

Provincial Assessment Results 2021-22: Grades 4 & 6 Scientific Literacy

Background

Scientific Literacy Assessments were administered to Grade 4 and 6 students in the spring of 2022 to assess scientific literacy skills. Both assessments contained 24 items covering topics in three outcome strands (Initiate and Plan, Perform and Record, and Analyze and Explain). These assessments were not administered in the previous two years due to COVID-related school closures.

This year, there was a change in methodology from matrix sample to census administration for the scientific literacy assessments to bring them in line with the provincial reading assessments. With the new methodology, students completed the full assessment rather than only a quarter of the questions. This provides student-level data for teachers and allows for cohort tracking and longitudinal research. Combined with other data sources, it will tell a more complete story about student performance.

Due to this change in methodology, results from 2021-22 onward are not comparable to historical data, and 2021-22 will be the baseline for future comparisons.

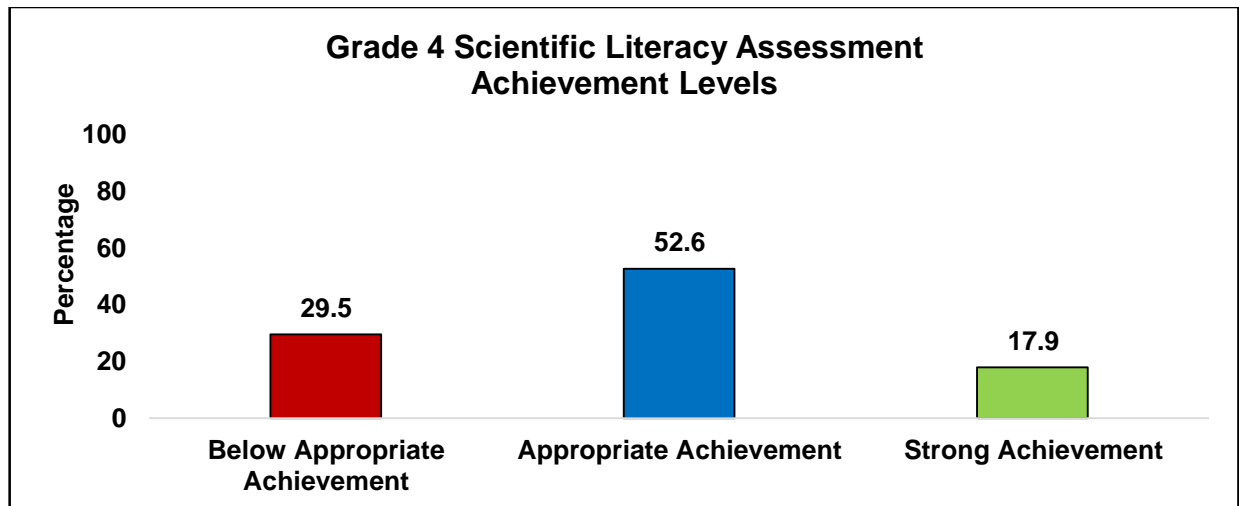
The 2021-22 *Scientific Literacy Assessments* were administered using an online platform for the first time. Prior to the actual administration, schools were invited to have students familiarize themselves with the platform using a practice assessment that they could access as often as they wished.

A mode study was conducted to identify any impact or bias resulting from the migration to the online platform. Traditional paper versions were administered to ten percent of students, while the rest completed their assessments online. Results of statistical analyses indicate the following:

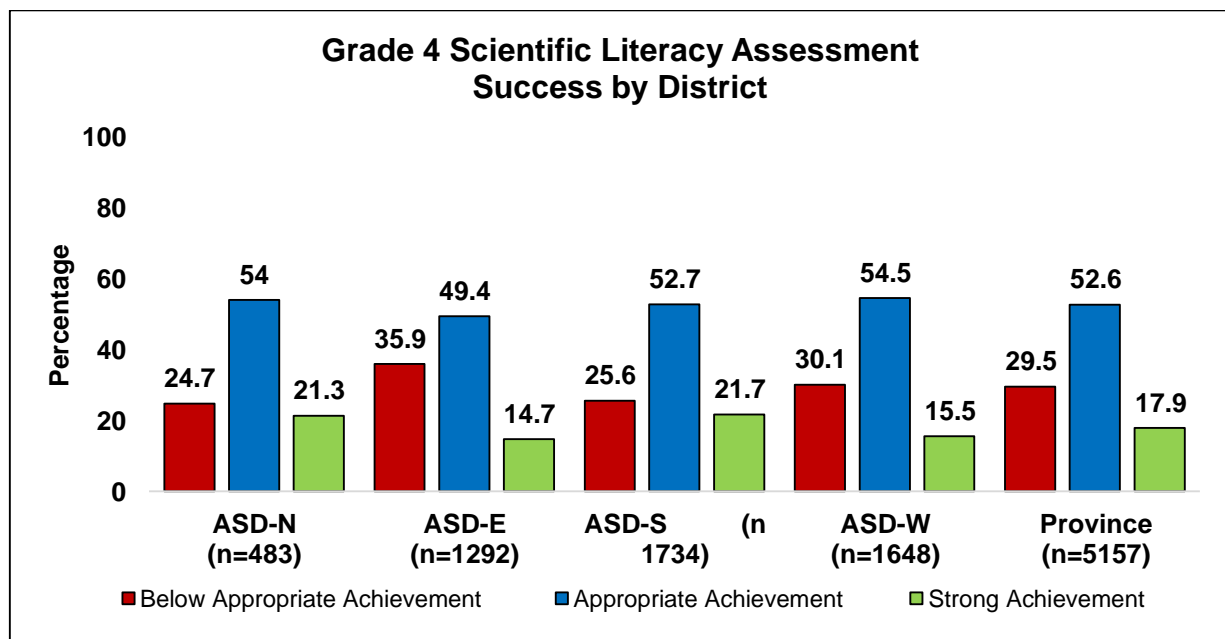
- Online versions of the assessments are statistically equivalent to their paper versions.
- Test reliability is comparable to last year.
- Items performed without bias for students in all programs of study and for all accommodations.

Grade 4 Achievement Results

Of the 5157 Grade 4 students registered, 70.5% were successful. Of these students, 17.9% attained *Strong Achievement*, 52.6% attained *Appropriate Achievement* and 29.5% were *Below Appropriate*. The *Below Appropriate Achievement* calculation includes exempted students (4.1%) but excludes students who are absent during the assessment administration period (1.6%). The success rate calculated excluding exemptions is 73.5%.



The graph below indicates the success rates for the province and for each school district. District success rates are as follows: ASD-N = 75.3%; ASD-E = 64.1%; ASD-S = 74.4%; ASD-W = 70.0%.



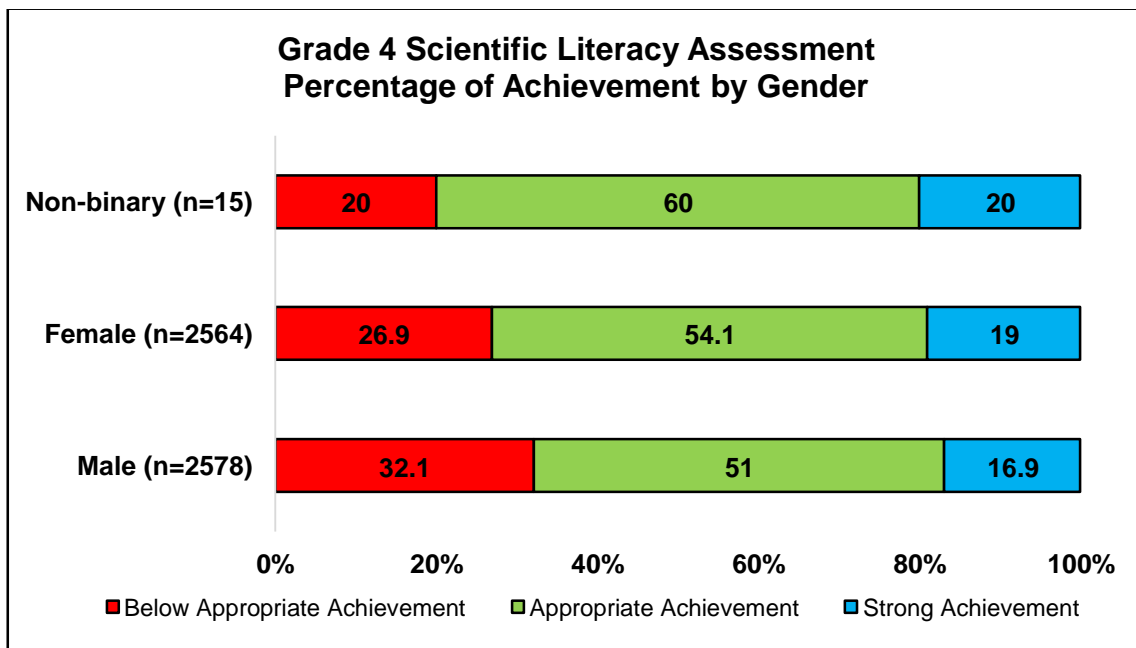
(n = total number of students)

Warranted accommodations are provided to include as many students as possible in the provincial assessment program. In certain circumstances, it is necessary and fitting for students to be exempted from participation. This is the case when the testing format is not suitable for a student to demonstrate their learning, even with accommodations. For further information, please consult the [Provincial Assessment Program: Protocols for Accommodations and Exemptions](#).

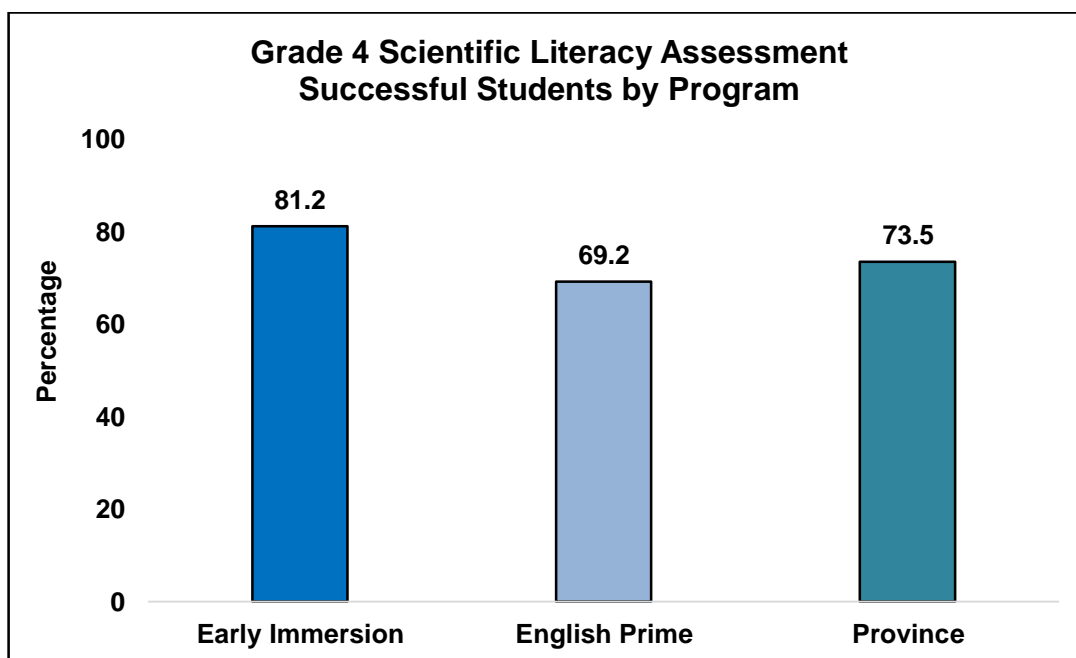
Exemption rates for the *Grade 4 Scientific Literacy Assessment* are displayed in the table below.

Grade 4 Scientific Literacy Assessment Exemption Rates				
District	Number of Grade 4 Students	Number of Students Exempt	Percent Exempt	Success Rate Excluding Exemptions
Province	5157	211	4.1	74.8%
ASD-North	483	11	2.3	78.2%
ASD-East	1292	67	5.2	69.1%
ASD-South	1734	71	4.1	78.5%
ASD West	1648	63	3.8	74.7%

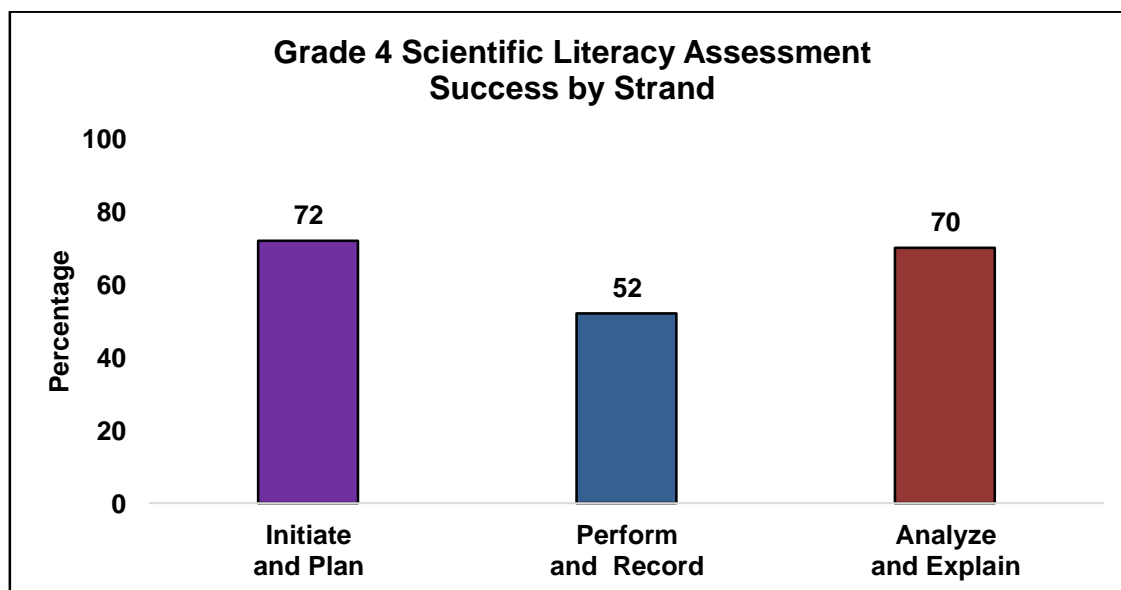
The following graph illustrates achievement levels by gender. Gender designations for this analysis were retrieved from administrative data contained in the provincial Student Information System. Combining Appropriate and Strong achievement levels, the success rate was 75.8% for female students, 71.1% for male, and 80% for non-binary students, and does not include exempted students. Although there are few students in the latter group (15), results are included to provide a complete provincial picture and a baseline for anticipated increases in the number of students in this group over time.



The graph below indicates the student success rates by language program. This does not include students who were exempted from this assessment.



The assessment includes three curriculum strands: Initiate and Plan, Perform and Record, and Analyze and Explain. Overall, student success was highest for Initiate and Plan and Analyze and Explain.



**Description of the *Appropriate Achievement Level*
for the *Scientific Literacy skills – Grade 4***

Initiate and Plan

- I can ask questions about familiar objects and events that lead to simple investigations
- I can make predictions, based on prior knowledge, about objects and events
- I can identify the measured variable
- I can identify the variable being changed
- I can suggest a problem statement for a technological solution
- I can suggest steps to conduct a fair test to answer a question

Perform and Record

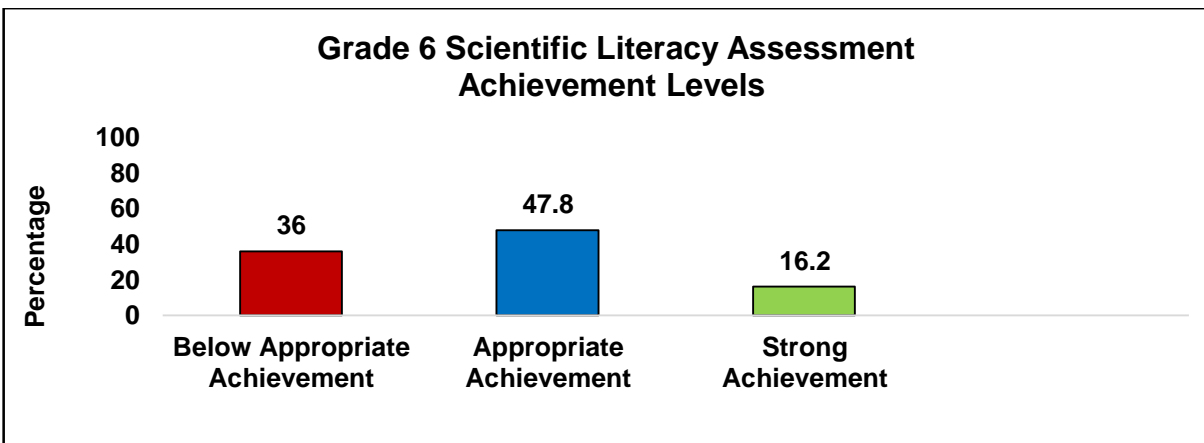
- I can suggest a plan for how to carry out an inquiry
- I can use materials and equipment to test predictions to answer the question
- I can collect data using various methods
- I can record data using formal measurements (where appropriate)

Analyze and Explain

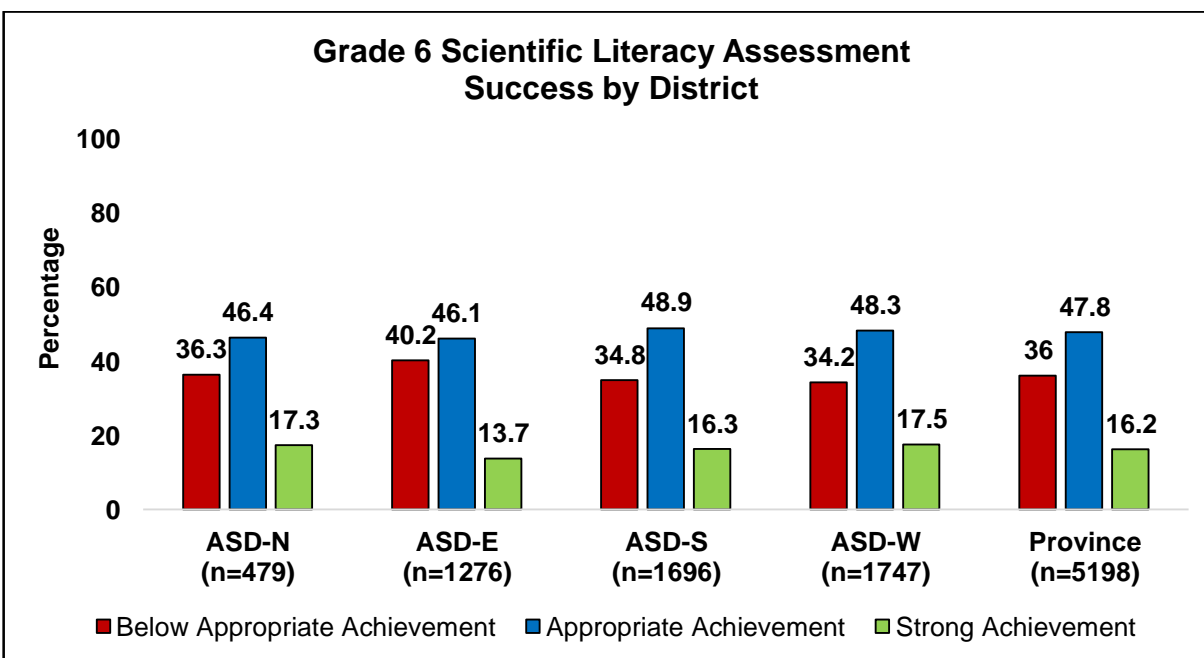
- I can create simple labelled drawings, tables, bar graphs, or other formats to represent data
- I can classify objects and events according to one or more properties
- I can identify new questions that result from investigations
- I can review ideas/useful information that can be used to answer initial questions
- I can review ideas/useful information that can be used to solve a problem

Grade 6 Achievement Results

Of the 5198 Grade 6 students registered, 64.0% were successful. Of these students, 16.2% attained *Strong Achievement*, 47.8% attained *Appropriate Achievement* and 36.0% were *Below Appropriate*. The *Below Appropriate Achievement* calculation includes exempted students (3.3%) but excludes students who were absent during the assessment administration period (3.3%). The success rate excluding exemptions is 66.1%.



The graph below indicates the success rates for the province and for each school district. District success rates are as follows: ASD-N = 63.7%; ASD-E = 59.8%; ASD-S = 65.2%; ASD-W = 65.8%.

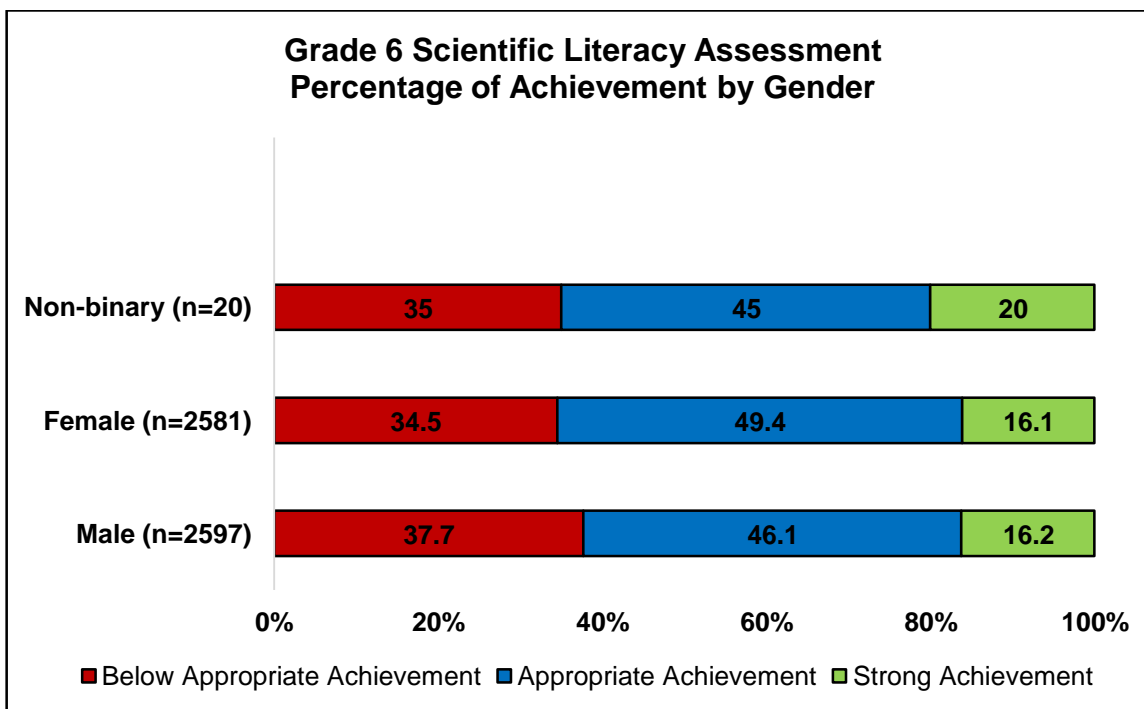


(n = total number of students)

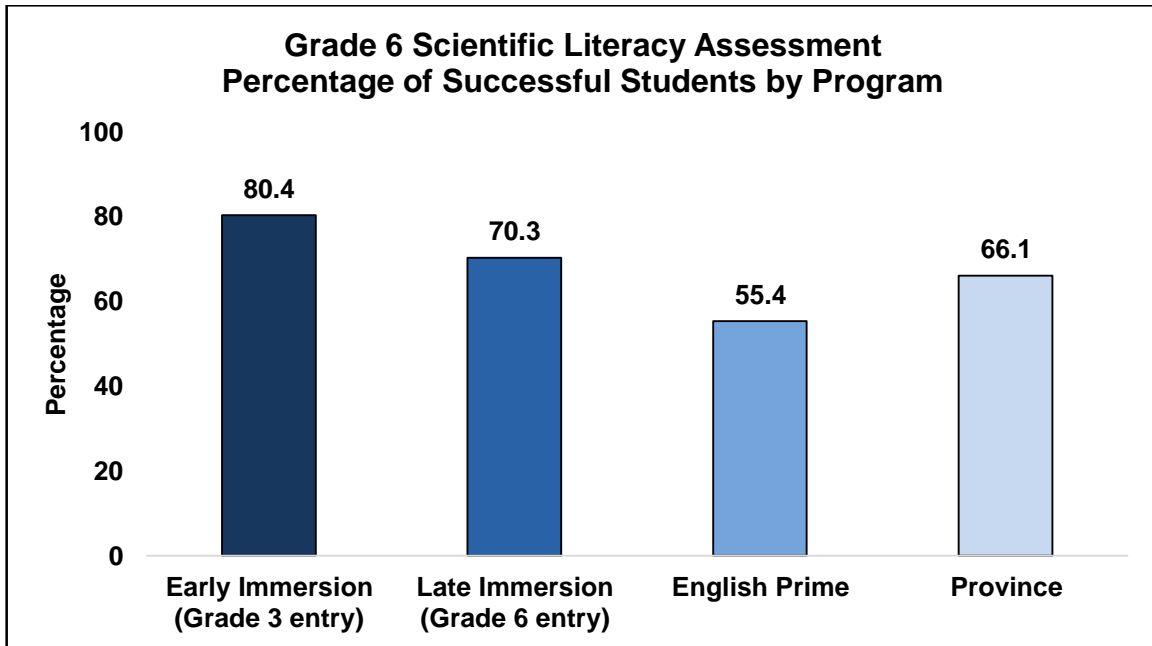
Exemption rates for the *Grade 6 Scientific Literacy Assessment* are displayed in the table below.

Grade 6 Scientific Literacy Assessment Exemption Rates				
District	Number of Grade 6 Students	Number of Exempt Students	Percent Exempt	Success Rate Excluding Exemptions
Province	5198	172	3.3	65.2%
ASD-North	479	12	2.5	64.5%
ASD-East	1276	42	3.3	60.4%
ASD-South	1696	63	3.7	67.2%
ASD West	1747	56	3.2	67.0%

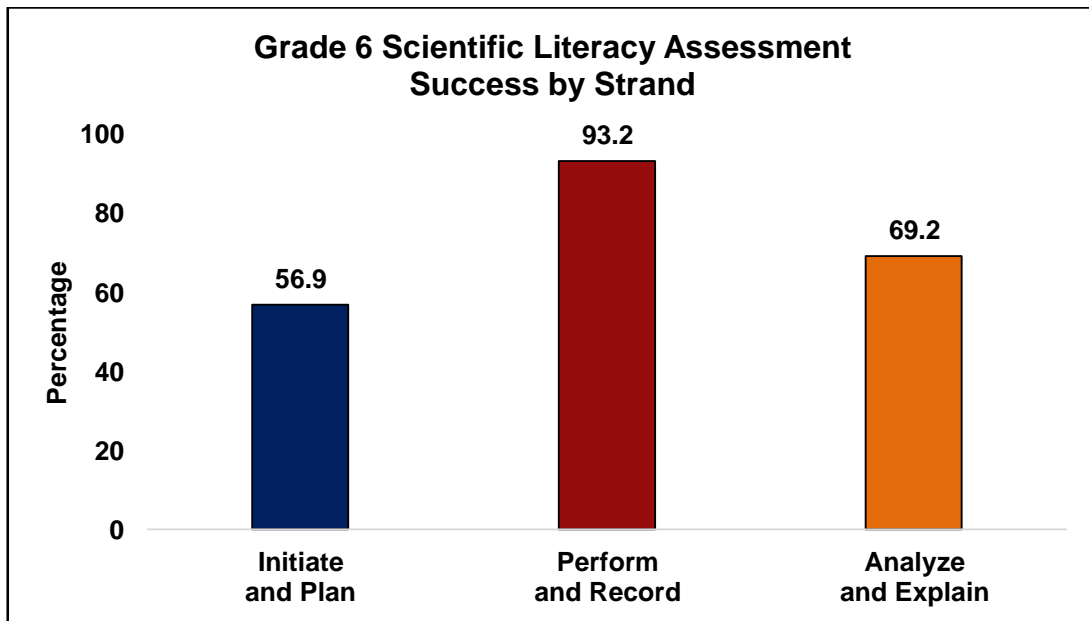
The following graph illustrates achievement levels by gender. Gender designations for this analysis were retrieved from administrative data contained in the provincial Student Information System. Combining *Appropriate* and *Strong* achievement levels, the success rate was 65.5% for female students, 62.3% for male, and 65% for non-binary students. Although there are few students in the latter group (20), results are included to provide a complete provincial picture and a baseline for anticipated increases in the number of students in this group over time.



The graph below indicates the student success rates by language program. This does not include students who were exempted from this assessment.



The assessment includes three curriculum strands types: Initiate and Plan, Perform and Record, and Analyze and Explain. Overall, student success was higher for Perform and Record.



**Does not include exempt*

**Description of the *Appropriate Achievement Level*
for the *Scientific Literacy skills – Grade 6***

Initiate and Plan

- Ask questions that arise from careful observation of phenomena, models or unexpected results.
- Determine variables (e.g. dependent, independent, and control) to formulate a hypothesis
- Define the problem
- Select appropriate tools, materials, and equipment to carry out a fair test

Perform and Record

- Record qualitative and quantitative data using measurement tools as appropriate

Analyze and Explain

- Identify possible sources of error
- Construct graphical displays (e.g., drawings, charts, maps, tables, and graphs)
- Interpret maps, graphs, and statistics across spatial and temporal scales
- Apply concepts of probability and statistics (e.g. mean, median, mode, and variability)
- Draw a conclusion based on evidence gathered from scientific experiment or testing of the prototype