MEETING CURRICULAR REQUIEMENTS: A MAPPING OF STUDENT-DIRECTED STEM

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THEME

STEM education

BACKGROUND/AIMS

We describe longitudinal study results of Grade 7 student-directed STEM inquiry (SDSI) at a small, independent school in Québec. The school is commitment to research-based practice; teachers know SDSI improves student conceptual understandings, retention, skills (Bunterm et al., 2019). They struggle with research-identified barriers to implementing SDSI: lack of time, resources, professional learning, etc. (Fitzgerald et al., 2019). This presentation focuses specifically on teacher concerns regarding connections to mandated curricular requirements (Fitzgerald et al., 2019) via the question: *How does SDSI align with the Québec Education Program (QEP)?* We present analyses/mappings of curricular outcomes from Years 1&2, and alignment with the QEP. The presentation thus addresses a key concern in STEM education.

PROCESS UNDERTAKEN

The QEP (Ministère de l'Éducation, 2004) is the basis for analysis. It is a competency-based program with five broad areas of learning (e.g., well-being, environmental awareness), and nine cross-curricular competencies (e.g., solves problems, uses creativity). Disciplinary areas each focus on three competencies (e.g., in science: seeks answers to scientific problems). In science, lessons address content organized via four big ideas (energy/matter, systems/interactions, form/function, constancy/change).

Data sources: Participants are Grade 7 students and their teachers. SDSI occurs 15-20 times per year, in 120 minute-periods every two weeks. Data includes: class photographs/videos, student work, exit tickets, lesson plans, teacher planning/debrief recordings, interviews with students/teachers.

Methods/techniques: For each year, individual classes were analyzed for links to all QEP elements for science, English language arts, social studies, mathematics, arts, personal development, and career development. Tables were constructed to track instances of each element, with correlated evidence from the class sessions. Once a year was complete, we examined it globally using a summary table to track how various elements were taken up over the year.

RESULTS/CONCLUSIONS

In Years 1&2, science curricular connections are clear, moreover, student projects become interdisciplinary very quickly, and sometimes moved well-beyond grade level. In Figures 1&2, each line represents a class where competencies from a disciplinary area were taken up.

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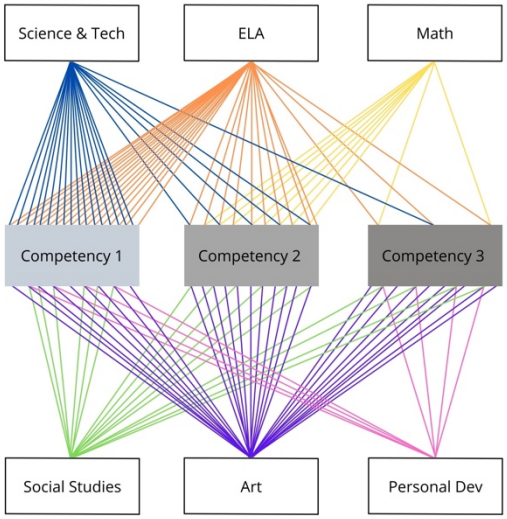

Figure 1. Number of times the competencies for each disciplinary area was addressed in Year 1 of the project.

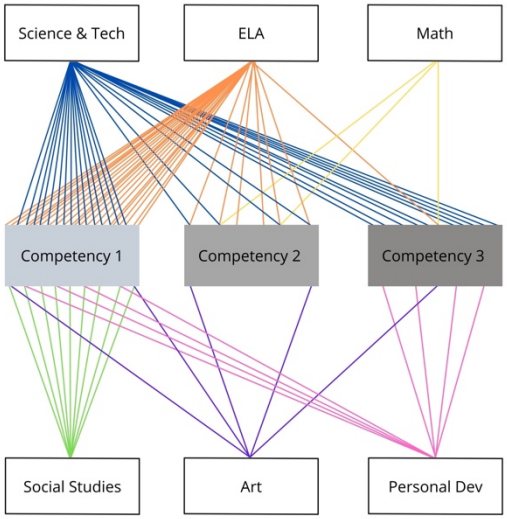

Figure 2. Number of times the competencies for each disciplinary area was addressed in Year 2 of the project.

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