Research Project Three

Title: Teacher practice and professional development needs

In June 2025, STEM Collegiate conducted an internal survey of teachers responsible for Grades 7–10 classes to gather systematic evidence about instructional practices, learning supports, and professional learning needs. This work was undertaken by the Executive Director of Research and Instruction to:

1. Inform professional development priorities for 2025–2026, and
2. Provide internal evidence of progress on the Alberta Education Assurance Domains "Learning Supports" and "Teaching & Leading" as detailed in STEM Collegiate's 2025–2028 Education Plan.

The survey was anonymous but completed by all teachers present at a staff meeting; completion was expected rather than optional.

Methodology

Participants

A total of 14 teachers who teach Grade 7–10 students completed the survey which represented almost all the 2024-2025 STEM Collegiate Faculty. These teachers cover both core subjects and STEM-focused option courses and collectively teach the 315 students who completed the parallel student survey.

Instrument

The survey, administered via Qualtrics, included:

- Four closed questions about:
  - Variety of teaching strategies (Q1)
  - Frequency of formative feedback (Q2)
  - Use of formative assessment to adjust instruction (Q3)
  - Providing multiple ways for students to demonstrate learning (Q4)
- Two open-ended questions:
  - What teachers enjoy most about teaching at STEM Collegiate (Q5)
  - One improvement that would make teaching at STEM Collegiate better (Q6)
- One ranking question (Q7) in which teachers ordered potential PD topics (assessment, instructional strategies, STEM skills & competencies, design

thinking, computational thinking, supporting struggling students, classroom management, and "other") from highest to lowest priority.

Procedure & Analysis

The survey was administered at the end of a staff meeting in June 2025. Responses were exported from Qualtrics and analyzed descriptively (frequencies, percentages) and thematically (for open responses). Results were then interpreted against:

- Domain: Teaching & Leading - focused on effective instruction, assessment, and professional learning.
- Domain: Learning Supports – focused on supports, services, and systems for students, especially those at risk or struggling.

Findings Related to "Teaching & Leading"

1. Use of Varied Teaching Strategies (Q1)

Question: In a typical week, how often do you use different teaching strategies (discussion, hands-on, video, collaborative work) in a selected core class?
Results (N = 14):

- 36% reported using a variety of strategies many times (4–5x) per week.
- 29% reported using varied strategies several times (2–3x) per week.
- 36% reported using them at least once per week.

Interpretation One

Every teacher reported using multiple instructional approaches at least weekly, and over one-third use varied strategies nearly every day. This aligns well with the Teaching & Leading emphasis on effective, responsive instruction and suggests that multi-modal teaching is a norm rather than an exception at STEM Collegiate.

Formative Feedback to Support Learning (Q2)

Question: For a different class (core or option), how often do you provide formative feedback to support and improve student learning in a typical unit?
Results (N = 14):

- 36%: Many times (4–5x) a week
- 21%: Several times (2–3x) a week

- 43%: At least once a week
- No respondents indicated that they were not teaching any classes.

Interpretation Two

All teachers reported that they provide regular formative feedback, with the majority doing so at least weekly and many doing so multiple times per week. If accurate, then this indicates that formative assessment is embedded in day-to-day practice and supports the Education Plan's focus on research-based assessment strategies within the Teaching & Leading domain.

3. Using Formative Assessment to Adjust Instruction (Q3)

Question: For the same class used in Q2, how often do you use formative assessments to adjust your instruction in a typical unit?
Results (N = 14):

- 36%: Adjust instruction many times (4–5x) per unit
- 50%: Adjust instruction several times (2–3x) per unit
- 14%: Adjust instruction at least once per unit

Interpretation Three

Nearly 9 out of 10 teachers report adjusting instruction multiple times within a unit of study, indicating a strong culture of responsive pedagogy. This is a concrete indicator that teachers are actively using assessment data to guide instruction and directly supporting the Teaching & Leading domain goals around instructional quality and continuous improvement.

4. Multiple Ways to Demonstrate Learning (Q4)

Question: To what extent do you agree with the statement: "I give students multiple ways to demonstrate their learning" in the selected class?

Results (approximate, based on response distribution):

- The vast majority of teachers selected "Agree" or "Strongly agree".
- Only one teacher selected "Disagree," and none selected "Somewhat disagree."

Interpretation Four

Teachers overwhelmingly perceive that they offer multiple assessment modalities (e.g., projects, quizzes, tests, performance tasks). This aligns with the school's charter emphasis on creativity, problem-solving, and varied demonstrations of learning, and

gives strong evidence that teaching practice aligns with the research base on universal design and differentiated assessment.

Findings Related to "Learning Supports" and School Climate

The open-ended questions (Q5 and Q6) provide rich qualitative evidence about teachers' perceptions of strengths and areas for growth in learning supports, school systems, and working conditions.

5. What Teachers Enjoy Most about Teaching at STEM Collegiate (Q5)
Common positive themes included:

- Collaboration & Professional Culture
  - "I enjoy the collaboration, the resources available, and the opportunity for professional growth."
  - "Friendly and supportive staff."
- Resources and Technology
  - "Good resources and funding to provide opportunities to students."
  - "I enjoy being able to use technology to enhance my teaching… students are able to use technology to connect different core subjects."
- Autonomy and Innovation
  - "The opportunity to turn ideas into action… encouraged to take initiative, think creatively, and follow through."
  - "Freedom in the content and literature I bring into the classroom."
- STEM-Focused Design & Options
  - Enthusiasm for STEM option courses, design-oriented work, and student-centered projects ("trial, error, success and failure are all baked into the design process").
- Student Relationships and Class Size
  - "Building meaningful relationships with students that focus on the evolution of self and skills."
  - Appreciation for smaller class sizes and more meaningful prep time.

Interpretation Five

Teachers see STEM Collegiate as a resource-rich, collaborative, and innovative environment, with strong alignment to STEM design principles and a culture that supports professional growth. This strengthens the narrative that the school's systems for Teaching & Leading are robust and that the environment provides a solid foundation for implementing the charter mandate.

6. Desired Changes or Improvements (Q6)

When asked for one change or improvement that would make teaching at STEM Collegiate even better, themes included:

- More Structure and Clear Policies
    - Calls for "more structure and policies," including a clearer and more consistent discipline system (e.g., lunch/after-school detention) and more consistent enforcement from administration.
- Stronger and More Focused Collaboration Time
    - Requests for "more genuine time for collaboration (especially on PD days)" to build resources, assessments, and creative instructional approaches.
    - Desire for more grade-level collaboration time, particularly for teachers teaching across multiple grades.
- Targeted Professional Development on Technology and STEM Tools
    - Requests for PD on "some of the technologies available at the school and how to implement them into core subjects."
    - Recognition that not all students (and some staff) are equally familiar with all technologies.
- Additional Operational Supports
    - Need for more substitute teachers.
    - Concerns about laptop distraction and interest in more explicit rules and restrictions.
- Student Engagement and Behaviour
    - Concerns that some students demonstrate low buy-in to STEM tasks, particularly in design-oriented projects, with impact on peers ("This poisons the well for other students who want to excel.").
    - Desire for a stronger "community among the teachers" and consistent behavioural expectations.

Interpretation Six (Learning Supports domain)

These themes highlight that while teachers value the innovative STEM environment, they also see a need to strengthen:

- Behaviour and discipline systems to support a welcoming, caring, respectful, and safe learning environment, and
- Time and structures for collaboration and PD that directly support their work with struggling or disengaged students.

This aligns directly with the Learning Supports domain in the Education Plan, which emphasizes coherent structures, processes, and pathways to support at risk students.

Professional Learning Priorities (Q7)

For the last question, teachers were asked to rank PD topics from most to least important:

- Assessment
- Instructional Strategies
- STEM Skills and Competencies
- Design Thinking
- Computational Thinking
- Supporting Struggling Students
- Classroom Management
- Other (open category)

There are several clear patterns which emerged from the raw data from this question:

- Assessment was frequently ranked among the top priorities, with many teachers placing it in their top three.
- Instructional Strategies and STEM Skills & Competencies also attracted high rankings, suggesting teachers want to deepen their use of research-based teaching approaches and STEM-specific pedagogy.
- Supporting Struggling Students and Classroom Management appeared regularly in the upper-middle ranks, echoing open-ended comments about student engagement, behaviour, and the need for consistent systems.
- Design Thinking and Computational Thinking tended to be ranked mid- to lower-priority, suggesting that while they are part of the STEM identity of the school, teachers currently see foundational assessment and classroom practice as more urgent focus areas for PD.

Interpretation Seven (Teaching & Leading domain)

STEM Collegiate Teachers signalled the most valuable PD would focus on:

- Assessment literacy (formative and summative, blueprints, DOK, etc.),
- Instructional strategies that engage diverse learners,
- Supporting struggling students and classroom management, and
- Strengthening core STEM teaching skills before moving more deeply into specialized areas like design and computational thinking.

These results provide evidence that STEM Collegiate is meeting is identified Education Plan's Teaching & Leading strategies, which emphasize PD in assessment, engagement strategies, effective instructional approaches, and classroom management, as well as in-house mentoring for new STEM option teachers.

Insights

- There is a strong alignment between teachers' self-reported practice *(i.e., frequent formative assessment, responsive instruction, multiple ways of demonstrating learning)* and the school's charter commitments and Teaching & Leading strategies.
- Teachers value the innovative STEM environment, rich resources, and professional autonomy, but they are also clearly asking for:
    - More structure and consistency in behaviour/discipline systems, and
    - More time and focused PD to collaborate and build capacity, especially around technology, struggling students, and classroom management.
- These themes dovetail with the Learning Supports domain, reinforcing the need to continue refining the continuum of supports, counselling services, and collaborative structures around at-risk students.

Limitations

- The survey provides a snapshot (June 2025) rather than longitudinal data.
- N is modest (≈14-17 teachers), though it does represent almost the entire Grade 7–10 teaching staff at STEM Collegiate in 2024-2025.
- Rankings of PD topics are informative but not precise enough to serve as a strict "menu order"; they should guide, not dictate, PD planning.

Conclusion

The June 2025 teacher survey provides concrete, staff-voice evidence that instructional practices at STEM Collegiate are aligned with current research on formative assessment, responsive instruction, and that teachers are by and large offering students multiple ways to demonstrate their learning. At the same time, the results point to specific system-level areas where additional work is needed, particularly around establishing more consistent discipline structures, strengthening supports for struggling and disengaged students, and creating more intentional time for collaboration. All together, the findings offer a clear professional learning roadmap for the STEM Collegiate Senior Leadership team that reflects staff-identified needs and aligns tightly with the strategies outlined in the 3-Year Education Plan.