

Central Florida Community College Adult Education State Leadership Project

Florida GED Research Project Report

Overview

Each year, Florida's adult educators struggle with the challenges of preparing students for the GED Tests. On an annual basis, approximately 30% of Florida's GED candidates fail to meet the minimum standards required to earn a State of Florida High School Diploma. The Florida GED Research Project, an adult education state leadership activity conducted by Central Florida Community College, was designed to review the data and identify strategies and resources that teachers, support staff, and administrators could use to better assist their students in passing the GED Tests.

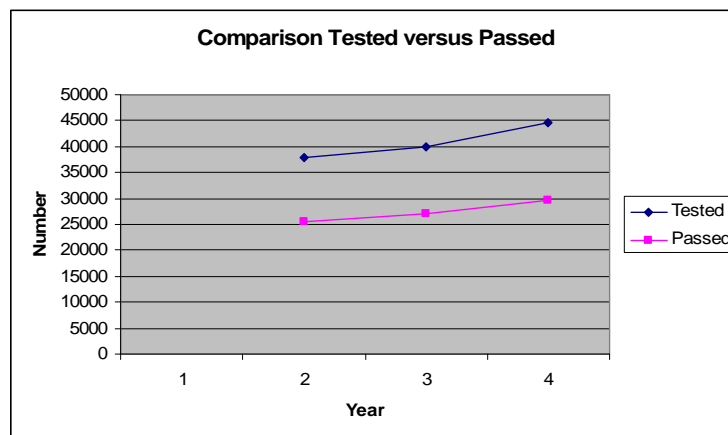
The Florida GED Research Project reviewed two types of data. The first data set consisted of reports obtained from the GED Testing Service. The second set of data was obtained from a review of student results on the Official GED Practice Tests from 10 sites in the state of Florida that represented school districts, community colleges, and correctional institutions.

The following report outlines the findings of the research team and serves as the basis for the development and implementation of professional development and instructional resources for teachers.

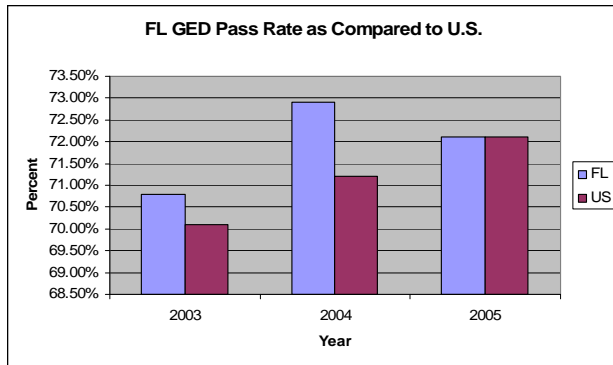
Florida GED Research Project, Phase I – Reviewing the Data from the GED Testing Service

Who Passed the GED Tests? is a statistical report that is issued each year by the GED Testing Service. This report provides information from both a national and state level and includes a wide range of data including passing rate (national and by state), demographic information about students who take the test, and average test scores for those who complete and those who pass the GED Tests. The following data was drawn from the *Who Passed the GED Tests?* for 2003, 2004, and 2005. It should be noted that data for 2006 will not be published until late 2007.

The number of candidates taking the GED Tests continues to increase each year. However, despite the growth in the total number of candidates testing, GED Testing Centers are reaching only 1.6%-2.0% of adults in the state of Florida who do not have a high school diploma. In 2005, more than 2.4 million adults living in Florida did not have a high school diploma. During 2005, approximately 44,000 adults took the GED Test. However, slightly less than 30,000 candidates passed the tests. As indicated by the graph, there is a significant discrepancy between the number of who test and those who pass the tests and earn a State of Florida High School Diploma.

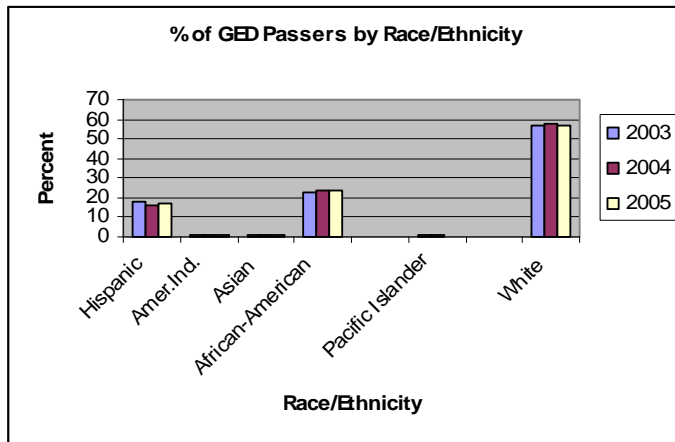


As indicated by the graph, during 2003-2005, Florida's GED Passing Rate remained close to that of the national passing rate, 70-72%. In 2004, Florida's passing rate exceeded the national passing rate by approximately 1.7%. The year 2004 saw the highest passing rate of the three years reviewed. In 2005, the passing rate declined by approximately 2%.



In 2005, 22 states had passing rates exceeding 80%. Of those 22 states, three states had passing rates at or above 90%. It should be noted that some of the states with higher passing rates require GED candidates to take and pass the Official GED Practice Test prior to registering for the GED Tests. Nineteen states had passing rates below that of Florida.

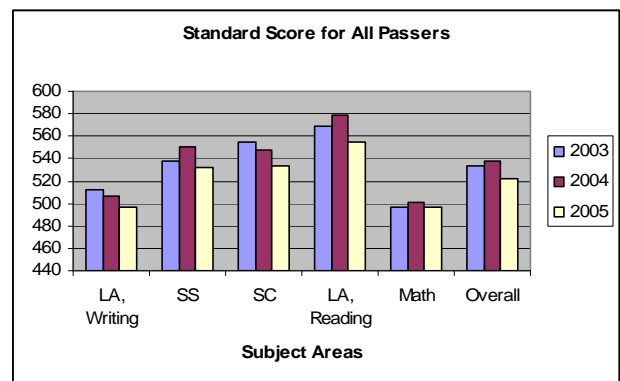
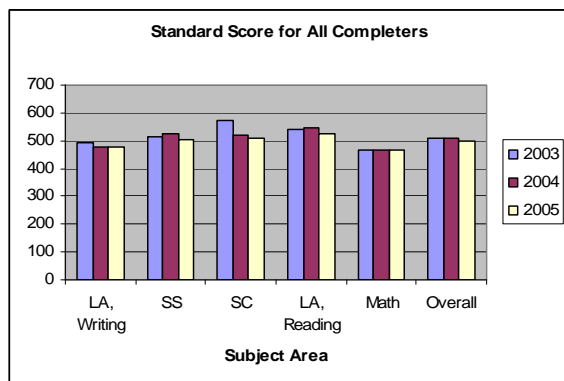
The gender and ethnic makeup of Florida's GED candidates has remained relatively constant over the past few years. Approximately 54% of GED candidates are male and 46% are female.



As shown by the graph, there has been a slight decrease in the percent of Hispanic adults who take the GED Tests, 18% in 2003 versus 16.6% in 2005. During that same period, the percent of African-American candidates has increased from 22.6% to 24.1%. The percent of American Indian and Asian candidates has declined slightly during that same time frame.

Of even greater import to teachers is the mean passing score within each of the GED

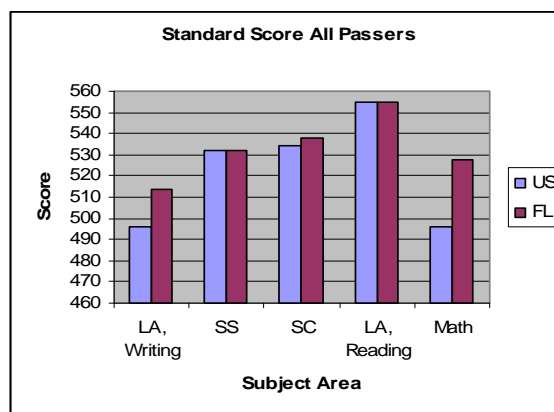
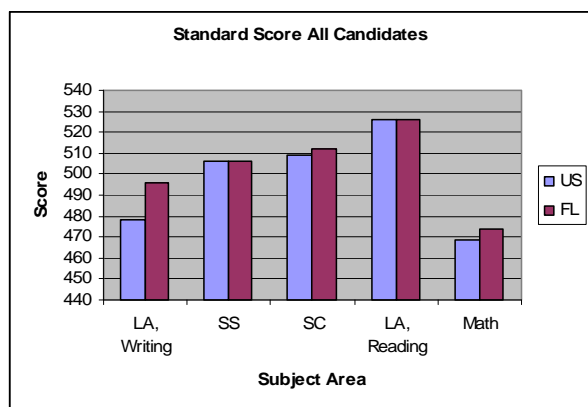
Tests. This data assists teachers in understanding what overall subject areas present the greatest challenges and allows them to look at their own test results to see where students rank in terms of the overall national mean passing scores for GED candidates, completers, and passers.



In *Who Passed the GED Tests? 2005*, the GED Testing Service made a significant change in the data that was reported. For the first time, the GED Testing Service provided data relative to the mean passing

scores for each state. The data was broken down at the national level by both those who took the tests and those who passed the tests.

The following graphs show how Florida compares to the nation on the GED Tests.



The data shows that Florida candidates who passed the tests scored higher in four out of five subjects. In fact, Florida passers scored 18 points higher on Language Arts, Writing and 32 points higher on Mathematics. This clearly indicates that students who are adequately prepared for the test attain higher scores than their peers across the nation.

Based on the data, the standard score for all Florida candidates is about the same as that for the nation with Florida candidates scoring slightly higher in Science, Mathematics, and Language Arts, Writing. It is important to remember that this group includes approximately 30% of candidates who did not attain a passing score on the GED Tests.

The data is clear that the GED Language Arts, Writing Test and the GED Mathematics Test present the greatest challenges to adult learners in Florida. The GED Social Studies, Science, and Language Arts, Reading Tests present fewer challenges for most GED students. It is important to note, that while many of the mean standard score are significantly above the 450 average required to pass the test, these scores are not at a level that adequately prepares students for postsecondary education and training. Each year, the GED Testing Services provides a comparison of GED Test Scores to estimated class ranking. Scores at the 450 level place a student in the bottom 40% of a graduating class. Scores at the 500 level place students in the bottom 50% of a graduating class. The GED Testing Service indicates that more than 65% of students take the GED in order to pursue higher education and training. Therefore, students need scores that are a better indication of their readiness for postsecondary education.

Based on the data from the GED Testing Service, approximately 30% of Florida GED candidates are not successful on the GED Tests. The data clearly shows that overall Language Arts, Writing and Mathematics present the greatest challenges for students. However, the question remains as to what specific content and cognitive skills created the greatest challenges for students who are preparing for the GED Tests. To identify those areas, the Florida GED Research Project undertook a second phase of research with the intent of identifying specific areas that are troublesome for students and what teachers can do to help alleviate these problems.

The Florida GED Research Project, Phase I – Conducting an Item Analysis

The Florida GED Research Project obtained Official GED Practice Test results from a total of 10 sites throughout the state that represented school districts, community colleges, and correctional institutions.

The project research team conducted an item analysis of more than 1,280 individual tests. Four forms of the test were included in the analysis: Forms PA, PB, PC, and PD. Results for each form and each content area were tabulated and provided the researchers with information on those areas which presented the greatest challenges to GED students. Overall, the types of questions which presented challenges to students clearly indicated difficulty with basic reading comprehension skills.

Language Arts, Writing, Part I – Multiple Choice

Analysis

The Language Arts, Writing Test assesses four specific areas: mechanics, usage, organization, and sentence structure. Questions are presented in three formats: correction, revision, and construction shift. The test assesses the student's ability to edit and revise text. Material is presented through workplace, how-to, or informational text. Six to eight questions are presented for each document. Students are asked to correct or revise a sentence or in some cases recast (rewrite) a sentence or combine two sentences into one more effective sentence.

Seventeen questions were identified as moderately to severely problematic for students, meaning that more than 35% of all students were unable to select the correct response for that particular question. Two questions, one dealing with subject-verb agreement and the other with the combination of two sentences, were missed by more than 75% of students assessed.

While students demonstrated some difficulty in all four areas of Language Arts, Writing, the greatest percentage of questions missed fell into two primary areas:

- **Organization** where students were asked to move or remove a sentence or determine appropriate text divisions within a document.
- **Sentence Structure** where students were asked to combine sentences, or to identify and correct sentence fragments, run-on sentences, comma splices, improper coordination and subordination, modification, and parallel structure.

Understanding the types of questions on the GED Language Arts, Writing Test can help students better understand how to approach answering those questions. Students exhibited substantial problems with correction type questions which involve one sentence, a number of sentences, a complete paragraph, or the text as a whole and ask what correction should be made. Correction questions cover all four areas of the test.

The construction shift type of question consists of a stem that must be rewritten using a different structure. Stems in construction shift questions do not contain errors. These questions test a student's ability to employ alternate structures correctly rather than the ability to correct errors. Construction shift questions require students to logically think through the process of changing a sentence, or in the case of organization, change the structure of a document.

Conclusion

Based on an analysis of the items missed, the following areas create significant challenges for students and thus instructors should place a greater emphasis on these areas, especially just prior to the students taking the GED Language Arts, Writing Test:

- Mechanics
 - Overuse or misuse of commas
 - Verb tense in order to maintain parallel structure
- Usage
 - Appropriate use of *which* and *that*
 - Subject-verb agreement
- Organization

- Removing a sentence because it does not fit within a passage
- Moving a sentence to an appropriate location within a passage
- Sentence Structure
 - Combination of two sentences to create a more effective sentence
 - Split sentences to avoid run-ons

Language Arts, Writing, Part II – The Essay

Analysis

Two-hundred and sixty-four (264) essays written for the Official GED Practice Test were holistically scored using the four-point writing rubric from the GED Testing Service. Prompts for the essays included those from the PA, PB, PC, and PD versions of the Official GED Practice Tests.

Results of the study are as follows:

Level of Writing	0	1	2	3	4
Number of Participants Holistically Scored at This Level	21	66	130	47	0

The following generalizations are based on the error patterns exhibited by individuals who were administered the Official GED Practice Language Arts, Writing Test, Part II.

Response to the Prompt

- Students often misinterpreted the topic and responded inappropriately to the questions. For example: Writing a “why” essay when the topic requires a “how-to” essay.
- Students had difficulty staying focused on ideas that supported their response to the topic.

Organization

- Students often used a five-paragraph structure; however, they were unable to appropriately structure the essay for clarity. Many essays used the same introductory phrases for each paragraph, which made it difficult to read the writing sample.
- Many essays exhibited continuous repetition of words and ideas, using the exact same information for both introduction and conclusion paragraphs. Phrases and ideas were repetitive throughout the essays without any development.

Development and Details

- Students failed to include supporting details and specific examples. Instead, lists were often used within the essay structure.
- Students failed to develop a topic into a meaningful writing

Conventions of EAE

Organization

- Essays lacked clarity of sentence and paragraph structure.
- Continuous repetition of words and ideas were noted throughout the essays.
- Many of the essays were difficult to read due to a lack of cohesiveness in the writing. Words were left out of sentences that were necessary for meaning. Students also appeared to have a difficult time in merely crafting a correctly written sentence.
- Many essays exhibited a basic subject/verb pattern, such as: I went to the store. Essays at the GED level should exhibit more complex sentence structure.

Mechanics

- Essays exhibited run-on sentences, as well as sentence fragments. The use of the words “and” and “because” were often used to begin sentences.
- Students showed poor understanding of subordination when writing, which resulted in a lack of clarity.

- Many essays did not use appropriate capitalization or punctuation. Examples include the non-use of capitalization for beginning a sentence and the word “I.” Overuse and inappropriate use of commas made many of the essays difficult to read.

Usage

- Essays exhibited difficulty with subject-verb agreement and verb tense errors.
- Pronoun reference errors were also prevalent throughout the writings. Students also appeared to have difficulty in determining whether to use the word “I”, “me”, or “myself”.
- Parallel structure was a strong error pattern throughout many of the essays.
- Although spelling is not directly assessed by the GED Testing Service, it was noted that numerous essays exhibited such poor spelling that it interfered with the understanding of the essay.
- Students also showed difficulty in selecting the correct word (homonym). Examples included such words as:
 - poor/pour
 - their/there/they’re
 - higher/hire

Word Choice

- Essays exhibited very limited word choice.
- Many of the essays were unable to clearly communicate ideas to the reader.

Additional Comments

- Analytical scoring was employed on some of the essays with editing marks and comments from the instructor. It appears that there is confusion regarding analytical versus holistic scoring, as well as the appropriate use of the Official GED Language Arts, Writing Test, Part II as a diagnostic tool
- The four-point rubric was not used to holistically score the essays. This was determined through viewing such scores as 2.75, 2.8, 3.2 or a range of scores that could be awarded to the essay, such as 3.75 – 4.0. None of these scores are valid if using the recommended scoring rubric.
- Many of the essays show undeveloped critical thinking skills, as well as writing skills. These essays had little or no focus, limited or no development of ideas, lack of details or examples, irrelevant information, poor control of the conventions of EAE, and ineffective word choice. It would appear that these students require a structured approach to the writing craft, beginning at the sentence level before they attempt a higher-level writing assignment.

Mathematics

Analysis

The GED Mathematics Test consists of two parts. Both parts are equally weighted and include the same types of questions. Part I allows for the use of the calculator. Part II does not allow calculator use. Both parts include alternate format questions which require students to construct a response much as the student would have to do in real-life situations which require calculations or problem solving. All questions are presented as word problems.

The GED Mathematics Test includes four content areas:

- Number operations and number sense
- Measurement and geometry
- Data, statistics, and probability
- Algebra, functions and patterns

Questions on the GED Mathematics Test are presented in three formats:

- Procedural problems which require that the student be able to determine what operation and/or process is needed to solve the problem.
- Conceptual problems which require the student to understand basic mathematical concepts and be able to “set-up” the problem but not solve it.

- Application problems which focus on the use of mathematical concepts and procedures in real-life situations.

Twenty-one questions were identified as moderately to severely problematic for students, i.e., questions missed by 40% or more of the students tested. Eleven of these questions (52%) required that students interpret information from a graphic. This provides clear evidence that GED students lack basic graphic literacy skills essential for success on the GED Tests. Students had the greatest difficulty in dealing with graphics which involved triangles, angles, and multi-line graphs.

Fourteen of the twenty-one most frequently missed questions (67%) were presented as application problems indicating that students lack the ability to take basic mathematical skills and concepts and apply them to real-life situations. This may be due in part to the instructional practices in many classrooms which focus on the use of either textbooks or computer-assisted instruction which often presents contrived situations rather than those a student would experience in real-life.

Seven of the most frequently missed questions were in the area of measurement and geometry. In a national study conducted by the GED Testing Service, geometry was proven to be the most problematic for students nationwide. Eight of the most frequently missed questions were in the area of algebra, another area identified as problematic by the GED Testing Service.

Conclusion

Based on an analysis of the items missed, the following areas create significant challenges for students and thus instructors should place a greater emphasis on these areas, especially just prior to the students taking the GED Mathematics Test:

- Number Operations and Number Sense
 - Percentage problems
 - Problems that require a gridded response
- Measurement and Geometry
 - Comparison of two similar figures
 - Triangles and angles (supplementary and complementary)
 - Pythagorean Theorem
- Data, Statistics, and Probability
 - Location of data in a chart or table
 - Interpretation of a line or bar graph
- Algebra, Functions and Patterns
 - Exponents
 - Proportions to solve for a variable
 - Y-intercept
 - Determine value of a variable

Science

Analysis

The GED Science Test bases the content of its questions on three of eight broad content standards for grades 9-12 outlined by the National Science Education Standards (NSES). The content areas targeted by the test questions are as follows:

- Physical Science: 35%
- Life Science: 45%
- Earth and Space Science: 20%

Questions are presented at four cognitive skill levels: comprehension, application, analysis, and evaluation. The GED Science Test requires more than just reading in the content area. The test requires that students have some understanding of basic science concepts and be able to apply those concepts in real-life situations.

Seventeen questions were identified as moderately to severely problematic for students. Life science created the greatest challenge for students with 41% of the most frequently missed questions falling into

this area. The remaining questions were evenly divided between physical science and earth/space science. Students exhibited difficulty in all four cognitive skill areas.

Seventy-six percent (76%) of the most frequently missed questions included graphics such as process diagrams, multi-line graphs, and tables or charts. Eight of the thirteen questions (62%) included a diagram, a clear indication that diagrams especially process diagrams present major problems for the GED student.

Conclusion

Based on an analysis of the items missed, the following areas create significant challenges for students and thus instructors should place a greater emphasis on these areas, especially just prior to the students taking the GED Science Test:

- Graphic Literacy
 - Interpreting graphs
 - Identifying data in a chart or table
 - Understanding process diagrams
- Life Science (general concept knowledge)
- Physical Science (general concept knowledge)
- Earth and Space Science (general concept knowledge)

Social Studies

Analysis

The GED Social Studies Test questions are based on prose and graphics-based information drawn from a variety of sources, including academic and practical texts as well as primary and secondary sources. Approximately 60% of the questions relate to concepts and issues taken from a global or international perspective and 40% address a national setting. Source materials and questions on the *Social Studies Test* address the experiences of citizens, consumers, and workers in the United States (Canada) and the rest of the world. The test includes questions in each of the following areas:

- History: 40% (U.S. - 25%, World - 15%)
- Geography: 15%
- Civics and Government: 25%
- Economics: 20%

The Social Studies Test requires that students use higher-level thinking skills. These skills often require prior knowledge of important social studies concepts, principles, and events. The questions require that students be able to comprehend, apply, analyze, and evaluate information. Approximately 50% of the test includes graphic-based material, including: graphs, charts, tables, maps, photographs, and editorial cartoons.

Nineteen questions were identified as moderately to severely problematic for students. U.S. History and Civics and Government presented the greatest challenge for students and represented eleven of the nineteen most frequently missed questions (58%). Students had the greatest difficulty with questions which required them to analyze and evaluate information from text, graphics, and text/graphic combinations.

Ten of the nineteen questions (53%) included a graphic. Students exhibited difficulty with graphics that included maps, photographs, timelines, tables, and graphs. While most publishers include a variety of graphics in their GED preparation materials, it appears that there is insufficient practice for students to be able to take a basic understanding of a particular graphic and then use that information to answer higher-order questions.

Conclusion

Based on an analysis of the items missed, the following areas create significant challenges for students and thus instructors should place a greater emphasis on these areas, especially just prior to the students taking the GED Social Studies Test:

- Graphic Literacy
 - Interpret graphs
 - Identify data from tables and charts
 - Interpret editorial cartoons
 - Interpret photographs from various historical eras
 - Use maps and recognize key features
 - Compare two graphics and interpret data from each
- U.S. History (general knowledge of major concepts and historical eras)
 - Key historical documents and their significance
- World History (general knowledge of major concepts and historical eras)
- Economics (general knowledge of major concepts)
- Geography
 - Identify geographical areas and ecosystems
- Civics and Government (general knowledge of major concepts)

Language Arts, Reading

Analysis

Language Arts, Reading is a passage-based, multiple-choice test that measures a student's ability to comprehend and interpret reading selections and to apply those interpretations to new contexts. Literary texts in each test form comprise 75% of the test and include at least one selection from each of the following areas:

- Poetry
- Drama
- Prose Fiction before 1920
- Prose Fiction between 1920-1960
- Prose Fiction after 1960

Nonfiction texts in each test form make up 25% of the test and include two selections of nonfiction prose representing two of the three following areas on a rotating basis:

- Nonfiction prose;
- Critical review of visual and performing arts; and
- Workplace and community documents, such as mission and goal statements, rules for employee behavior, legal documents, communications, such as letters, excerpts from manuals, etc.

The multiple-choice questions on Language Arts, Reading are constructed on four cognitive levels based on Bloom's taxonomy, including: comprehension, application, analysis, and synthesis. Synthesis requires that students take information from the passage and combine it with information presented in the stem of the question in order to determine an appropriate answer.

Seventeen questions were found to be moderately or severely problematic for students. Of these seventeen questions, seven (41%) were derived from fiction passages. The remaining questions were evenly distributed among poetry, drama, and workplace and community documents. Students had difficulty at all levels of Bloom's taxonomy with the highest incidences (five questions each) that required the student to analyze and synthesize information.

Conclusion

Based on an analysis of the items missed, the following areas create significant challenges for students and thus instructors should place a greater emphasis on these areas, especially just prior to the students taking the GED Language Arts, Reading Test:

- Fiction
 - Summarization
 - Prediction
 - Compare/contrast
 - Characterization

- Poetry and Drama
 - Attribute feelings
 - Cause and effect
 - Prediction
- Workplace and Community Documents
 - Transfer information to a different situation based on what is read