

# Virgina Technical Report

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# Chapter 1

## Prerequisites

This is a *sample* book written in **Markdown**. You can use anything that Pandoc's Markdown supports, e.g., a math equation  $a^2 + b^2 = c^2$ .

The **bookdown** package can be installed from CRAN or Github:

```
install.packages("bookdown")  
# or the development version  
# devtools::install_github("rstudio/bookdown")
```

Remember each Rmd file contains one and only one chapter, and a chapter is defined by the first-level heading #.

To compile this example to PDF, you need XeLaTeX. You are recommended to install TinyTeX (which includes XeLaTeX): <https://yihui.name/tinytex/>.



## Chapter 2

# Introduction

It is the policy of the State Board of Education and a priority of the Virginia Department of Education that there will be no discrimination or harassment on the grounds of race, color, religion, sex, sexual orientation, national origin, age or disability in any educational programs, activities or employment. Persons having questions about equal opportunity and nondiscrimination should contact the Deputy Superintendent of Public Instruction with the Virginia Department of Education. \*This technical report is one of a series that describes the development of Virginia's Statewide Assessment System. The complete set of volumes provides comprehensive documentation of the development, procedures, technical adequacy, and results of the system.

Peer Review Critical Elements Reference Tables

Critical Elements	
<b>Critical Element 1</b>	Statewide system of standards and assessments
<b>Critical Element 2</b>	Assessment system operations
<b>Critical Element 3</b>	Technical quality - validity
<b>Critical Element 4</b>	Technical quality - other
<b>Critical Element 5</b>	Inclusion of all students
<b>Critical Element 6</b>	Academic achievement standards and reporting

Critical Elements	
<b>Critical Element 1 - Statewide system of standards and assessments</b>	
<b>1.1 State adoption of academic content standards for all students</b>	The State formally adopted challenging academic content standards for all students in reading/language arts, mathematics and science and applies its academic content standards to all public elementary and secondary schools and students in the State.
<b>1.2 Coherent and rigorous academic content standards</b>	The State's academic content standards in reading/language arts, mathematics and science specify what students are expected to know and be able to do by the time they graduate from high school to succeed in college and the workforce; contain content that is coherent (e.g., within and across grades) and rigorous; encourage the teaching of advanced skills; and were developed with broad stakeholder involvement.
<b>1.3 Required Assessments</b>	The State's assessment system includes annual general and alternate assessments (based on grade-level academic achievement standards or alternate academic achievement standards) in: Reading/language arts and mathematics in each of grades 3-8 and at least once in high school (grades 10-12); Science at least once in each of three grade spans (3-5, 6-9 and 10-12).
<b>1.4 Policies for including all students in assessments</b>	<p>The State requires the inclusion of all public elementary and secondary school students in its assessment system and clearly and consistently communicates this requirement to districts and schools.</p> <p>For students with disabilities, policies state that all students with disabilities in the State, including students with disabilities publicly placed in private schools as a means of providing special education and related services, must be included in the assessment system;</p> <p>For English Learners:</p> <ul style="list-style-type: none"> <li>A) Policies state that all English learners must be included in the assessment system, unless the State exempts a student who has attended schools in the U.S. for less than 12 months from one administration of its reading/ language arts assessment;</li> <li>B) If the State administers native language assessments, the State requires English learners to be assessed in reading/language arts in English if they have been enrolled in U.S. schools for three or more consecutive years, except if a district determines, on a case-by-case basis, that native language assessments would yield more accurate and reliable information, the district may assess a student with native language assessments for a period not to exceed two additional consecutive years.</li> </ul>
<b>1.5 Participation Data</b>	The State's participation data show that all students, disaggregated by student group and assessment type, are included in the State's assessment system. In addition, if the State administers end-of-course assessments for high school students, the State has procedures in place for ensuring that each student is tested and counted in the calculation of participation rates on each required assessment and provides the corresponding data.



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<b>1.5 Participation Data</b>	The State's participation data show that all students, disaggregated by student group and assessment type, are included in the State's assessment system. In addition, if the State administers end-of-course assessments for high school students, the State has procedures in place for ensuring that each student is tested and counted in the calculation of participation rates on each required assessment and provides the corresponding data.

<b>Critical Element 2 - Assessment system operations</b>	
<b>2.1 Test Design and Development</b>	<p>The State's test design and test development process is well-suited for the content, is technically sound, aligns the assessments to the full range of the State's academic content standards, and includes:</p> <ul style="list-style-type: none"> <li>A) Statement(s) of the purposes of the assessments and the intended interpretations and uses of results;</li> <li>B) Test blueprints that describe the structure of each assessment in sufficient detail to support the development of assessments that are technically sound, measure the full range of the State's grade-level academic content standards, and support the intended interpretations and uses of the results;</li> <li>C) Processes to ensure that each assessment is tailored to the knowledge and skills included in the State's academic content standards, reflects appropriate inclusion of challenging content, and requires complex demonstrations or applications of knowledge and skills (i.e., higher-order thinking skills);</li> <li>D) If the State administers computer-adaptive assessments, the item pool and item selection procedures adequately support the test design.</li> </ul>
<b>2.2 Item Development</b>	<p>The State uses reasonable and technically sound procedures to develop and select items to assess student achievement based on the State's academic content standards in terms of content and cognitive process, including higher-order thinking skills.</p>
<b>2.3 Test Administration</b>	<p>The State implements policies and procedures for standardized test administration, specifically the State:</p> <ul style="list-style-type: none"> <li>A) Has established and communicates to educators clear, thorough and consistent standardized procedures for the administration of its assessments, including administration with accommodations;</li> <li>B) Has established procedures to ensure that all individuals responsible for administering the State's general and alternate assessments receive training on the State's established procedures for the administration of its assessments;</li> <li>C) If the State administers technology-based assessments, the State has defined technology and other related requirements, included technology-based test administration in its standardized procedures for test administration, and established contingency plans to address possible technology challenges during test administration.</li> </ul>
<b>2.4 Monitoring test administration</b>	<p>The State adequately monitors the administration of its State assessments to ensure that standardized test administration procedures are implemented with fidelity across districts and schools.</p>
<b>2.5 Test Security</b>	<p>The State has implemented and documented an appropriate set of policies and procedures to prevent test irregularities and ensure the integrity of test results through:</p> <ul style="list-style-type: none"> <li>A) Prevention of any assessment irregularities, including maintaining the security of test materials, proper test preparation guidelines and administration procedures, incident-reporting procedures, consequences for confirmed violations of test security, and requirements for annual training at the district and school levels for all individuals involved in test administration;</li> <li>B) Detection of test irregularities;</li> <li>C) Remediation following any test security incidents involving any of the State's assessments;</li> <li>D) Investigation of alleged or factual test irregularities.</li> </ul>

<b>2.6 Systems for protecting data integrity and privacy</b>	<p>The State has policies and procedures in place to protect the integrity and confidentiality of its test materials, test-related data, and personally identifiable information, specifically:</p> <ul style="list-style-type: none"> <li>A) To protect the integrity of its test materials and related data in test development, administration, and storage and use of results;</li> <li>B) To secure student-level assessment data and protect student privacy and confidentiality, including guidelines for districts and schools;</li> <li>C) To protect personally identifiable information about any individual student in reporting, including defining the minimum number of students necessary to allow reporting of scores for all students and student groups.</li> </ul>
<b>Critical Element 3 - Technical quality - validity</b>	
<b>3.1 Overall validity, including validity based on content</b>	<p>The State has documented adequate overall validity evidence for its assessments, and the State's validity evidence includes evidence that the State's assessments measure the knowledge and skills specified in the State's academic content standards, including:</p> <ul style="list-style-type: none"> <li>A) Documentation of adequate alignment between the State's assessments and the academic content standards the assessments are designed to measure in terms of content (i.e., knowledge and process), the full range of the State's academic content standards, balance of content, and cognitive complexity;</li> <li>B) If the State administers alternate assessments based on alternate academic achievement standards, the assessments show adequate linkage to the State's academic content standards in terms of content match (i.e., no unrelated content) and the breadth of content and cognitive complexity determined in test design to be appropriate for students with the most significant cognitive disabilities.</li> </ul>
<b>3.2 Validity based on cognitive processes</b>	The State has documented adequate validity evidence that its assessments tap the intended cognitive processes appropriate for each grade level as represented in the State's academic content standards.
<b>3.3 Validity based on internal structure</b>	The State has documented adequate validity evidence that the scoring and reporting structures of its assessments are consistent with the sub-domain structures of the State's academic content standards on which the intended interpretations and uses of results are based.
<b>3.4 Validity based on relations to other variables</b>	The State has documented adequate validity evidence that the State's assessment scores are related as expected with other variables.
<b>Critical Element 4 - Technical quality - other</b>	
<b>4.1 Reliability</b>	<p>The State has documented adequate reliability evidence for its assessments for the following measures of reliability for the State's student population overall and each student group and, if the State's assessments are implemented in multiple States, for the assessment overall and each student group, including:</p> <p>Test reliability of the State's assessments estimated for its student population;</p> <p>Overall and conditional standard error of measurement of the State's assessments;</p> <p>Consistency and accuracy of estimates in categorical classification decisions for the cut scores and achievement levels based on the assessment results;</p> <p>For computer-adaptive tests, evidence that the assessments produce test forms with adequately precise estimates of a student's achievement.</p>
<b>4.2 Fairness and accessibility</b>	The State has taken reasonable and appropriate steps to ensure that its assessments are accessible to all students and fair across student groups in the design, development and analysis of its assessments.
<b>4.3 Full performance continuum</b>	The State has ensured that each assessment provides an adequately precise estimate of student performance across the full performance continuum, including for high- and low-achieving students.

4.4 Scoring	The State has established and documented standardized scoring procedures and protocols for its assessments that are designed to produce reliable results, facilitate valid score interpretations, and report assessment results in terms of the State's academic achievement standards.
4.5 Multiple assessment forms	If the State administers multiple forms within a content area and grade level, within or across school years, the State ensures that all forms adequately represent the State's academic content standards and yield consistent score interpretations such that the forms are comparable within and across school years.
4.6 Multiple versions of an assessment	If the State administers assessments in multiple versions within a content area, grade level, or school year, the State: <ul style="list-style-type: none"> <li>A) Followed a design and development process to support comparable interpretations of results for students tested across the versions of the assessments;</li> <li>B) Documented adequate evidence of comparability of the meaning and interpretations of the assessment results.</li> </ul>
4.7 Technical analyses and ongoing maintenance	The State has a system for monitoring and maintaining, and improving as needed, the quality of its assessment system, including clear and technically sound criteria for the analyses of all of the assessments in its assessment system (i.e., general assessments and alternate assessments).
<b>Critical Element 5 - Inclusion of all students</b>	
5.1 Procedures for including SWDs	The State has in place procedures to ensure the inclusion of all public elementary and secondary school students with disabilities in the State's assessment system, including, at a minimum, guidance for IEP Teams to inform decisions about student assessments that: <ul style="list-style-type: none"> <li>A) Provides clear explanations of the differences between assessments based on grade-level academic achievement standards and assessments based on alternate academic achievement standards, including any effects of State and local policies on a student's education resulting from taking an alternate assessment based on alternate academic achievement standards;</li> <li>B) States that decisions about how to assess students with disabilities must be made by a student's IEP Team based on each student's individual needs;</li> <li>C) Provides guidelines for determining whether to assess a student on the general assessment without accommodation(s), the general assessment with accommodation(s), or an alternate assessment;</li> <li>D) Provides information on accessibility tools and features available to students in general and assessment accommodations available for students with disabilities;</li> <li>E) Provides guidance regarding selection of appropriate accommodations for students with disabilities;</li> <li>F) Includes instructions that students eligible to be assessed based on alternate academic achievement standards may be from any of the disability categories listed in the IDEA;</li> <li>G) Ensures that parents of students with the most significant cognitive disabilities are informed that their student's achievement will be based on alternate academic achievement standards and of any possible consequences of taking the alternate assessments resulting from district or State policy (e.g., ineligibility for a regular high school diploma if the student does not demonstrate proficiency in the content area on the State's general assessments);</li> <li>H) The State has procedures in place to ensure that its implementation of alternate academic achievement standards for students with the most significant cognitive disabilities promotes student access to the general curriculum.</li> </ul>

<b>5.2 Procedures for including ELs</b>	<p>The State has in place procedures to ensure the inclusion of all English learners in public elementary and secondary schools in the State's assessment system and clearly communicates this information to districts, schools, teachers, and parents, including, at a minimum:</p> <ul style="list-style-type: none"> <li>A) Procedures for determining whether an English learner should be assessed with accommodation(s);</li> <li>B) Information on accessibility tools and features available to all students and assessment accommodations available for English learners;</li> <li>C) Guidance regarding selection of appropriate accommodations for English learners.</li> </ul>
<b>5.3 Accommodations</b>	<p>The State makes available appropriate accommodations and ensures that its assessments are accessible to students with disabilities and English learners. Specifically, the State:</p> <ul style="list-style-type: none"> <li>A) Ensures that appropriate accommodations are available for students with disabilities under IDEA and students covered by Section 504;</li> <li>B) Ensures that appropriate accommodations are available for English learners;</li> <li>C) Has determined that the accommodations it provides (i) are appropriate and effective for meeting the individual student's need(s) to participate in the assessments, (ii) do not alter the construct being assessed, and (iii) allow meaningful interpretations of results and comparison of scores for students who need and receive accommodations and students who do not need and do not receive accommodations;</li> <li>D) Has a process to individually review and allow exceptional requests for a small number of students who require accommodations beyond those routinely allowed.</li> </ul>
<b>5.4 Monitoring test administration for special populations</b>	<p>The State monitors test administration in its districts and schools to ensure that appropriate assessments, with or without appropriate accommodations, are selected for students with disabilities under IDEA, students covered by Section 504, and English learners so that they are appropriately included in assessments and receive accommodations that are:</p> <ul style="list-style-type: none"> <li>A) Consistent with the State's policies for accommodations;</li> <li>B) Appropriate for addressing a student's disability or language needs for each assessment administered;</li> <li>C) Consistent with accommodations provided to the students during instruction and/or practice;</li> <li>D) Consistent with the assessment accommodations identified by a student's IEP Team or 504 team for students with disabilities, or another process for an English learner;</li> <li>E) Administered with fidelity to test administration procedures.</li> </ul>
<b>Critical Element 6 - Academic achievement standards and reporting</b>	
<b>6.1 State adoption of academic achievement standards for all students</b>	<p>The State formally adopted challenging academic achievement standards in reading/language arts, mathematics and in science for all students, specifically:</p> <ul style="list-style-type: none"> <li>A) The State formally adopted academic achievement standards in the required tested grades and, at its option, also alternate academic achievement standards for students with the most significant cognitive disabilities;</li> <li>B) The State applies its grade-level academic achievement standards to all public elementary and secondary school students enrolled in the grade to which they apply, with the exception of students with the most significant cognitive disabilities to whom alternate academic achievement standards may apply;</li> <li>C) The State's academic achievement standards and, as applicable, alternate academic achievement standards, include: (a) At least three levels of achievement, with two for high achievement and a third for lower achievement; (b) descriptions of the competencies associated with each achievement level; and (c) achievement scores that differentiate among the achievement levels.</li> </ul>

<b>6.2 Achievement standard setting</b>	The State used a technically sound method and process that involved panelists with appropriate experience and expertise for setting its academic achievement standards and alternate academic achievement standards to ensure they are valid and reliable.
<b>6.3 Challenging and aligned academic achievement standards</b>	<p>The State's academic achievement standards are challenging and aligned with the State's academic content standards such that a high school student who scores at the proficient or above level has mastered what students are expected to know and be able to do by the time they graduate from high school in order to succeed in college and the workforce.</p> <p>If the State has defined alternate academic achievement standards for students with the most significant cognitive disabilities, the alternate academic achievement standards are linked to the State's grade-level academic content standards or extended academic content standards, show linkage to different content across grades, and reflect professional judgment of the highest achievement standards possible for students with the most significant cognitive disabilities.</p>
<b>6.4 Reporting</b>	<p>The State reports its assessment results, and the reporting facilitates timely, appropriate, credible, and defensible interpretations and uses of results for students tested by parents, educators, State officials, policymakers and other stakeholders, and the public, including:</p> <ul style="list-style-type: none"> <li>A) The State reports to the public its assessment results on student achievement at each proficiency level and the percentage of students not tested for all students and each student group after each test administration;</li> <li>B) The State reports assessment results, including itemized score analyses, to districts and schools so that parents, teachers, principals, and administrators can interpret the results and address the specific academic needs of students, and the State also provides interpretive guides to support appropriate uses of the assessment results;</li> <li>C) The State provides for the production and delivery of individual student interpretive, descriptive, and diagnostic reports after each administration of its assessments that: <ul style="list-style-type: none"> <li>1) Provide valid and reliable information regarding a student's achievement;</li> <li>2) Report the student's achievement in terms of the State's grade-level academic achievement standards (including performance-level descriptors);</li> <li>3) Provide information to help parents, teachers, and principals interpret the test results and address the specific academic needs of students;</li> <li>4) Are available in alternate formats (e.g., Braille or large print) upon request and, to the extent practicable, in a native language that parents can understand;</li> <li>5) The State follows a process and timeline for delivering individual student reports to parents, teachers, and principals as soon as practicable after each test administration.</li> </ul> </li> </ul>

You can label chapter and section titles using `{#label}` after them, e.g., we can reference Chapter 2. If you do not manually label them, there will be automatic labels anyway, e.g., Chapter 6.0.1.1.2.

```
#bookdown::render_book("index.Rmd")
```

Figures and tables with captions will be placed in `figure` and `table` environments, respectively.

```
par(mar = c(4, 4, .1, .1))
plot(pressure, type = 'b', pch = 19)
```

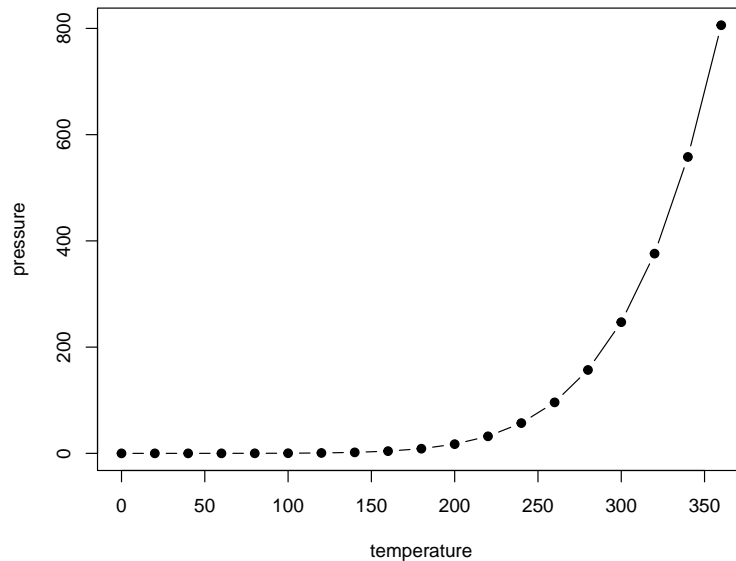


Figure 2.1: Here is a nice figure!

Reference a figure by its code chunk label with the `fig:` prefix, e.g., see Figure 2.1. Similarly, you can reference tables generated from `knitr::kable()`, e.g., see Table 2.1.

```
knitr::kable(
  head(iris, 20), caption = 'Here is a nice table!',
  booktabs = TRUE
)
```

You can write citations, too. For example, we are using the **bookdown** package (Xie, 2020) in this sample book, which was built on top of R Markdown and **knitr** (Xie, 2015).

Table 2.1: Here is a nice table!

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3.0	1.4	0.2	setosa
4.7	3.2	1.3	0.2	setosa
4.6	3.1	1.5	0.2	setosa
5.0	3.6	1.4	0.2	setosa
5.4	3.9	1.7	0.4	setosa
4.6	3.4	1.4	0.3	setosa
5.0	3.4	1.5	0.2	setosa
4.4	2.9	1.4	0.2	setosa
4.9	3.1	1.5	0.1	setosa
5.4	3.7	1.5	0.2	setosa
4.8	3.4	1.6	0.2	setosa
4.8	3.0	1.4	0.1	setosa
4.3	3.0	1.1	0.1	setosa
5.8	4.0	1.2	0.2	setosa
5.7	4.4	1.5	0.4	setosa
5.4	3.9	1.3	0.4	setosa
5.1	3.5	1.4	0.3	setosa
5.7	3.8	1.7	0.3	setosa
5.1	3.8	1.5	0.3	setosa



## Chapter 3

# Critical Element 1

## Statewide system of standards and assessments

3.0.1 1.1 State Adoption of Academic Content Standards for All Students

3.0.2 1.2 Coherent and Rigorous Academic Content Standards

3.0.3 1.3 Required Assessments

3.0.4 1.4 Policies for Including All Students in Assessments

3.0.4.1 1.4A English Learners

3.0.4.2 1.4B Native Language Assessments

3.0.5 1.5 Participation Data



## Chapter 4

# Critical Element 2 Assessment system operations

### 4.0.1 2.1 Test Design and Development

#### 4.0.1.1 2.1A VAExt Purpose

#### 4.0.1.2 2.1B VAExt Test Blueprint

#### 4.0.1.3 2.1C Test Development Processes

#### 4.0.1.4 2.1D Computer-Adaptive Considerations

### 4.0.2 2.2 Item Development



## Chapter 5

# Critical Element 3

## Technical Quality - Validity

5.0.1 3.1 Overall Validity, Including Validity Based on Content

5.0.1.1 3.1A Alignment Between AA-AAAS and Academic Content Standards

5.0.1.2 3.1B AA-AAAS Linkage to General Content Standards

5.0.2 3.2 Validity Based on Cognitive Processes

5.0.3 3.3 Validity Based on Internal Structure (Content and Function)



## Chapter 6

# Critical Element 4 Technical Quality - other

### 6.0.1 4.1 Reliability

#### 6.0.1.1 Inter-Rater-Reliability

##### 6.0.1.1.1 Background

##### 6.0.1.1.2 Methods

##### 6.0.1.1.2.1 Domain Definitions







## Chapter 7

# Critical Element 5 Inclusion of all students

### 7.0.1 5.1 Procedures for Including SWDs

#### 7.0.1.1 5.1A Clear Explanations of the Differences Between Assessments

#### 7.0.1.2 5.1B Eligibility Decisions Made by IEP Teams

#### 7.0.1.3 5.1C Guidelines for Assessment Selection

#### 7.0.1.4 5.1D Information on Accessibility Options

#### 7.0.1.5 5.1E Guidance Regarding Appropriate Accommodations

#### 7.0.1.6 5.1F All SWDs Eligible for the VAExt

#### 7.0.1.7 5.1G Parents Informed of AA-AAAS Consequences

#### 7.0.1.8 5.1H State Ensures VAExt Promotes Access to the General Education Curriculum

### 7.0.2 5.2A - 5.2C Procedures for Including ELs

### 7.0.3 5.3 Accommodations

#### 7.0.3.1 5.3A Appropriate Accommodations are Available for SWD/Section 504

#### 7.0.3.2 5.3B Appropriate Accommodations are Available for ELs

#### 7.0.3.3 5.3C Accommodations are Appropriate and Effective

#### 7.0.3.4 5.3D Accommodations are Appropriate and Effective

### 7.0.4 5.4A - 5.4E Monitoring Test Administration for Special Populations

## Chapter 8

# Critical Element 6

## Academic achievement standards and reporting

8.0.1 6.1 State Adoption of Alternate Academic Achievement Standards for SWSCD

8.0.1.1 6.1A State Formally Adopted Alternate Academic Achievement Standards

8.0.1.2 6.1B State Applies AAAS to All Public School SWSCD in Tested Grades

8.0.1.3 6.1C State's AAAS Include At Least Three Levels, ALDs, and Cut Scores

8.0.2 6.2 Achievement Standard Setting



# Bibliography

Xie, Y. (2015). *Dynamic Documents with R and knitr*. Chapman and Hall/CRC, Boca Raton, Florida, 2nd edition. ISBN 978-1498716963.

Xie, Y. (2020). *bookdown: Authoring Books and Technical Documents with R Markdown*. R package version 0.18.