learning between students, or working professionals. The fact remains that standardized testing as we know it will be here for a long while, but that does not

mean that we cannot critically think about ways to improve current teaching strategies so that students get as much out of their education as possible.

In his book *The Search for Ability* author D.A. Goslin wrote, “In the past fifty years not only has testing become firmly established as a part of American culture, but the experience of taking a standardized, objective test of intelligence, aptitude, or achievement now is virtually universal among children and widespread within the adult population” (20). Should a test score truly define everyone as competent, even worthy? It is time to create change, and let the Seuss loose.

Works Cited

- Baker, Eva L. "Can We Fairly Measure the Quality of Education?" *NEA Today*, vol.6, no. 6, 1988, pp. 9-14.
- Bracey, Gerald W. "Standardized Testing, Unstandardized Kids." *The Phi Delta Kappan*, vol. 71, no. 9, 1990, pp. 732-33.
- Brown, Dave F. and Joe Varady. "Reexamining the Writings of Dr. Seuss to Promote Character Development." *Middle School Journal*, vol. 28, no. 4, 1997, pp. 28-32.
- Erikson, Erik. *Childhood and Society*. New York: Norton, 1964. Print.
- Farris, Pamela J. "A Study of the Effects on Attitude from Listening to McGuffey Readers and Dr. Seuss Books." *Dissertation Abstracts International*, vol. 41, no. 6-A, 1980.
- Fraser, Steven. *The Bell Curve Wars: Race, Intelligence, and the Future of America*. New York: Basic Books, 1995. Print.
- Fensch, Thomas. *Of Sneetches and Whos and The Good Dr. Seuss: Essays on the Writings and Life of Theodor Geisel*. Jefferson, NC: McFarland, 1997. Print.
- Fensch, Thomas. *The Man Who Was Dr. Seuss: The Life and Work of Theodor Geisel*. The Woodlands, TX: New Century Books, 2000. Print.
- Garrison, Mark. *A Measure of Failure: The Political Origins of Standardized Testing*. Albany: State U of New York P, 2009. Print.
- Geisel, Theodore. *Horton Hears a Who!* New York: Random House, 1954. Print.
- Goslin, D.A. *The Search for Ability: Standardized Testing in Social Perspective*. Philadelphia: W. M. F. Fell, 1963. Print.
- Gould, Stephen J. "A Nation of Morons." *New Scientist*, 6 May 1982, pp. 349-52.
- Herman, Joan. "The Effects of Standardized Testing on Teaching and Schools." *Educational Measurement: Issues and Practice*, vol. 12, no. 4, 1993, pp. 20-25.
- Juchartz, Larry. "Team Teaching with Dr. Seuss and Shel Silverstein in the College Basic Reading Classroom." *Journal of Adolescent & Adult Literacy*, vol. 47, no. 4, 2003, pp. 336-41.
- Kuncel, Nathan R. and Sarah A. Hezlet. "Standardized Tests Predict Graduate Student's Success." *Science*, vol. 315, 23 February 2007, pp. 1080-81.

- Klingberg, Torkel. *The Overflowing Brain: Information Overload and the Limits of Working Memory*. New York: Oxford UP, 2009. Print.
- McAdams, Dan, Ruthellen Josselson, and Amia Lieblich. *Identity and Story: Creating Self in Narrative*. Washington, DC: American Psychological Association, 2006. Print.
- Minear, Richard H. *Dr. Seuss Goes to War: The World War II Editorial Cartoons of Theodor Seuss Geisel*. New York: The New Press, 1999. Print.
- Morgan, Judith, and Neill Morgan. *Dr. Seuss and Mr. Geisel: A Biography*. New York: Random House, 1995. Print.
- Motoko, Rich. "Grading the Common Core: No Teaching Experience Required." *New York Times*, 22 June 2015, A-11.
- Mullen, Paul. "The Grinch, Lorax, Yertle the Turtle, and Others as Advocates in a Literature-based Collaborative Group Approach to Social Skills Building in a Therapeutic Day School: A New Use for Seuss." *Dissertation Abstracts International Section A: Humanities and Social Sciences*, vol. 60, no. 4-A, 1999.
- Neill, Monty, and Noe Medina. "Standardized Testing: Harmful to Educational Health." *The Phi Delta Kappan*, vol. 70, no. 9, 1989, pp. 688–97.
- "No Child Left Behind." *Education Week Research Center*, 19 Sept. 2011.
- "Problems with Standardized Testing." *Education.com*. 3 November 2013.
- Popham, W.J. "Why Standardized Tests Don't Measure Educational Quality." *Educational Leadership*, vol. 56, no. 6, 2007, pp. 8–15.
- Sacks, Peter. "Standardized Testing: Meritocracy's Crooked Yardstick". *Change*, vol. 29, no. 2, 1997, pp. 24–31.
- Sternberg, R.J. *Handbook of Human Intelligence*. Cambridge, UK: Cambridge UP, 1982. Print.
- Seuss, Dr. *The Secret Art of Dr. Seuss*. New York: Random House, 1995. Print.
- Wilde, Marian. "Global Grade: How do U.S. Students Compare?" *GreatSchools*, 2 April 2015, [greatschools.org/gk/articles/u-s-students-compare](https://www.greatschools.org/gk/articles/u-s-students-compare). Accessed 10 Sept. 2016.