Research Project Five

Title: Academic Achievement Monitoring

Beginning in September 2025, STEM Collegiate formalized a new internal research and monitoring process led by the Executive Director of Research and the Director of Student Success. The goal of this work is to provide senior leadership with regular, data-rich analyses of student achievement, aligned with the Alberta Education Assurance Framework and the school's charter goals.

The Executive Director of Research and Director of Student Success meet twice monthly to determine which data sets need to be collected or analyzed, and they produce a written academic achievement report approximately once per month for the Superintendent and Chief Strategy Officer. To date, three reports have been completed for the 2025–2026 school year (September, November, and December). These reports focus on:

- establishing baseline profiles of new students and key cohorts based on prior PAT results
- tracking provincial assessment performance over time in relation to provincial averages
- analyzing course-embedded assessments (midterm exams) at the high school level to ensure consistency between classroom marks and exam performance.

Together, these reports represent a systematic, research-informed approach to monitoring achievement and identifying areas for targeted intervention.

Methodology and Data Sources

The monitoring project relies entirely on existing achievement data routinely collected by the school or provided by Alberta Education. No additional testing is administered solely for research purposes. Key data sources include:

- **Provincial Achievement Tests (PATs)** in Grades 6 and 9, both historic (prior to entering STEM Collegiate) and current
- **Diploma examinations** at the Grade 12 level (to be incorporated once embargoes are lifted)
- **Internal course-based assessments**, with an initial focus on Grade 10 and 11 midterm exams in Mathematics, Science, English Language Arts, and Social Studies.

Each short, one-to-two-page, monthly report follows the same general structure:

1. Tables summarizing current and prior PAT results by grade, subject, and performance band.
2. Comparisons of STEM Collegiate results to provincial averages at both the acceptable standard and the standard of excellence.
3. For internal assessments, tables by grade and by teacher showing midterm averages, comparisons to Term 1 report card averages, and proportions of students at the acceptable and excellence standards.
4. A short narrative analysis highlighting key patterns, strengths, and areas for follow-up, along with a list of actions already underway.

Key Findings by Reporting Period

September 2025 – Establishing Baseline Profiles

The September 2025 report focused on two main questions:

1. What are the academic profiles of new students entering STEM Collegiate this year?
2. How did the current Grade 9 cohort perform on their Grade 6 PATs prior to entering STEM Collegiate?

New student PAT profiles.

Table 1 below, taken from the September 2025 report aggregates the most recent PAT results for incoming students by grade (Grades 7–11) and subject.

Grade	# of Students	Most Recent PAT Results (Avg.)						
		Math A	Math B	Science A	Science B	ELA A	ELA B	SS
7	110	**	**	*	*	*	*	*
8	26	**	**	86%	82%	**	**	86%
9	23	91%	83%	84%	77%	77%	70%	83%
10	18	86%	*	*	*	*	*	*
11	2	90%	90%	91%	94%	84%	80%	90%

For example, Gr 9 students (N = 23) who were new to STEM Collegiate this school year (2025-2026) brought very strong prior achievement in Mathematics (91% in Math A and 83% in Math B) and solid results in Science and Social Studies, with English Language Arts scores slightly lower but still strong. New Gr 8 and 10 students also entered with generally high PAT averages, particularly in Science and Mathematics.

Current Grade 9 cohort's Grade 6 PAT results (2022)

The table below disaggregates the 2022 Grade 6 PAT results of the current Grade 9 cohort (N = 145) into three performance bands (<50%, 50–90%, >90%) for each subject.

Current Gr 9's June 2022 Gr 6 PAT's average group score by percentage band	Gr 6 PAT Math A (μ)	Gr 6 PAT Math B (μ)	Gr 6 PAT Science A (μ)	Gr 6 PAT Science B (μ)	Gr 6 PAT ELA A (μ)	Gr 6 PAT ELA B (μ)	Gr 6 PAT SS (μ)
<50%	5%	0%	0%	6%	10%	0%	0%
50% to 90%	25%	85%	71%	75%	75%	95%	79%
>90%	70%	15%	29%	18%	15%	5%	21%

The data show that this cohort entered STEM Collegiate with very strong mathematics achievement and comparatively weaker performance in English Language Arts. For example, 70% of these students scored above 90% on the Grade 6 Math A PAT, whereas only 15% scored above 90% on ELA Part A and 5% scored above 90% on ELA Part B.

Grade 9 PAT 2024 baseline.

In 2024, STEM Collegiate students already exceeded the provincial average at the acceptable standard by 25% in Mathematics, 18.7% in Science, 14.1% in ELA, and 20.6% in Social Studies; they also exceeded the province at the excellence standard by 5.2–19.8 percentage points depending on the subject.

The September 2025 academic achievement data analysis concluded that STEM Collegiate's Grade 9 cohort entered the school with strong prior performance in Mathematics and relative weaknesses in reading comprehension, especially in ELA Part B. These patterns helped shape instructional intervention priorities in literacy and informed planning for the 2025 Grade 9 PAT cycle. At the same time, the 2024 PAT results provided an early indication that STEM Collegiate was already helping students perform substantially above provincial norms in their first administration of Grade 9 PATs.

November 2025 – Integrating 2025 PAT Results

This report built on the September baseline by incorporating the newly released 2025 Gr 9 PAT results and extending the prior-achievement analysis to multiple grade levels.

The table below, taken from the November 2025 report summarizes the most recent PAT results (either Grade 6 or Grade 9) for all current grades 7–11.

Current Grade	# of Students	Most Recent PAT Results (Avg.)						
		Math A	Math B	Science A	Science B	ELA A	ELA B	SS
7	113	69%	63%	*	*	76%	69%	77%
8	114	*	*	83%	80%	*	*	82%
9	145	86%	78%	82%	73%	77%	70%	76%
10	67	79%	76%	82%	84%	75%	69%	80%
11	45	62%	71%	73%	73%	72%	68%	73%

For example, the current Grade 7 cohort (N = 113) has mean prior PAT scores of 69% in Math A, 63% in Math B, 76% in ELA A and 69% in ELA B, with similar strengths in Social Studies. Current Grade 9 students (N = 145) show average Grade 6 PAT scores of 86% and 78% in Math A and B respectively, 82% and 73% in Science, and mid-70s in ELA and Social Studies, confirming that STEM Collegiate's junior high students entered with comparatively strong mathematics backgrounds and more mixed literacy scores.

For the current Gr 9s, the November 2025 report highlights that only 15% of students scored above 80% on their Gr 6 ELA Part B PAT, compared with 43–69% in other subjects, and that 10% failed Part B of their Grade 6 Science PAT. For the current Gr 10s, most students scored between 50–80% across subjects, with relatively fewer in the >80% band for ELA and Social Studies, again pointing to historical literacy weaknesses.

Grade 9 PAT performance 2024–2025 vs province

Subject	2024 Acceptable STEM	2024 Acceptable Province	2024 Excellence STEM	2024 Excellence Province	2025 Acceptable STEM	2025 Acceptable Province	2025 Excellence STEM	2025 Excellence Province
Math	87.0%	62.0%	21.7%	16.5%	88.2%	59.2%	50.6%	16.2%
Science	97.9%	79.2%	34.0%	24.4%	98.8%	79.5%	57.6%	23.7%
ELA	97.9%	83.8%	22.9%	14.2%	96.4%	81.9%	15.5%	12.1%
SS	91.5%	70.9%	38.3%	18.5%	94.1%	71.1%	47.1%	21.4%

This table compares STEM Collegiate's 2024 and 2025 Gr 9 PAT results to provincial averages at both the acceptable and excellence standards. In 2025, STEM Collegiate Grade 9 students exceeded the provincial acceptable standard by:

- **29 percentage points in Mathematics** (88.2% vs 59.2%)
- **19.3 points in Science** (98.8% vs 79.5%)
- **14.5 points in ELA** (96.4% vs 81.9%)
- **23 points in Social Studies** (94.1% vs 71.1%).

At the standard of excellence, STEM Collegiate Gr 9 students exceeded the province by:

- **34.4 points in Mathematics** (50.6% vs 16.2%)
- **33.9 points in Science** (57.6% vs 23.7%)
- **3.4 points in ELA** (15.5% vs 12.1%)
- **25.7 points in Social Studies** (47.1% vs 21.4%).

The report notes "tremendous growth" in the proportion of students achieving the standard of excellence from 2024 to 2025, particularly in Mathematics (21.7% to 50.6%) and Science (34.0% to 57.6%), with smaller increases in Social Studies (38.3% to 47.1%) and a modest decline in ELA (22.9% to 15.5%). When interpreted alongside the Grade 6 PAT profiles, this pattern suggests that STEM Collegiate has been especially effective in accelerating performance in Math and Science, while also maintaining high levels of acceptable-standard achievement in ELA despite weaker prior reading skills.

The November analysis emphasizes that the current Grade 9 cohort entered STEM Collegiate relatively stronger in Mathematics and weaker in reading, yet by Grade 9 they are substantially outperforming provincial peers across all four core subjects at both the acceptable and excellence levels. This reinforces the conclusion that STEM Collegiate is making meaningful progress in closing prior learning gaps, particularly in STEM subjects.

December 2025 – Midterm Exam Analysis (Semester 1)

The December 2025 report shifts focus from provincial assessments to internal midterm exams for Gr 10 and 11 in Mathematics, Science, English Language Arts, and Social Studies. The purpose was twofold: to verify the alignment between classroom marks and exam performance, and to identify specific classes or groups that may require closer support.

Mathematics

At the grade level, Grade 10 students (N = 43) had a midterm average of 72%, which was very close to their Term 1 average of 71% (+1 point), with 48% achieving over 80% (excellence) and 33% between 50–79% (acceptable). Grade 11 students (N = 41) had a midterm average of 76% compared to a Term 1 average of 80% (−4 points), with 46% at excellence and 46% at acceptable, and only 8% below 50%. Teacher-level tables show that Teacher A's students generally achieved higher midterm and Term 1 averages and higher proportions at the excellence standard than those in Teacher B and Teacher C's classes, suggesting areas for sharing practice and targeted support.

Science

Gr 10 Science midterm results (N = 52) were stable relative to Term 1 (78% vs 78%), with 65% of students achieving excellence and 27% acceptable. Grade 11 Science midterm averages (N = 62) were slightly lower than Term 1 (76% vs 81%; –5 points) but still showed 50% of students at excellence and 40% at acceptable. Teacher-level analysis again revealed variation: students in Teacher B classes tended to demonstrate higher midterm averages and a greater proportion at excellence than those in Teacher A or Teacher C's classes.

English Language Arts

ELA midterm results showed the largest discrepancies compared to Term 1 classroom marks. Gr 10 students taught by Teacher A (N = 44) had a midterm average of 69%, down from 77% at Term 1 (–8 points), with 23% at excellence and 68% at acceptable. Gr 11 students taught by Teacher B (N = 23) had a midterm average of 69% compared to 79% at Term 1 (–10 points), with 22% at excellence and 64% at acceptable. While most students remained at or above 50%, the drop from classroom marks to exam performance suggests the need to examine the alignment between instruction, assessment expectations, and exam conditions in ELA.

Social Studies

Grade 10 Social Studies midterm results (N = 37) were slightly higher than Term 1 (70% vs 68%; +2 points), with 22% at excellence, 75% at acceptable, and only 3% below 50%. Section-level analysis shows small differences between classes, but overall performance is consistent and generally strong.

The December 2025 STEM Collegiate data analysis concludes that, across Mathematics, Science, and Social Studies, midterm exam scores are broadly consistent with Term 1 report card marks (differences of 1–5 percentage points), indicating that classroom assessment practices are reasonably aligned with exam expectations. English Language Arts results, by contrast, show larger drops (8–10 percentage points), suggesting that ELA exams may be more demanding or that students require additional support with extended reading and writing under timed conditions. The report also highlights specific teacher/class combinations where midterm and Term 1 results are lower, providing a starting point for targeted coaching and collaborative planning.

Implications

Taken together, the September, November, and December 2025 academic data reports demonstrate that STEM Collegiate has established a robust internal system for monitoring student achievement across multiple data sources. Several cross-cutting insights emerge:

- **Strong and improving PAT performance.** Gr 9 PAT results in both 2024 and 2025 show STEM Collegiate students consistently outperforming the province at both the acceptable and excellence standards, with particularly large gains in Mathematics and Science and continued high performance in Social Studies.

- **Closing prior learning gaps.** Analysis of incoming Gr 6 PAT data shows that many students entered STEM Collegiate with weaker literacy and, for some, Science results. By Gr 9, these cohorts are achieving substantially above provincial averages, indicating that the school is making progress in **closing prior gaps**, especially in STEM subjects.

- **Consistent internal assessment practices with targeted areas for refinement.** Midterm-to-Term 1 comparisons for Gr 10 and 11 suggest that, in most subjects, classroom marks are aligned with exam performance, with only modest differences. English Language Arts is an exception, pointing to a need for further work on exam preparation, task design, and calibration of standards.

- **Data-informed professional learning.** Each report concludes with "Underway" actions showing that data are not simply reported but actively used. Examples include item analysis of PAT exams by department leads, collaborative identification of literacy and numeracy diagnostics, and teacher-level analysis of midterm results to inform instructional planning and targeted intervention.

Next Steps

The academic achievement monitoring project will continue throughout the 2025–2026 school year, following the reporting schedule already established for final Semester 1 reports and midterm and final Semester 2 reports. Over time, these repeated cycles of data collection, analysis, and action will create a longitudinal picture of cohort performance from entry through to graduation.

For the purposes of the charter self-evaluation, this ongoing project provides evidence that STEM Collegiate is building a sustainable culture of evidence-based decision making, using provincial and internal assessment data to guide instructional interventions, professional learning, and resource allocation in ways that directly support the school's charter goals and provincial assurance domains.