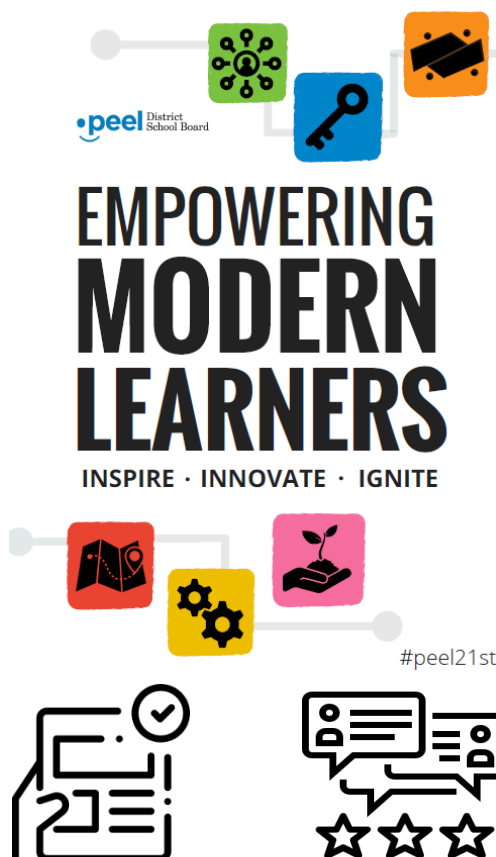




Empowering Modern Learners (EML): 21st Century Learning Phase 1 Evaluation Report



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Empowering Modern Learners (EML): 21st Century Learning

Phase 1 Evaluation Report

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Empowering Modern Learners (EML): 21st Century Learning

Phase 1 Evaluation Report

Introduction

In this era of globalization, digitalization, complexity, and constant transformation, both students and educators are expected to develop multidimensional competencies that would allow them to be adaptable, innovative, resilient, empathetic, globally responsible, and technologically skilled lifelong learners (OECD, 2018a, 2018b, WEF, 2015). There has been a growing international effort to identify *what* knowledge, skills, and values modern students need and *how* education systems can best develop these skills (OECD 2018a). One of the major education goals of the Ontario Government and the Ministry of Education is to help students “become personally successful, economically productive, and actively engaged citizens” (Ontario Government, 2016, p. 3). As part of this commitment, the Ministry of Education has mapped out 21st century competencies that are taught universally and developed its own framework of 21st century competencies (Ontario Government, 2016). They include (a) critical thinking and problem solving, (b) innovation, creativity, and entrepreneurship, (c) learning to learn, (d) collaboration, (e) communication, and (f) global citizenship. Although there are a number of educational policies in Ontario that include 21st century competencies in their frameworks, there is little direction on how these competencies can be integrated into the provincial curriculum (People for Education, 2018). The RAND Corporation report (2012) suggests that the major reasons for this situation are that 21st century competencies (a) do not fit easily into the traditional system of knowledge transmission, (b) they are not taught and practiced in the same way as literacy and numeracy skills, and (c) they are difficult to assess.

With regard to students’ future, it is well documented in the research literature that employers value and seek 21st century transferable skills more than technical skills in prospective candidates (Borwein, 2014; Business Council of Canada, 2018; Foundation for Young Australians, 2016). In addition to being instrumental for career success, 21st century competencies are also crucial in “preparing students to solve challenging societal problems” (People for Education, 2018). Peel District School Board (PDSB) parents/guardians also acknowledge the role of modern learning in preparing their children for the fast-paced, developing, globalized, and digitalized world that requires skills beyond their own education and necessitates adaptability and resiliency (Glisic, 2018).

The Peel District School Board has released its Empowering Modern Learners (EML) vision document in the fall of 2017 describing the belief statements, moral imperative, and six innovative elements (see Figure 1). EML is a board-wide project intended to ensure high expectations for student achievement through the application of innovative instructional practices, the provision of modern technology, development of learning networks, and equity of access for all students.

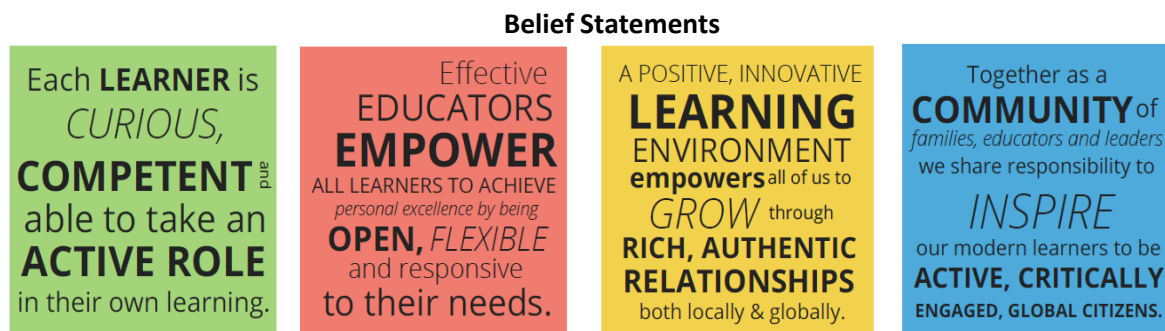
The EML vision was presented as a conceptual model that requires a collective commitment to move the current educational practices forward and adequately equip and empower all students with 21st century competencies – transferable skills needed for success in a modern world (PDSB,

2017). Educators are asked to innovate their professional practices and to create conditions necessary for the development of 21st century competencies in every learner. In order to model the EML vision, beliefs and instructional practices, the PDSB encouraged administrators and educators to use their professional judgment and level of readiness in deciding how and to what extent to implement the EML vision.

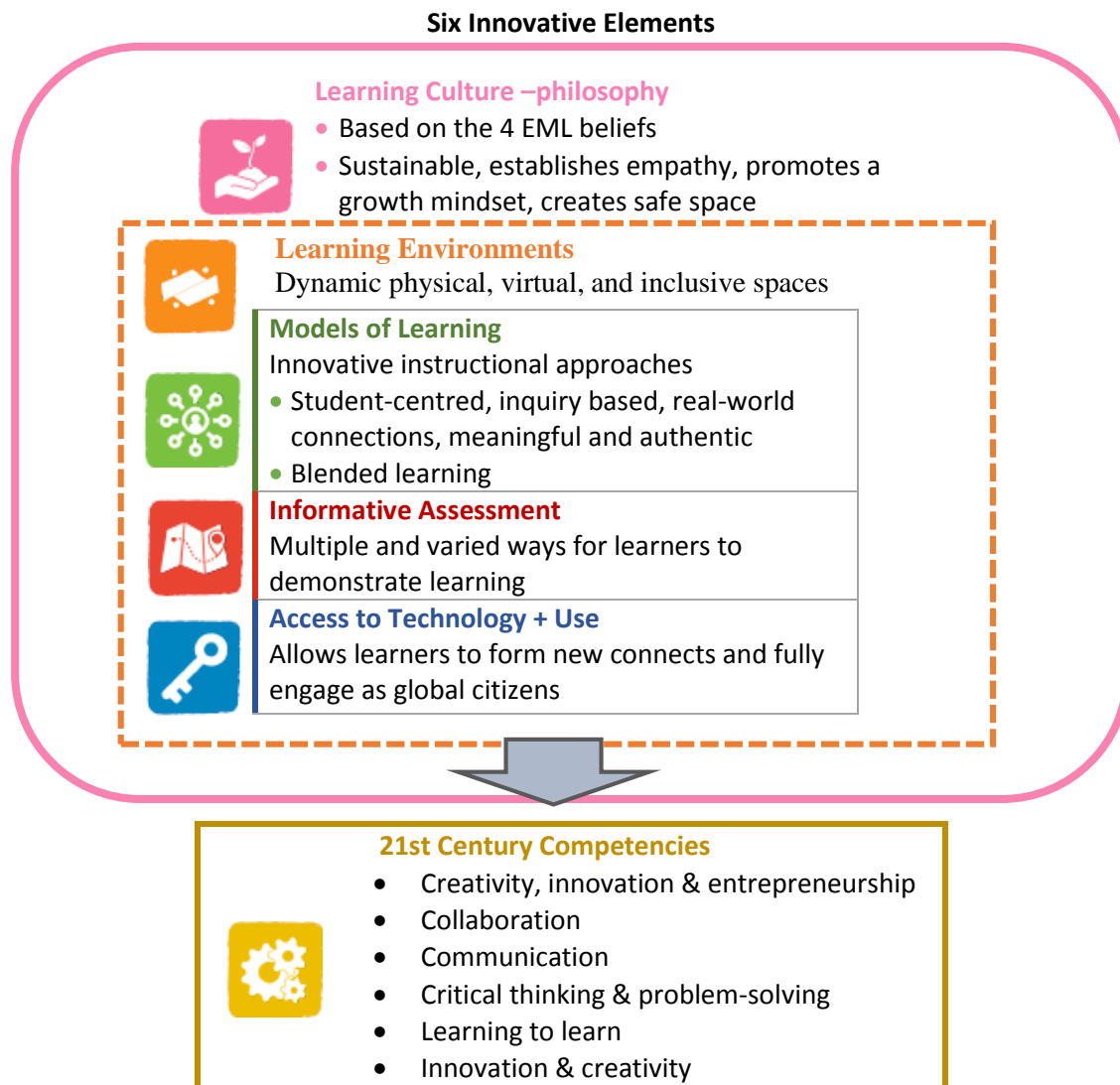
The purpose of this report is to present the results of the Phase 1 evaluation of the *Empowering Modern Learners* project at the Peel District School Board conducted during the 2017/18 school year. The evaluation focuses on the EML implementation process at both the system and school level. The four main goals of the report are:

- 1) To describe the PDSB Phase 1 EML implementation journey,
- 2) To document how schools are implementing the EML vision – what type of EML activities, projects, and initiatives school teams are undertaking in Phase 1,
- 3) To report how superintendents, modern learning resource teachers (MLRTs), instructional coaches (ICs), instructional coordinators and other resource teachers are perceiving and supporting EML implementation,
- 4) To identify factors that contribute to successful implementation of the EML project and lead to the expected outcomes in teaching and learning by conducting a formal contribution analysis.

Figure 1. Empowering Modern Learners Conceptual Model (Peel District School Board, 2017)



Moral Imperative: “We remain committed to inspiring students to be successful, confident, and hopeful today and in the future. An ever changing world requires us, as educators, to be willing to **innovate our practice** in response to the needs of modern learners in a dynamic global context. By **modelling** the skills, knowledge and attitudes that we hope to instill in our learners, we embody the competencies necessary for success in a modern world. Being a 21st century educator is more about the journey than the destination.”



Program Evaluation Models and Approaches

Developmental Evaluation

The complexity of the system-wide EML implementation process, the dynamic and transformative nature of the vision, and the reliance on multiple user networks necessitated the use of a developmental evaluation model as the overarching evaluation framework (Patton, 2011). This program evaluation model is most suitable for complex, innovative, and large scale change projects where outcomes are formative in nature and implementation is varied across stakeholders. The model also allows for the integration of other research and evaluation approaches while still maintaining an adequate level of evaluation and research rigour (Patton, 2011; Patton, McKegg, & Wehipeihana, 2016). Developmental evaluation allows for timely feedback and flexibility to develop new measures or adapt existing measures in order to document stakeholders' journeys through the Phase 1 EML implementation process. Moreover, the developmental evaluation approach also provided an opportunity to “learn as we go” and involve all stakeholders in the evaluation process (Patton, McKegg, & Wehipeihana, 2016).

Given that the EML project was at the early stages of implementation, the focus of the Phase 1 evaluation activities was on capturing the formative nature of the EML implementation process. Developmental evaluation was used in a preformative manner, with the intention of designing a summative evaluation in later phases of the EML project (Patton, 2011). Given the formative nature of the project and the early process of the implementation, a formal experimental research design was not warranted.

EML Logic Model

In order to operationalize the EML vision into measurable constructs, an EML logic model was developed. The logic model identified program activities and outputs, as well as short, intermediate, and long term outcomes (see Figure 2). The logic model depicts the relationship between the EML mission, goals, activities, and outcomes.

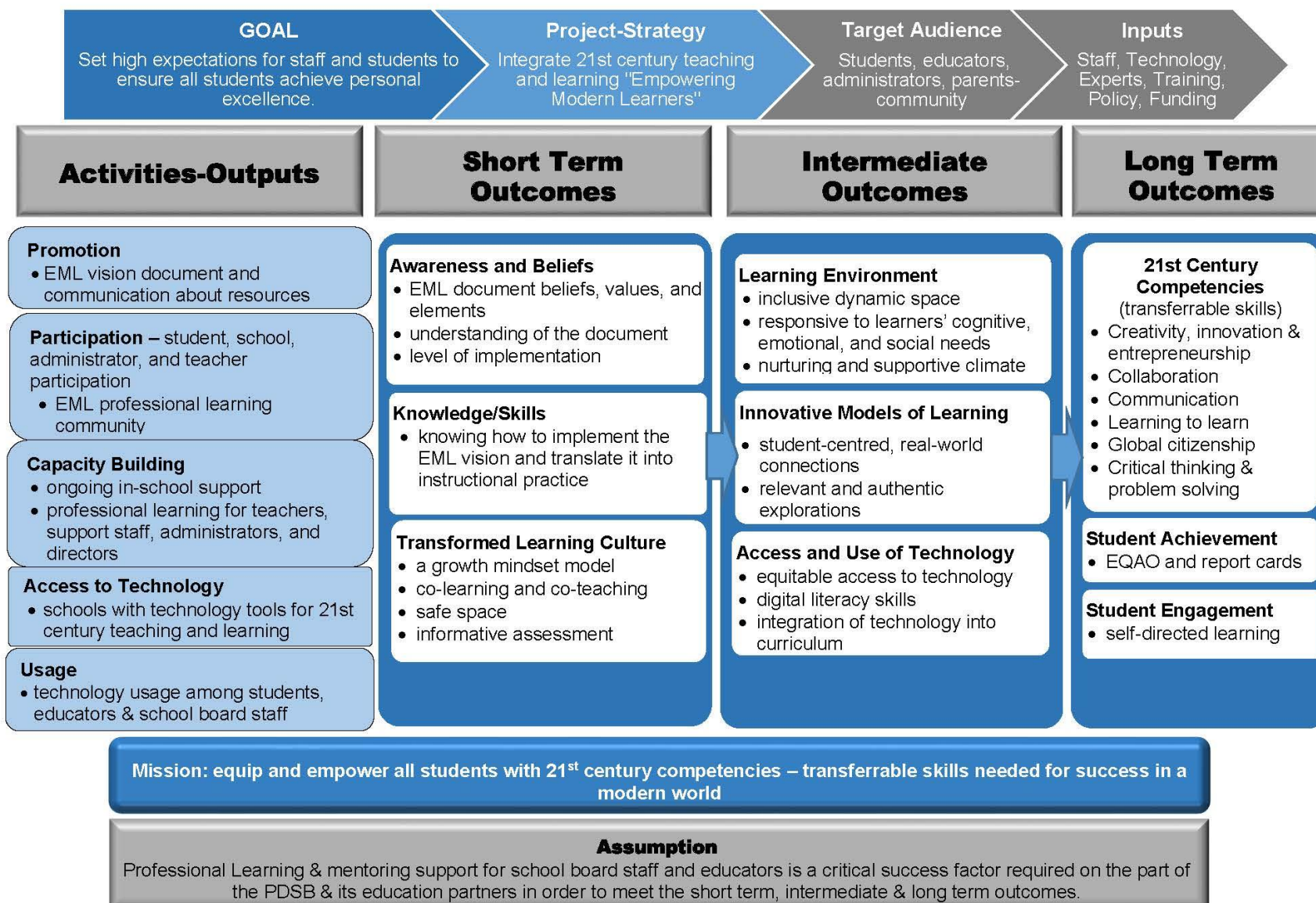
Contribution Analysis

Contribution analysis methodology was employed in order to evaluate the contribution that the project activities and resources had in facilitating the project outcomes. Contribution analysis is an appropriate analytical method when implementation is formative in nature and all outcomes are not yet fully developed. It is a result-oriented approach to evaluation that “explores attribution through assessing contribution” (Mayne, 2008, p.1). Contribution analysis tells the contribution story of a program and helps identify the contribution that specific program activities have made to the measured outcomes. It also provides a level of scientific rigor and credibility of the development of the contribution story (Mayne, 2001, 2012). In addition, it is used as “a means to document progress towards outputs and intermediate and end outcomes” (Kotvojs, 2006, p.1). Contribution analysis has been used as an effective evaluation methodology in the fields of public policy, international development, and public health (e.g., Biggs, Farrell, Lawrence, & Johnson, 2014; Ministry of Foreign Affairs of Denmark, 2014; Riley et

al., 2017). This study utilized contribution analysis in order to extend beyond a mere description of the results and consolidate all the available data and produce a comprehensive contribution analysis narrative. Factors that have contributed to the success of the EML implementation were identified. Contribution analysis was used as a tool to help identify direct and indirect influences that the EML implementation has on the production of the EML outcomes specified in the EML Logic Model (Mayne, 2008, 2012).

Developmental evaluation and contribution analysis are highly versatile program evaluation approaches that are methodologically neutral, flexible and adaptable for complex system-wide change projects. They also have a strong participatory and facilitative component (Kane, Levine, Orians, & Reinelt, 2017; Patton, 2011, 2012a, 2012b; Patton, McKegg, & Wehipeihana, 2016; Riley et al., 2017).

Figure 2. Empowering Modern Learners Project - Logic Model



Methodology, Measurement Tools, and Data Collection

System-level data were collected from the PDSB Leadership Council, school teams, resource teachers, instructional coaches and instructional coordinators in the time span of six months. At the beginning of the evaluation, two capacity building professional learning sessions were conducted with the Leadership Council. These sessions were used to build capacity around the use of the developmental evaluation model in the PDSB EML context, to identify the various EML activities across families of schools, and to develop the evaluation focus for Phase 1 of the EML project. Information from the capacity building sessions was used to design the EML Implementation Measurement Tool (EML-IMT). The EML-IMT consisted of three components:

- (i) *EML Implementation Rubric*. This measure was completed by school teams and Leadership Council. They were instructed to use it as a reflective tool to determine where their schools, superintendencies/departments are at on the EML Journey. The rubric consisted of five steps that describe different levels of EML implementation ranging from awareness to innovation. Below is a description of each implementation step. Examples for each step are provided in Appendix A:
 - *Awareness* - Building awareness and capacity around the EML vision,
 - *Understanding* - Learning, inquiring, discussing, understanding, and planning for the application of the EML vision,
 - *Experimentation* - Initial attempts to make connections between the EML vision and professional practices,
 - *Integration* - Continuous efforts to integrate the EML vision into professional practice and make it part of the school and classroom learning culture,
 - *Innovation* - Going beyond consolidated EML practices and inventing new ways to empower modern learners.
- (ii) *EML Look Fors Rating Scale*. This measure was completed by school teams. The rating scale consisted of seven EML implementation domains: EML Topics Mentioned at Learning Sessions, Familiarity with the EML Components, EML Collaboration, Cognitive EML Processes, EML and Professional Practice, EML System Alignment, and EML Innovative Practices. Each domain had three to five *EML Look Fors* that describe practices/activities/behaviours related to EML implementation. The frequencies of each item was rated by school teams using a five-point Likert type scale, ranging from “almost never” to “almost always.”
- (iii) *EML Activities, Challenges and Supports Survey*. School teams, Leadership Council, instructional coaches, coordinators, and resource teachers reported their EML implementation success stories, challenges, and required supports. The survey consisted of four open-ended questions. One question inquired about EML implementation activities; two questions inquired about EML implementation challenges and supports required to further EML implementation; and one question inquired about EML professional learning experiences/sessions.

Instructions to all participants emphasized that the purpose of the EML-IMT was not to evaluate individual school or teacher practices but to document how the PDSB as a system is implementing the EML vision and what resources and supports are needed to further support the success of the EML project.

Table 1 presents the data collection instruments, sample size, and response rate for each participant group.

Table 1

Participant Groups, Data Collection Instruments, Sample Size, and Response Rate

Participant Group	Data Collection Instrument	Sample Size	Response Rate
Leadership Council	<ul style="list-style-type: none"> • EML Implementation Rubric • EML Activities, Challenges, and Supports Survey 	25	88%
School teams	<ul style="list-style-type: none"> • EML Implementation Rubric • EML Look Fors Rating Scale • EML Activities, Challenges, and Supports Survey 	255	89%
Instructional coaches, instructional coordinators, and resource teachers	<ul style="list-style-type: none"> • EML Activities, Challenges, and Supports Survey 	97	40%

Results

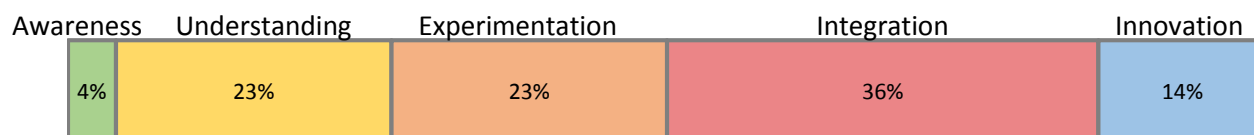
This section presents the results of the Phase 1 evaluation organized by the following three stakeholder groups: the Leadership Council, school teams, and instructional coaches, instructional coordinators and resource teachers.

Leadership Council

(i) EML Implementation Rubric

Fifty percent of the Leadership Council indicated that their superintendencies/departments are either at the awareness, understanding or experimentation step, and 50% placed their superintendencies/departments at the integration or innovation step. The most prevalent implementation step reported was the integration step, with 36% of Leadership Council placing superintendencies/departments at this step, followed by the understanding (23%) and experimentation steps (23%), innovation (14%), and awareness (4%) (see Figure 3).

Figure 3. Distribution of Leadership Council ratings of PDSB schools by EML implementation step



(ii) EML Activities, Challenges and Supports Survey

The open-ended responses of the Leadership Council are summarized in Table 2 and Table 3. Table 2 presents four activities and factors that the Leadership Council felt significantly contributed to the successful implementation of the EML project:

- 1) Collaboration and sharing of best practices,
- 2) Strategic planning and professional learning,
- 3) Intentional use of technology, and
- 4) Learning/working environment.

Schools at the innovation step of implementation were described by the Leadership Council to be intentional about EML beliefs and elements, developing multidisciplinary strategic road maps, creating school cultures based on EML, using technology as a tool for creativity and innovation, and designing physical environments that promote 21st century learning.

Table 3 describes five implementation challenges that Leadership Council reported across all implementation steps:

- 1) Insufficient resources – budget, time, human resources, and support
- 2) Lack of understanding of EML
- 3) Inconsistent levels of implementation

- 4) Learning new technologies and technical skills
- 5) Resistance to change

Four supports were identified to enhance EML implementation at the PDSB irrespective of where superintendencies/departments were on the EML implementation steps:

- 1) Opportunities for EML capacity building and professional learning
- 2) Ongoing support from existing MLRTs and the placement of additional MLRTs
- 3) Development of a strategic multiyear action plan for EML
- 4) Opportunities for schools and departments to network, review, reflect, and improve current EML practices.

Table 2*Leadership Council – EML Successful Implementation Activities*

	Collaboration and Sharing of Best Practices	Strategic Planning and Professional Learning	Technology	Learning/Working Environment
Awareness 4%	Beginning to build capacity	Starting to relate the business/operation side to the EML components	Building capacity	Building capacity
Understanding 23%	Administrators/school teams engaging in conversations with each other and with MLRTs	Teams working on unpacking the EML document	The emphasis is on process automation and digitalization and the adoption and roll out of certain technologies.	These elements are present at every step of the EML Implementation. Examples include flexible work spaces and learning environments, outdoor education, makerspaces, design based thinking, and inquiry based learning.
Experimentation 23%	In addition to collaborating with MLRTs, principal learning teams are using technology and social media to share their work and collaborate. There is a mention of virtual meetings and e-decision making.	Strategic EML plan for every school, dedicated time allocation to EML, comfort with and promotion of the EML agenda. Administrators formed teams/groups that have different EML focuses.	In addition to digitalizing the workflow, teams are comfortable using Google Suite and mobile devices in their work. In addition, there is a recognition that the focus should be on both teach and tech.	
Integration 36%	In addition to establishing school learning teams and using social media and online platforms for collaboration, communication, and consultation, individuals are engaging in collaborative inquiries on EML components and are having intentional focused conversations on how to use EML lens for different aspects of their work. There is a sharing of best practices and challenges. Teams who are at this stage also work collaboratively on developing a deeper and more conceptual understanding of the EML innovative elements.	EML is used as an umbrella for all the work. Teams are focusing on specific EML elements and are strategically planning and implementing EML professional learning. In addition, teams are examining each EML element and are making connections that align all their work to different EML components.	Individuals are going much deeper with the integration of technology and its use in skill development (e.g., collaboration, communication, critical thinking).	
Innovation 14%	Teams who are innovating are intentional about the EML beliefs, values, and elements and how they support overall and specific expectations.	Those who are at the innovative stage of the EML journey are developing multidisciplinary strategic roadmaps and a new departmental vision. The whole culture is EML based.	Technology is used as a learning tool for creativity and innovation.	

Table 3*Leadership Council - EML Implementation Challenges*

	Challenges
Awareness 4%	<ul style="list-style-type: none"> • Incorporating the operation/business side with EML
Understanding 23%	<ul style="list-style-type: none"> • Resistance to new ways of teaching and learning • Limited technological capability • Belief that technology will make things more complicated • Insufficient funding for EML related initiatives • Adapting to new digital system for some departments • Prioritizing EML projects and ensuring adequate supports • Accepting EML as an umbrella concept for equity initiatives
Experimentation 23%	<ul style="list-style-type: none"> • Understanding the links between EML work and other initiatives • Inconsistent implementation levels within and across schools • Disparity of access for students due to inconsistent implementation • Because the nature of work for specific departments is process driven, there are limited opportunities for innovation
Integration 36%	<ul style="list-style-type: none"> • Individuals are at different points on the implementation continuum • Administrators are also co-learning EML concepts with their staff • Not enough time to experiment with EML • Reaching internal staff who use online tools less frequently • Financial challenges in supporting spaces for STEM/STEAM • Limited professional learning options for staff at various level of understanding
Innovation 14%	<ul style="list-style-type: none"> • Keeping the balance between student-initiated and teacher-directed learning • Not enough time to innovate • Not understanding that EML is embedded in all work and not standalone, changing the mindset • Change management and transformational shift

School Teams

(i) EML Implementation Rubric

Forty percent of PDSB school teams rated themselves at the experimentation step of EML implementation, followed by the awareness (23%), understanding (18%), and integration (16%) steps. Three percent of schools indicated that they were at the innovation step of EML implementation.

Figure 4a indicates that elementary school teams reported having almost identical EML implementation levels when compared to the PDSB. The EML implementation journey of secondary schools is similar to the PDSB distribution, except that there is a slightly higher percentage of secondary school teams (22%) at the integration step when compared to the PDSB implementation distribution.

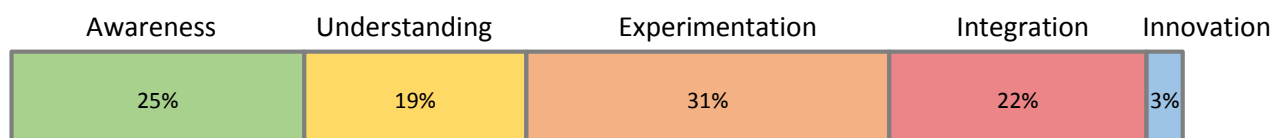
Figure 4. Distribution of the PDSB school team ratings by EML implementation step



Figure 4a. Distribution of elementary school team ratings by EML implementation step

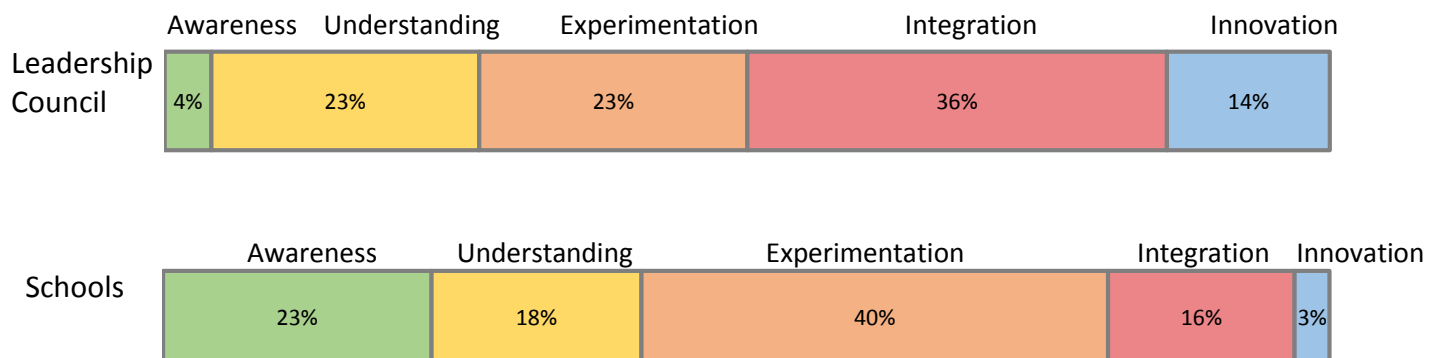


Figure 4b. Distribution of secondary school team ratings by EML implementation step



Alignment between the Leadership Council and School Teams

Given that both the Leadership Council and school teams completed the EML-IMT, it is important to juxtapose their responses. The overall comparison revealed that the Leadership Council members thought that schools were further along on the implementation rubric than what the school teams indicated. As evident from the two bar graphs below, 50% of the senior team indicated that their superintendencies or departments are at the integration or innovation step, whereas only 19% of the school teams placed their schools on these two steps. Also, 27% of the Leadership Council selected the first two steps compared to 41% of the school teams.



When examining the responses of individual superintendents and comparing them to the responses of their families of schools, it is interesting to note that the highest proportion of school responses that matched their respective superintendent's response was 50%, but in the majority of cases the percentage of matched responses was much lower.

(ii) EML Look Fors Rating Scale

Table 4 indicates that EML topics are mentioned "*often or almost always*" at Family of Schools (FOS) meetings (80%), staff meetings (69%), school-facilitated professional learning sessions (67%), online learning (56%), and Frontline Education (formerly MyLearningPlan) (44%).

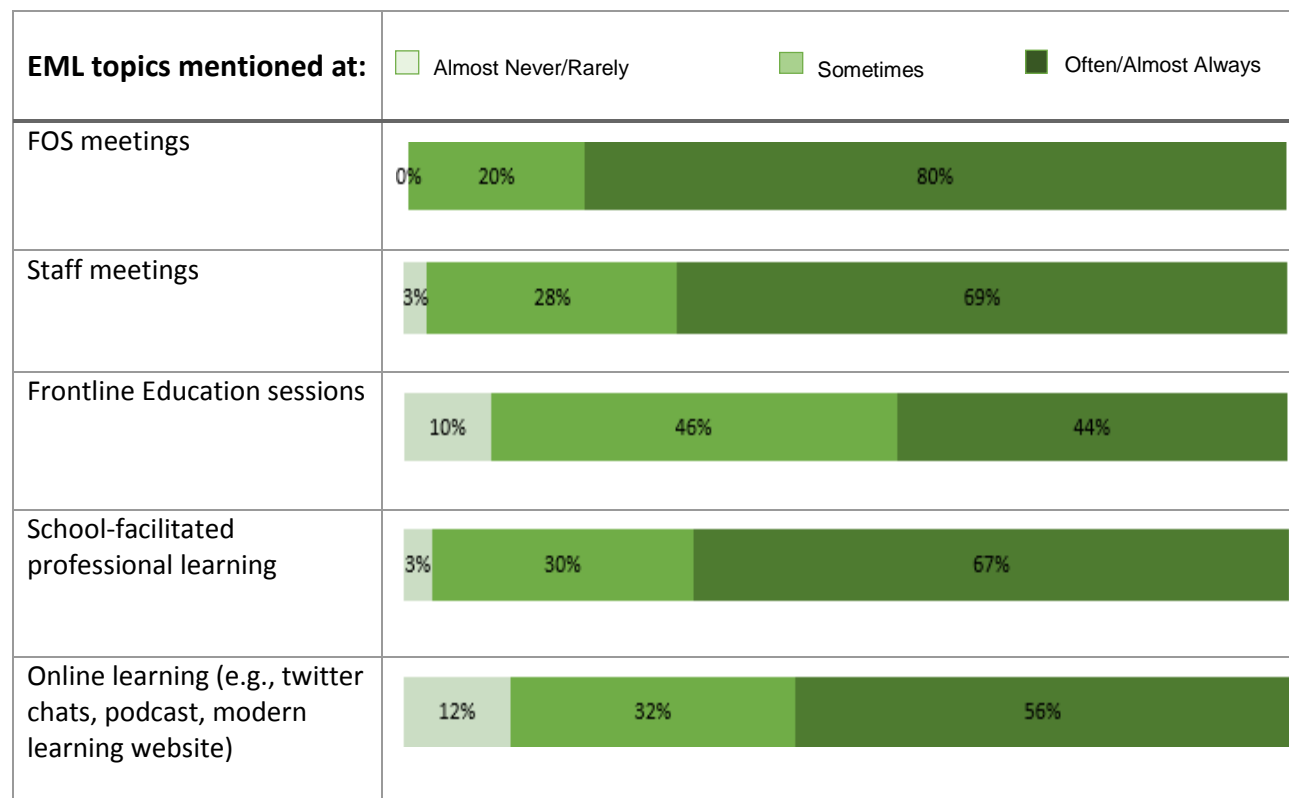
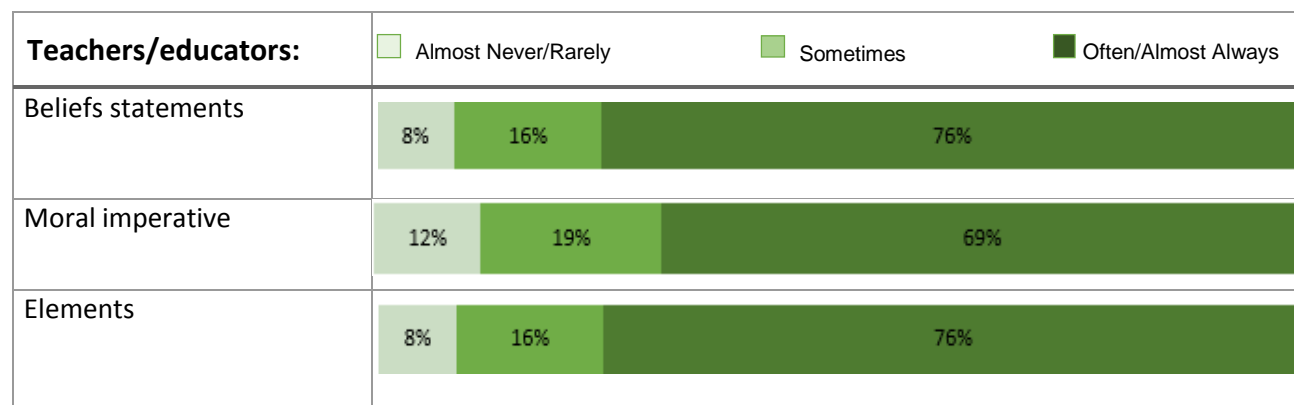
Table 4*Frequency of EML Topic Mentioned at Learning Sessions*

Table 5 reveals that approximately three quarters of PDSB school teams are either “*moderately or very familiar*” with the EML belief statements, moral imperative, and the EML elements.

Table 5*Frequency of Activities that Demonstrate Familiarity with the EML Components*

Approximately a third of school teams “*often or almost always*” ask questions about EML, discuss the EML components with others, and engage in purposeful conversations about EML integration (see Table 6).

Table 6*Frequency of Activities that Demonstrate Teacher/Educator Collaboration*

Teachers/educators:	Almost Never/Rarely	Sometimes	Often/Almost Always
ask questions about EML	21%	50%	29%
discuss the EML components with others	17%	50%	33%
engage in purposeful conversations with others about EML integration	16%	52%	32%

Forty four percent of schools “often or almost always” think about how to incorporate the EML components into their professional practice. Fifty percent of the respondents indicated that they “often or almost always” attempt to deepen their understanding of the need for 21st century teaching and learning, while 42% of school teams “often or almost always” reflect on their professional practice and application of modern pedagogies. Just over a quarter of schools reported that they “often or almost always” engage in additional self-directed learning about the EML components; while 57% of respondents indicated they “sometimes” engage in self-directed EML learning (see Table 7).

Table 7*Frequency of Activities that Demonstrate Engagement in Cognitive EML Processes*

Teachers/educators:	Almost Never/Rarely	Sometimes	Often/Almost Always
think about how to incorporate the EML components and modern pedagogies into their professional practice	10%	46%	44%
deepen their understanding of the need for 21 st century teaching and learning	8%	42%	50%
Reflect on their professional practice and application of modern pedagogies	11%	47%	42%
Engage in additional self-directed learning about the EML components	18%	57%	26%

Table 8 reveals that approximately 50% of the school teams “often or almost always” integrate modern pedagogies into their professional practices, and approximately 40% of the schools teams reported “often/almost always” trying the EML components in their classrooms. About a quarter of school teams indicated that they “often or almost always” make connections between the EML document and their professional practice and reflect on the outcomes of EML integration into their professional practice.

Table 8
Frequency of Activities that Demonstrate EML Integration into Professional Practice

Teachers/educators:	Almost Never/Rarely	Sometimes	Often/Almost Always
Make connections between the EML document and their professional practice	25%	48%	27%
Try the EML components in their professional practice	9%	50%	41%
integrate modern pedagogies into their professional practice	4%	47%	49%
reflect on the outcomes of EML integration into their professional practice	20%	54%	26%

Between 30% and 41% of the school teams reported that they *often or almost always* align the EML components with their professional practice in order to support the four areas of the Plan for Student Success (see Table 9).

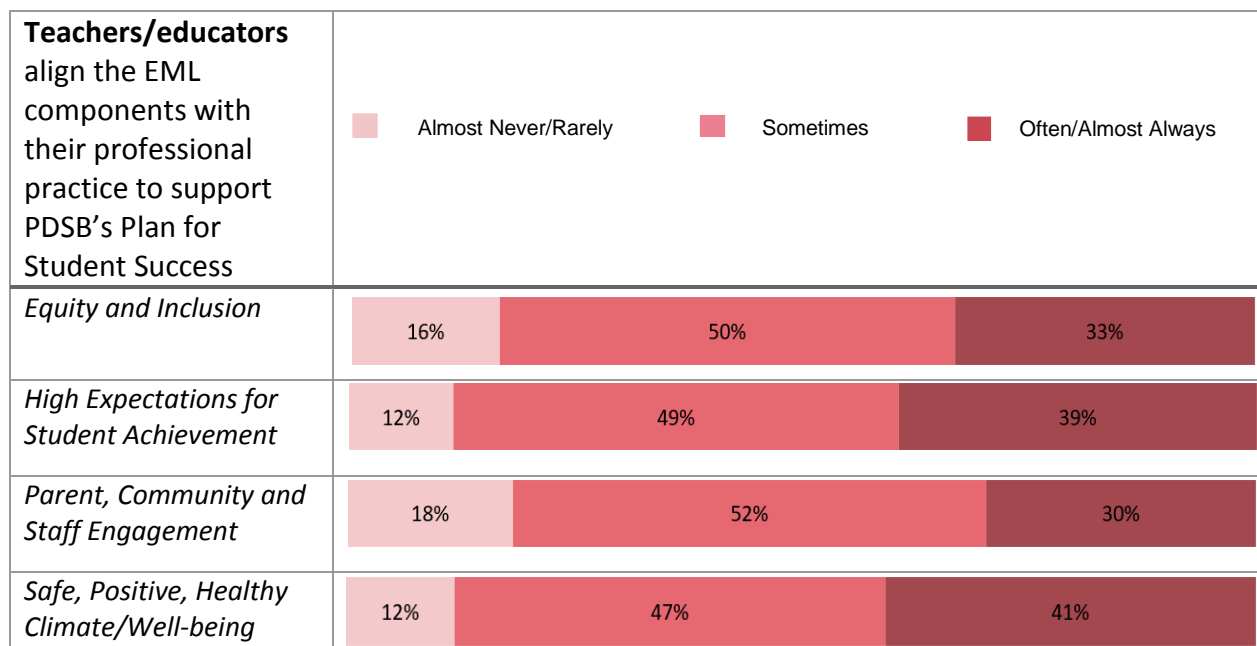
Table 9*Frequency of Activities that Demonstrate EML System Alignment*

Table 10 indicates that approximately 50% of school teams “often or almost always” seek innovative approaches to empower modern learners, 38% “often or almost always” iterate pedagogical approaches to ensure that they are responsive to the needs of modern learners, and 28% “often or almost always” embrace the EML vision as the core of all projects and initiatives.

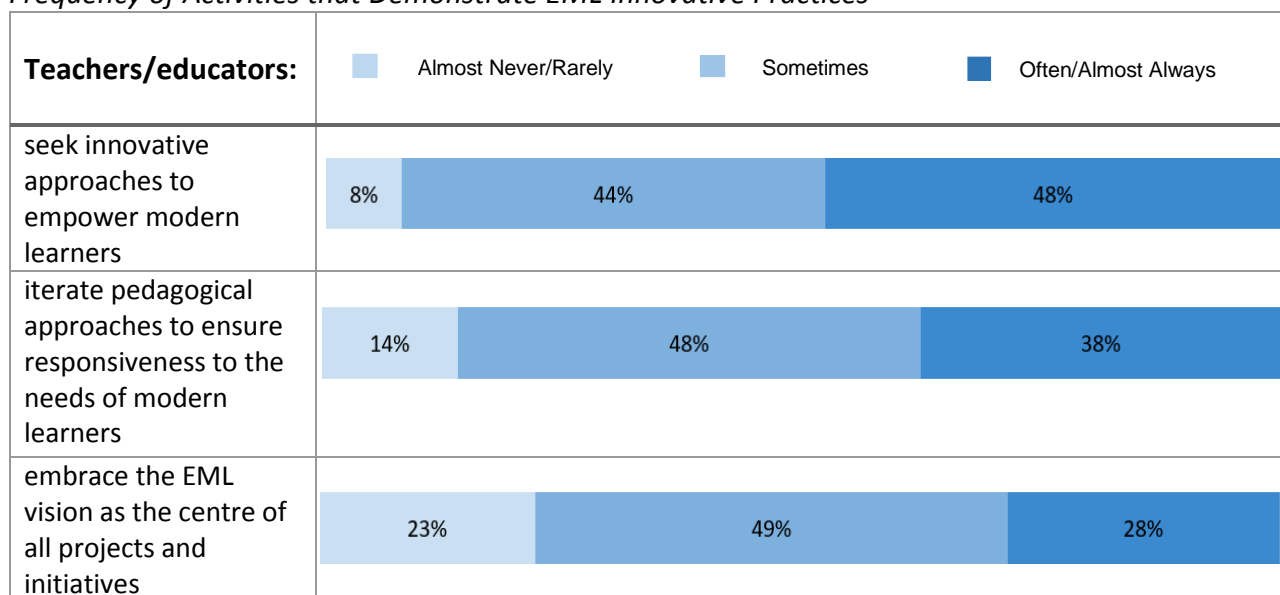
Table 10*Frequency of Activities that Demonstrate EML Innovative Practices*

Table 11 presents the proportion of school teams **across all implementation** steps that selected “*often or almost always*” on each of the 26 items of the EML Look Fors Survey. The Look Fors items that are most frequently implemented at schools across all implementation steps are: mentioning EML at FOS meetings, staff meetings, and school professional learning sessions, being familiar with the EML components and deepening educators’ understanding of the need for 21st century teaching and learning.

Two activities that are least frequently practiced across all implementation steps and that could be a focal point of the future implementation efforts are participation in additional self-directed learning about the EML components and reflecting on the outcomes of EML integration (only 26% of schools reported to “*often or almost always*” do these activities). In addition, asking questions about EML, making connections between the EML document and professional practice, and embracing the EML vision as the centre of all projects and initiatives are activities practiced “*often or almost always*” by less than 30% of all schools.

With respect to the difference between elementary and secondary panels, it is noteworthy that the proportions of elementary school teams across all implementation steps that selected “*often or almost always*” on each of the 26 items very closely resemble those of the PDSB. However, the scores of secondary school teams considerably differ on some of the items. In particular, approximately 20% more elementary schools mention EML topics at FOS and staff meetings.

However, on average 18% more secondary than elementary school teams across all implementation steps “*often or almost always*” integrate modern pedagogies into professional practice, seek innovative approaches to empower modern learners, and iterate pedagogical approaches to ensure responsiveness to the needs of modern learner.

In addition, secondary school teams exhibit greater familiarity with the EML components compared to elementary school teams. The percentage of secondary schools that are “*moderately or very familiar*” with the three EML components is between 14% and 18% higher than that of elementary schools teams.

Table 11

Percentage of School Teams that Selected “often/almost always” on each EML Look Fors Survey Item (Across all Implementation Steps)

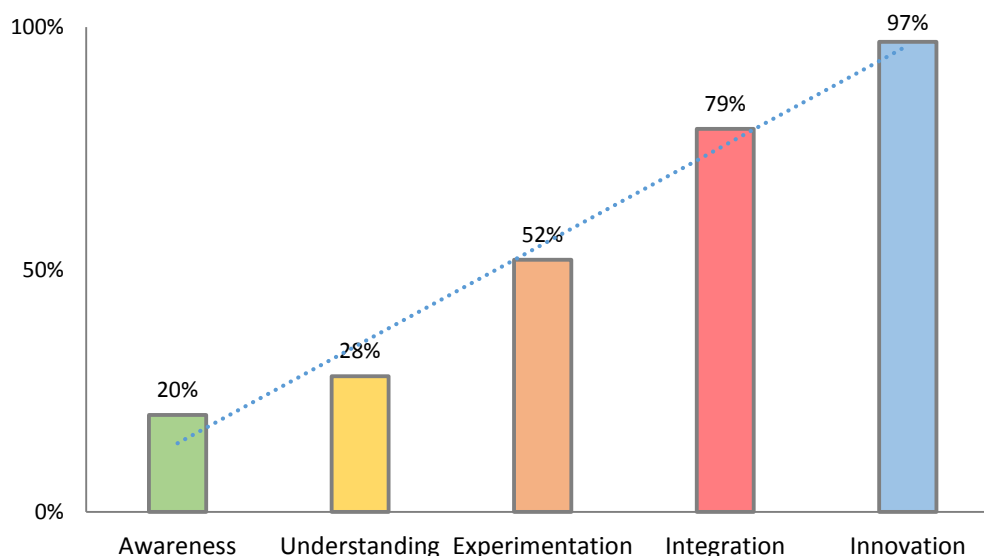
EML Topics Mentioned	Percentage of school teams that selected often/almost always
1. At FOS meetings	80%
2. At Staff meetings	69%
3. At Frontline/MyLearningPlan sessions	44%
4. At school-facilitated professional learning	67%
5. At Online learning	56%
Familiarity with the EML Components	
6. Beliefs statements	76%
7. Moral imperative	69%
8. Elements	76%
EML Collaboration	
9. Ask questions about EML	29%
10. Discuss the EML components with others	33%
18. Engage in purposeful conversations with others about EML integration	32%
Cognitive EML Processes	
11. Think about how to incorporate the EML components and modern pedagogies into professional practice	44%
15. Reflect on professional practice and application of modern pedagogies	42%
12. Deepen understanding of the need for 21st century teaching and learning	50%
16. Engage in additional self-directed learning about the EML components	26%
EML and Professional Practice	
13. Make connections between the EML document and professional practice	27%
14. Try the EML components in professional practice	41%
99. Integrate modern pedagogies into professional practice	49%
23. Reflect on the outcomes of EML integration into professional practice	26%
EML System Alignment	
19. Align the EML components with professional practice to support PDSB’s Plan for Student Success – <i>Equity and Inclusion</i>	33%
20. Align the EML components with professional practice to support PDSB’s Plan for Student Success- <i>High Expectations for Student Achievement</i>	39%
21. Align the EML components with professional practice to support PDSB’s Plan for Student Success- <i>Parent, Community and Staff Engagement</i>	30%
22. Align the EML components with professional practice to support PDSB’s Plan for Student Success- <i>Safe, Positive, Healthy Climate/Well-being</i>	41%
EML Innovative Practices	
24. Seek innovative approaches to empower modern learners	49%
25. Iterate pedagogical approaches to ensure responsiveness to the needs of modern learners	38%
26. Embrace the EML vision as the centre of all projects and initiatives	28%

Comparison among School Teams at Different Steps of the EML Implementation with High Frequency Scores (“Often or Almost Always”)

When it comes to disaggregating the data and analyzing the differences in responses among school teams who are at different steps of the EML implementation (e.g., awareness versus innovation), it was decided to extract the proportion of schools who selected “*often or almost always*” for each question and to disaggregate the data by the five different implementation steps.

Figure 5 present the average percentage of schools **at each implementation step** that selected “*often or almost always*” across all 26 items on the EML Look Fors Survey. Inspection of Figure 5 indicates that there is a linear relationship between the EML implementation steps and the frequency of use of EML professional learning activities, professional reflective practices, teacher interpretation of EML concepts in their professional practice, alignment with PDSB system practices, and embracing EML vision and beliefs as the core element of all teaching practices, projects, and initiatives. The higher the implementation step, the higher the frequency of the specified EML activities. For example, on average, only 20% of the school teams at the awareness step are “*always or almost always*” engaging in the 26 EML activities. However, on average, 97% of school teams who are at the innovation step are “*always or almost always*” engaging in the these activities. These results are in line with the expectation that school teams that are at the beginning steps of EML implementation would not be engaged in the specified EML activities and behaviours as frequently as those that are at the higher end of the implementation journey.

Figure 5. Percentage of school teams that selected “often or almost always” on the EML Look Fors Rating Scale items (average ratings by EML implementation step)



We also statistically examined the association between the EML Look Fors Items and the implementation steps by conducting a Kendall's tau-b nonparametric correlation test. The results revealed that all correlations were positive, implying that a higher frequency of participation in EML activities is generally associated with a higher implementation step. Although all correlations were significant, they ranged in magnitude from .28 to .65. The two highest correlations (.65 and .63) indicated that the more frequently school teams try the EML components in their professional practice and embrace the EML vision at the centre of all projects and initiative, the more likely they are to be at a higher implementation step. In addition, the following activities also had moderately high correlations with the implementation steps: asking questions about EML, discussing the EML components with others, thinking about how to incorporate the EML components and modern pedagogies into professional practice, reflecting on the outcomes of EML integration into professional practice, seeking innovative approaches to empower modern learners, and iterating pedagogical approaches to ensure responsiveness to the needs of modern learners. This implies that school teams that engage in these activities more frequently tend to be on a higher implementation step.

Based on a gap analysis of the proportion of schools at each step that “*often or almost always*” engage in the 26 EML Look Fors activities, Table 12 identifies EML activities that would be helpful in decreasing the implementation gap between each two consecutive steps.

Table 12
EML Look Fors to Close EML Implementation Gaps

Moving From	EML Look Fors
Awareness to Understanding	<ul style="list-style-type: none"> • Increase familiarity with belief statements and moral imperative • Deepen understanding of the need for 21st century teaching and learning
Understanding to Experimentation	<ul style="list-style-type: none"> • Try the EML components in professional practice • Integrate modern pedagogies into professional practice • Seek innovative approaches to empower modern learners
Experimentation to Integration	<ul style="list-style-type: none"> • Try the EML components in professional practice • Align the EML components with professional practice to support PDSB's Plan for Student Success- <i>Parent, Community and Staff Engagement</i> • Reflect on the outcomes of EML integration into professional practice
Integration to Innovation	<ul style="list-style-type: none"> • Ask questions about EML and discuss EML with others • Align the EML components with professional practice to support PDSB's Plan for Student Success – <i>Equity and Inclusion</i>

(iii) EML Implementation Activities, Challenges, Supports Survey

Activities that Lead to Successful EML Implementation

The following sections describe what EML implementation activities look like in schools that are at the five different implementation steps.

Awareness Step (23% of schools)

School teams that are at the awareness step are using the EML document at staff meetings as part of an ongoing professional learning tool. Professional learning in these schools is often focused on the specific EML elements such as mindfulness and growth mindset. Some schools have teacher leaders who provide support to their colleagues to help them gain EML skills (e.g., PD day presentations by School Success Teams). Teaching staff are exploring innovative and practical solutions in teaching, assessment, EML, and Math. They are engaged in inquiry for building their own capacity. There is an effort to align EML with the School Success Plan and school climate initiatives. In addition, some schools have curated a list of EML resources, and others are exploring resources that could support the implementation of EML elements (e.g., Prime, From Patterns to Algebra, Math Expressions, Marian Small).

There is evidence of collaboration and sharing of best practices. Schools have EML teams whose purpose is to move the vision forward. Teachers are taking a more integrated approach to curriculum expectations evidenced by co-planning, co-teaching, and sharing of best practices in a carousel. Some schools have a designated teacher who helps other colleagues integrate EML into rich cross-curricular activities. School teams are reporting that more teachers are willing to deprivatize their practices and collaborate with their colleagues.

Teachers are using EML terminology in the classroom and promoting a growth mindset and a supportive learning culture that allows students to take risks, explore possibilities, make mistakes, and experience success. Schools are creating dynamic and inclusive learning spaces with an intention to support all types of learners. Examples include Makerspaces, EML based outdoor education, labs for teaching 21st century competencies, and transformed Learning Commons spaces that include interactive white boards and Chrome books. Some schools use self-regulation principles to create safe, responsive, and flexible learning environments. Teachers are using student-centred practices such as hands-on learning, real-world connections, and student-driven coding. Students are involved in inquiry-based learning that supports the philosophy of the EML document.

Staff are modeling technology use and are exploring different strategies to engage students. (e.g., iPads, computer lab, GreenScreen technology, Dash & Dot, OSMOS kits). Some schools are using technology seamlessly in classes and throughout the building, while others are just beginning to purchase new technology.

Educators are focused on creating relevant and meaningful final evaluations and are flexible and more experimental with different modes of assessment. Ways of capturing learning have widened with increased access to technology and hands-on learning materials. Teachers are moving away from paper and pencil assessments.

Understanding Step (18% of schools)

Staff from schools at the understanding step are collectively unpacking and examining the EML document, sharing resources, co-teaching, and having discussions about EML integration (e.g., connecting EML to school numeracy goals). Some schools are working with instructional coaches to integrate EML and student voice into school success planning. Teachers are collaborating to plan and teach in meaningful ways to help students become engaged global citizens (e.g., reflecting on the history of Indigenous Peoples in Canada). EML committees are also being formed. There are release days specifically designated to EML professional learning.

Teachers are implementing transformational practices by incorporating EML into lesson planning and assessment/evaluation. The focus is on developing a growth mindset and giving students an active role in their learning and helping all of them achieve personal excellence. Some schools have community circles with students to share their knowledge and opinions so that teachers are not perceived as the exclusive knowledge bearers. Mindfulness and student well-being are also focal points in some schools. One school team mentioned that the move from a teaching culture to a learning culture has been slow. However, there are exemplary pockets of innovation.

Schools that are at the understanding step are changing their learning environments by establishing open learning and Makerspaces in the Library Learning Commons, creating classroom environments that focus on student needs, and promoting outdoor education. Educators are empowering learners through inquiry play-based interest learning. They encourage collaborative learning, use action-oriented approaches, open learning groups, and backward design with the lens of 21st century skills development.

Technology is used in more innovative ways and is becoming accessible to a larger number of students. Examples of technology used include Chromebooks, Arduino, My Robot's, Genius Hour, Coding Quest, Google Suite, music technology programs, STEAM Olympics. Some teachers are using modern Web 2.0 tools in classes on a regular basis such as dash robots, green screen, spark's tables, etc.

In addition to incorporating EML into assessments and final evaluations, school teams at the understanding step place a big emphasis on feedback-based learning and allow students to assess their performance skills and set goals for their improvement.

Experimentation Step (40% of schools)

Schools teams that are at the experimentation step have focused conversations around informative assessment and the learning environment and are integrating 21st century competencies and models of learning into student success planning. Professional learning sessions and learning maps embed new pedagogies that are culturally responsive. Superintendent steering committees use elements and design thinking to plan and deliver their monthly meetings. Principals are beginning to translate that into their meetings and professional learning with educators. For example, one school team has engaged in a gap analysis of instructional, operational, and climate initiatives against the six EML elements.

At some schools, EML is perceived as the overarching umbrella that guides all their work, and staff understand the “spirit” of EML. Some schools collectively understand that EML is very large in scope and that its ultimate goal is preparing young learners for high school, careers, and the work force. Most superintendents’ presentations are done through the EML lens. The link between numeracy goals and 21st century competencies is reviewed on a regular basis, and schools are also connecting EML to inquiry learning and *We Rise Together*/equity work.

Teachers work collaboratively with colleagues to design innovative approaches that reflect the beliefs outlined in EML and honour the voice of the modern learner. Teachers also participate in learning networks with colleagues from other schools and learn from and with each other in order to sharpen their instructional practices. Some are engaged in collaborative inquiries with a focus on one EML component at a time. For instance, staff work with modern learning resource teachers, student achievement officer, and instructional coaches to develop “integrated spiraled curriculum” that reflects modern learning approaches and builds skills in collaboration, teamwork, and problem solving. Different staff are becoming experts on different platforms and then sharing their experiences and learnings with other staff members. Some schools have *Tech Buddies* learning and leadership opportunities or incorporate EML strategies into team teaching. Schools also have EML school success teams that drive 21st century teaching and learning.

In addition to deprivatizing their practices and fostering an inclusive learning culture, teachers are ensuring that student voice is represented and is at the forefront of teaching. Students are empowered by technology to take risks and ownership for their learning - students are engaged in their learning at home and at school.

Schools are restructuring learning environments to help create alternative collaborative spaces including, lunch clubs, flipped classroom, open-ended Math and Literacy inquiry centres, hallways for physical activity and virtual environments as well as alternative learning spaces that promote mental health and wellness. Teachers work on inquiry-based projects with their students and work on changing instruction based on students’ needs. Some teachers are re-writing curriculum into student friendly language and asking students to create the learning goals and tasks. Some of the innovative models of learning mentioned by school teams involve: DICE program (Discover, Innovate, Create, Empower), which is a locally developed program to support students in taking greater ownership of learning and goes beyond the typical structures and formats of learning, building cross-curricular curriculum maps, taking equity into account, final assessments that are focused on inquiry based learning, utilizing universal design for learning, and creating learning spaces to support mental health and well-being.

Schools at the experimentation step utilize technology to empower the learner and to replace traditional teacher-led activities. Students are using technology for specific purposes and understand when it is helpful/purposeful (e.g., using Skype in language classes to connect with book authors, robotics and coding activities), and when they do not need it. Students are also using technology to demonstrate their learning process (e.g., Seesaw, ClassDojo). Some schools have clubs for students such as Coding Buddies. Technology is also used for communication with students and parents.

Teachers are creating final assessments that are focused on inquiry based learning and reflect the EML beliefs and student goals. Assessment is also being used as a means of learning. Teachers are using new tools to support innovative assessment and instruction (e.g., Piloting Sesame and levels-based assessment rather than focusing on marks).

Integration Step (16% of schools)

Schools that are at the integration step base their philosophy on the EML components or link EML with their theory of action for numeracy or connect all staff discussions to EML. For example, one school collaboratively personalized the six innovative elements to reflect that the school's goals and mission. Another school provides all students with an introductory EML package that focuses on applying problem solving skills and interconnecting mathematics with other curriculum areas and real world problems through open-ended questions.

Schools at the integration step that have 21st Century Committees include representation from each department. This Committee creates a sustainable technology plan, monitors it, and tweaks it each year in response to the needs of school staff and students. In-school professional learning is characterized by educators' openness to learn new EML strategies and to delve deeper into more explicit understanding of each EML component. Some schools even have a 21st century teaching and learning cross-curricular department head. Some schools are integrating EML into Core French and Maker Programs.

They are creating dynamic learning environments, which are flexible, responsive and adaptive spaces for innovation and design. Schools are also using new spaces to broaden their school staff's schema around what learning spaces may look like, including some spaces in which staff can experiment with their classes.

Students are engaging in inquiry and are using new and unique ways of sharing their learning. They are becoming more reflective, divergent thinkers and collaborative learners. There are a number of different clubs that encourage students to explore their passions and learn outside of the classrooms, providing them with unique learning opportunities both in the school and out in the community (e.g., student-led conferences, student initiated projects and clubs, inquiry based community projects). Schools are also investing in student mental health by implementing protocols for three components of a mentally healthy classroom.

In addition, almost all school teams reported increased access to technology for learners (e.g., clubs with drones, robotics, coding, e-textiles and sticker circuitry, STAC room design challenges, Sphero, STEAM rooms), some schools at the integration step have designated teachers who help others with the integration of technology into the classroom. In addition to providing students with multiple opportunities to demonstrate their knowledge through different forms of assessment, including observations and descriptive feedback, teachers are experimenting with their grading practices.

Innovation Step (3%)

In schools that are at the innovation step, EML is reflected in the mission, vision, and goals of the school and serves as a central guiding principle for staff. Some schools have developed a school specific EML vision. One school has an innovation head whose role is to bring EML to the forefront for both staff and students. One school provides an ongoing learning institute for staff delivered by both staff and students.

Schools at the innovation step have teachers supporting teachers on the EML journey. There is an emphasis on distributing the leadership and on growing collective knowledge. There is also a culture of risk taking in which educators are comfortable with experimentation and as a result are always revisiting and reflecting on the EML work. Teachers are taking a more flexible approach to teaching and learning due to the existence of various hardware supports (e.g., various Robotics kits, 3D printing, Raspberry Pi) coupled with new software and online platforms.

Schools at the innovation step are building a state of the art innovative Makerspaces, and some are moving to Makerspace at each grade level. Schools have modern technology that is used by students for coding, doing robotics, and building connections in the classroom. Some schools have a STEM program with art media, whereas others are planning to build a communication technology exploratory area with a focus on podcasts, a music recording studio, a media works student lead group, and a 3D virtual sandbox.

Themes Across all Implementation Steps

Four themes were common across school teams at all five implementation steps but were not exhaustive enough to be disaggregated by different steps. They are summarized in the following section.

Equity, Inclusion, and Social Justice

At each implementation step, school teams indicated that EML is intertwined with equity, inclusion, and social justice initiatives. Some examples that were mentioned with the reference to this are: We Rise Together Project, Indigenous Education Action Plan, equitable distribution of technology, activities aimed at students who are at-risk, responsiveness to student needs and integration of equity and inclusion in professional practice.

Student-Centered Approach

EML activities across all five steps are implemented with students in mind. School teams noted the importance of giving students voice and choice in their learning, employing student-centered practices, meeting student needs, having student representation, providing student-led programs, ensuring student engagement and student collaboration, empowering students, and allowing students to be teachers.

Student Well-Being and Mental Health

Well-being and mental health are perceived as an integral part of the EML vision across all steps. School teams promote activities that contribute to the holistic well-being of all students: self-regulation, mindfulness, yoga, and outdoor activities.

Family Engagement

Schools at all implementation steps are increasing family and community involvement by improving communication and organizing workshops for parents/guardians on topics relevant to modern learning (e.g., technology, Growth Mindset, Robotics Rodeo, learning strategies). These EML related activities are provided in the day and evening.

Reflective Practice

Reflective practice is a common strategy across all steps. Schools reported using a guided process of reflection with regard to their practices, assessment, and outcomes.

21st Century Competencies

Schools are still in the early stages of explicitly teaching the six 21st century competencies identified in the EML document. These competencies are embedded into the EML teaching and learning but are usually not directly specified in lesson plans.

EML Implementation Challenges

This section summarizes the EML implementation challenges reported by school teams. The following EML implementation challenges are consistent across all implementations steps: a lack of resources to fully implement EML in schools (i.e., time, budget, planning time) and resistance to changes by staff. Four additional implementation challenges that were identified by school teams are: lack of understanding of the EML components, EML perceived as a competing demand, discomfort with technology, and inconsistent levels of EML implementation. Table 13 presents the identified challenges.

Table 13
EML Implementation Challenges

Challenge	Description
Insufficient Resources	<ul style="list-style-type: none"> • Lack of time to learn, experiment, innovate with the EML components and go deeper with EML implementation • Limited collaborative planning time to reach and empower all staff (especially in large schools) to assimilate EML into professional practice • Lack of resources to redesign the learning environment to facilitate EML implementation
Resistance to Change	<ul style="list-style-type: none"> • Perception that EML is just another initiative (change is not necessary) and teacher skepticism (initiatives comes and go) • Lack of interest in the EML innovation (resistance in adopting the EML) and changing from a traditional learning model to an EML learning model (especially how to use it and explain it to parents)
Understanding of the EML Components	<ul style="list-style-type: none"> • Lack of teacher/school team expertise to teach modern learners and understand how to integrate the EML components into their professional practice including regular classroom, vocational settings, and students with special education needs
Competing Instructional Demands	<ul style="list-style-type: none"> • Perception of Engage Math, Transformational Practices 2.0, Equity work, Self-Regulation as separate initiatives and not integrated into EML • Perception that EML is does not apply to or embrace regular teaching practices
Instructional Technology	<ul style="list-style-type: none"> • Teacher comfort level with use of technology in their classroom • Student proficiency of technology use often higher than teachers • Teacher knowledge of how to adapt technologies to instructional practices and curriculum expectations and how to keep up with fast changing technologies
Inconsistent Levels of Implementation	<ul style="list-style-type: none"> • All stakeholders not on the same page and a lack of accountability for EML implementation • Lack of implementation consistency across the PDSB and across schools (across teachers, field offices, divisions, grade level, and subject areas) • Providing professional learning given the spectrum of learners across the PDSB and within schools

Supports Needed to Further the EML Implementation

This section summarizes the supports identified by school teams as necessary to advance EML implementation. The reported supports were aggregated across all five levels of implementation. It is also important to note that school teams who placed themselves at the integration and innovation steps did not specify a need for as many support categories as the schools at the awareness, understanding, and experimentation steps.

1. EML Integration

School teams are urging for a better integration of the EML vision with the goals and projects outlined in the PDSB Plan for Student Success. A number of schools are asking for a more explicit alignment of the EML vision with the four PDSB goals and other initiatives such as Engage Math, Zones of Regulation, and Descriptive Feedback. The Board is asked to show how these all fit together under the EML umbrella rather than compete with each other. According to school teams, this would allow for a more meaningful and effective EML implementation and curriculum mapping and would reduce any existing redundancies and confusion. School teams are advocating for the clear linkages and integrated structured supports at all of these levels: Students → Curriculum → School Goals → Board Goals → Ministry Goals

2. Additional Resources Release Time

School teams indicated that additional release time would be needed for school EML committees to explore the document, to work with ideas and make iterations, to plan rich EML programs, to collaborate and share their resources, and to engage in additional professional learning opportunities.

Funding – Budget support to fund collaborative inquires, physical spaces, and technology was also mentioned.

Professional Learning – A number of school teams expressed a need to continue with professional learning related to EML, stipulating that some teachers especially need technology-based learning. Suggestions were made to have more professional learning at school levels and during school hours.

Ongoing support from MLRTs and ICs – There was an overwhelming consensus among school teams that the support received from MLRTs and ICs is very valuable and needs to continue. There is a request for additional MLRTs and ICs who would be able to provide continuous targeted support to schools in the area of EML planning, goal setting, and technology use in order to help schools grow and move forward on the EML implementation journey.

Long Term Support Implementation Plan – Some school teams feel that the EML implementation process needs to be formalized with the identification of annual and long-term goals for the Board and individual schools.

Technology – There are two categories of need in terms of technology support. One of them is equity of access to technology for children who do not have devices at home. School teams also mentioned a need for technology at schools that is easily accessible to all students all the time and assigned to individual classrooms. The second category is a greater access to technology experts (trainers) who would support educators and schools in their use of technology and help them to keep up with EML. Schools also want recommendations for their software and hardware purchases.

EML Resource Packages – Both administrators and teachers would like to have a centralized EML resource or package with concrete examples of how to embed EML in teaching, how to fully integrate it into curriculum across subject areas, and examples of how EML classrooms

look and sound like. They would also like to have a central repository of student work and teacher activities/lessons related to the EML components and organized by grade level and generic curriculum topics.

3. Opportunities for Collaboration and Sharing of Best Practices

School teams put a great emphasis on the need to network and share best practices and resources. They not only seek opportunities for collaboration and sharing within their schools but across families of schools and the entire board. Administrators and teachers are eager to share their EML success stories but to also learn about best practices from others and establish collaborative networks that would aid them in advancing the EML implementation. There are also suggestions to create colleague mentorship networks in schools and to continue to co-learn and co-teach.

4. Union Support

Some school teams mentioned the importance of the teacher unions and their support in providing clear directive and expectations and in conducting professional learning that is aligned with the EML vision.

Instructional Coaches, Instructional Coordinators, and Resource Teachers

(i) EML Implementation Activities

This section presents EML implementation activities most frequently reported by instructional coaches, instructional coordinators, and resource teachers.

Collaboration and Sharing of Best Practices

At a number of locations, school staff have an EML team and are collaboratively working through the EML document with the entire school. They are also using the EML elements to structure staff meeting and to identify their current school-wide EML practices.

Learning Culture

Teachers are purposefully engaging in activities that facilitate a shift in mindset from ‘keepers of knowledge’ to ‘a community of knowledge-builders’ and are truly embracing what students bring to the learning community. In elementary schools, teachers are engaging in activities that create a welcoming climate. Teachers foster regular discussions of growth mindset and are very comfortable using activities that support student-centered learning. There are schools that center most of their work around 21st century skills.

Learning Environment

Teachers are thinking more critically, reflecting, and changing their learning environment, both the physical space and the structure or flow of their lessons. Teachers are redesigning learning spaces, making alternative seating arrangements and welcoming technology into their learning environment.

Models of Learning

Educators are taking risks with regards to models of learning, reflecting and asking questions about assessment and rethinking the effective use of technology as an everyday tool to support teaching and learning. Teachers are utilizing inquiry-based learning, maker education, open ended questions and showing learning in a variety of ways. Risk taking is also being nurtured in the classroom.

Technology

Access to technology is no longer a major obstacle to implementing 21st century learning. Teachers are using the available PDSB technology in their classrooms. Teachers are using and becoming more comfortable with the Access to Technology element, especially with the use of the Google suite. Most teachers also use and are comfortable with the language of learning goals and success criteria. Teachers are at the beginning stages of using these EML activities from an equity and diversity standpoint or as a collaborative tool to help students move to an EML learning framework.

Informative Assessment

Teachers are adopting differentiated assessment tools/resources (grounded in the 4 C’s) and ongoing feedback assessment tools to support student success.

(ii) EML Implementation Challenges

Teachers

Lack of Resources

Instructional coaches, coordinators, and resource teachers also indicated a lack of resources, mostly funds and time, as one of the key challenges with regard to the EML implementation. For example, they mentioned a lack of time to go deep with the philosophy underlining the EML document, to explore use and implement resources, to develop new ideas and materials, to help with programming, to collaborate and plan, and to engage in professional learning

Lack of Understanding of EML

Some educators are struggling with fully understanding the EML components and are having difficulty linking the EML vision to the curriculum and their day to day classroom experience. Teachers often implement individual EML component in isolation without understanding how they connect with each other or with school and system initiatives. Many teachers equate the EML vision with technology and exclude the pedagogical shifts that EML encompasses. For example, many think they cannot implement EML because of the lack of technology in their classrooms. They use technology the same way that they would use a textbook. Because of their pre-existing commitments and the large number of the EML components and new EML language, some teachers struggle with incorporating the EML vision into their pedagogy and instructional practice.

There are also teachers who embrace the EML mindset and are implementing the components but do not realize that they are doing it because of the highly technical and specific language used in the document.

Inconsistent Levels of Implementation

Implementation levels vary widely across schools and among teachers. Some schools have only began to introduced EML, whereas others have implemented it school-wide. and have individual teachers working on it. Most teachers know about the EML documents and are focusing their implementation on at least one or two EML elements in their school or classroom. However, there are still teachers who have never seen the document and who do not understand how it might inform their teaching. Teachers are also trying to learn how to integrate EML with the curriculum, a few have integrated it and are using it as a vision, and a few are working on isolated projects.

There is also a difference between EML implementation in primary and secondary divisions. Primary schools are attempting to incorporate a variety of the EML components into their practices, whereas secondary schools are more focused on technology and informative assessment and may be more concerned with how the EML vision aligns with postsecondary education practice and expectations.

Administrators

Lack of Resources

Time was reported as a major challenge to EML implementation. It was particularly challenging to find time to delve into the EML document, to learn with their staff, and to experiment with technology. An additional challenge for administrators was to decide where to direct limited professional learning resources, given the existence of multiple initiatives in their schools. Even when resources are available, there is not sufficient time to address each of the six EML elements.

Lack of Understanding of EML

Administrators who lack an in-depth understanding of the EML vision and not adopting a student-driven inquiry based models of learning, was seen as a challenge. Administrators may comprehend *why* EML is important, but the *how* part for many is still unclear, especially if it was not a pedagogy they embodied as teachers and/or leaders. Some administrators are leading the EML project without having a good understanding of its components and are consequently not able to adequately support staff and provide answers to EML questions as they arise. As a result, their implementation strategies sometimes contradict messages sent by the Board, instructional coordinators and modern learning resource teachers.

EML Integration

All respondents indicated that more effort needs to be directed toward showcasing how EML is an umbrella that encompasses all other PDSB initiatives (e.g., Engage Math, Equity, We Rise Together) and how they all work together as opposed to being implemented as separate entities. Teachers also need opportunities to make explicit connections between their work and the EML elements by having examples of what this implementation looks like in different grades, divisions, panels, and subject areas. Having a long-term EML implementation plan based on school success plans would significantly improve the integration of EML into instructional practices.

The EML vision is not always seen through the lens of Equity, Engage Math, and Early Years work by all administrators. It is often perceived as a separate entity. Staff meetings often have a separate slot for each of the three E's (Equity, EML, Engage Math) with little integration. Some administrators also have limited technology skills and familiarity with EML tools to fully implement EML in their schools.

Students

Instructional coaches, coordinators, and resource indicated that students need time to acquaint themselves with the EML vision, to understand what the elements look like in their classroom, and to shift from valuing “marks driven” education. They need time to become accustomed to taking more responsibility for their own learning and to start engaging in inquiry-based models of learning. Students also need to learn how to use technology for educational purposes and to think about modern learning beyond technology.

Part of the EML implementation challenge for students is not having access to teachers who promote and explain the EML vision to them. Students need to see how teachers are shifting their practices and giving students an opportunity to be active participants in their own learning. Additionally, it was reported that challenges also arise from parents/guardians who may not fully understand the EML vision and who are focused on traditional learning styles and academic achievement.

(iii) Supports Needed to Further the EML Implementation

Instructional coaches, coordinators, and resource teachers indicated that resources in the form of time, funds, professional learning, and human resources are needed to advance EML implementation. They suggested an allocation of more time and resources for collaboration and networking among teachers as well as time to go deeper into the EML document with guided supports from MLRTs. They also suggested more release time to allow teachers to explore and experiment with EML. In terms of continuous professional learning, there were suggestions for more individualized supports based on specific schools' and teachers' needs and implementation guidance for each EML element for both administrators and teachers. There is also a need for more resources and activities for administrators on how to share, promote, and model the EML vision with their staff in a meaningful and interesting way and for encouraging administrators to utilize MLRTs and ICs when planning and delivering EML professional learning. There were suggestions for providing resources and lessons with curriculum links, videos, and mentoring for teachers on how to make connections between the EML vision and their practices. It was also recommended to focus on one element at a time and use the guidance of expert teachers on how to implement it. Reliance on self-directed EML learning should be minimized. EML implementation will require a shift from product based teaching to process based teaching and the addition of inquiry based tasks and teacher support throughout the process.

Privacy policy legislation is creating new challenges when using EML online learning assessment tools. A review of privacy policy legislation and its impact on EML practice and implementation was suggested by all respondents.

Contribution Analysis

Contribution analysis (CA) is a form of theory-based program evaluation (Mayne, 2008). It requires development of a program logic model (see Figure 2) and a nested theory of change for PDSB educators (see Figure 6). CA identifies and assesses the contribution that the EML activities have made to the production of the project outcomes and their underlying assumptions (Riley et al., 2017). CA recognizes that the implementation of EML activities is a function of multiple actions, contexts, and contributions from multiple players (Riley et al., 2017).

The nested theory of change for educators presented in Figure 6 utilizes the theory of change model proposed by Mayne (2015). The first component of the nested model specifies program or intervention activities and outputs, which in this case refer to implementation activities undertaken by all PDSB stakeholders and the outputs produced by those activities. The next component of the model identifies the audience intended to receive the EML project activities and outputs. The target audience here is educators (administrators, teachers and teaching assistants). The third component specifies building capacity changes related to educators' change of knowledge, abilities, skills, and aspirations. The final two components of the nested theory of change

refer to short and long-term behaviour changes. Specifically, the model postulates the adoption of new instructional practices by educators and their sustainability over time (increased student academic achievement, engagement, transformed learning environment). The "causal link assumptions" specified in the nested theory of change for educators are the necessary underlying assumptions that have to be met in order for the EML project outcomes to be achieved (Mayne, 2015).

Abridged Contribution Analysis Steps with an Implementation Focus

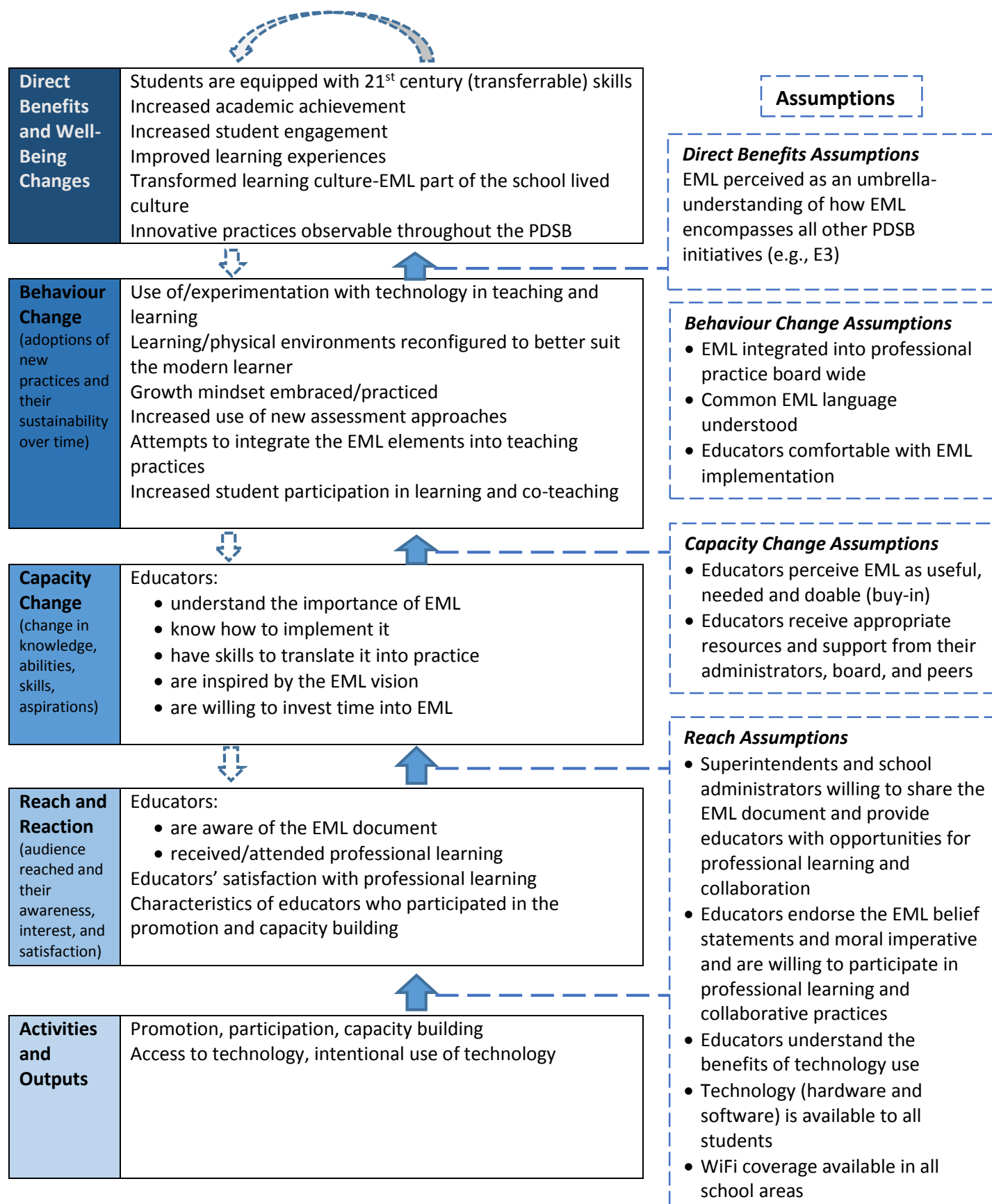
1. Set out the attribution problem (implementation focus)
2. Develop a nested theory of change for educators (see Figure 6)
3. Gather existing evidence on the theory of change (see Results section)
4. Develop the implementation contribution story and specify limitations
5. Identify factors that would strengthen the contribution story

The EML contribution analysis was undertaken to answer the following questions:

- (1) How are schools implementing the EML vision?
- (2) What type of EML activities, initiatives and collaborative processes are school teams undertaking in Phase 1?
- (3) How are superintendents, Modern Learning Resource Teachers, instructional coaches, and instructional coordinators perceiving and supporting the EML implementation?

The contribution analysis was designed to verify the nested theory of change behind the EML project and take into account other influencing factors (Mayne, 2008). It will validate the basic underlying assumptions that the EML project is based on and identify the external factors and limitations that also impact EML implementation and the production of the expected outcomes.

Figure 6. EML Implementation - Nested Theory of Change for Educators



Contribution Analysis Narrative

Direct and Indirect Factors that Influence EML Implementation

EML Activities and Outputs

The EML vision document was publicly launched at the beginning of the 2017/18 school year. It is evident from the open ended responses of the Leadership Council, school teams, resource teachers, instructional coaches, and coordinators that promotional and capacity building activities have been taking place board wide and at different organizational levels. Some examples of these activities include the EML Summer Conference, EML online modules, in-house EML professional learning days for individual schools or families of schools, EML website and online promotion, EML twitter account, EML podcast, Technology Summit, MLRTs and IC available for individual and school-wide consultations and professional learning, weekly emails to schools from MLRTs, EML Professional Learning for ICs and Coordinators, and the EML Parent Conference.

In addition, EML discussions that were taking place in Leadership Council meetings were extended to FOS meetings, and then to school meetings. Based on the observations of MLRTs, top-down promotional efforts seem to be most successful. If superintendents promote the vision, administrators are more likely to endorse it and promote it, and in turn, teachers are also likely to promote it because they perceive it as a priority. For example, there are schools that have special time allocation for the promotion of the EML agenda.

According to the results of the EML Look Fors Survey, 80% of school teams indicated that EML topics are mentioned *often or almost always* in their FOS meetings, and almost 70% indicated that these topics are mentioned *often or almost always* in staff meetings and school-facilitated professional learning. There are also school teams who are engaged in the EML work but are not promoting it explicitly. For those schools, promotional efforts were not viewed as very successful among administrators and educators. Overall, they did not see the value in the EML implementation vision.

It is evident from the open-ended responses of all stakeholder groups that EML discussions take place in various school meetings and that professional learning is planned with EML in mind. Schools have release days and professional learning designated to EML

Administrators are more willing to approve release time for professional development if they are able to make explicit connections between the EML vision and other PDSB initiatives. If the resources are not in place, educators are less willing to participate in professional learning and look for opportunities on their own. In particular, only a quarter of the school teams reported that they *often or almost always* engage in self-directed learning about the EML components such as seeking out additional resources and professional learning opportunities. There are also teachers who expect resources to be given to them rather than having to create their own EML activities.

Access to technology is no longer seen as a major obstacle to implementing 21st century learning. The majority of respondents from different groups indicated that there are generally sufficient tools and technology available for educators and students. Some examples of hardware and software used at schools include laptops, ipads, SMART Boards, green screens, Arduino, My Robots, Google Suite, Genius Hour, Coding Quest, and music technology programs. Schools that are well equipped with hardware provide students with access to a variety of devices in their classrooms or the Learning Commons and also with opportunities to integrate technology in the learning process. In addition, teachers are becoming more comfortable with the 'access to technology' element, especially with the use of Google Suite. Nonetheless, there are also schools that do not have enough funds for technology and thus lack devices for entire classrooms. Many schools purchase their technology through fundraising events, and schools with a high Socio-economic Vulnerability Index (SVI) have limited fundraising opportunities.

With respect to the WiFi coverage, the vast majority of schools have adequate coverage that allows for seamless integration of technology into instruction. However, schools in the northern part of the Board do not have appropriate WiFi coverage and are limited in their ability to utilize technology to its full potential.

At some schools, EML is perceived as the overarching umbrella that guides teaching, learning, collaborative work, curriculum redesign, and the school's theory of action. There are schools that base their philosophy on the EML components and collectively understand the larger implication of EML and its ultimate goal in preparing young learners for high school, careers, work force, and life. Some schools have applied EML concepts in the following ways:

- Organizing school committees under the EML umbrella and connecting EML to the Plan for Student Success
- Modelling EML by publically posting pictures under the EML elements to identify how the elements are being implemented and showcased in class, home, and school; with students and parents asked to contribute the materials along with teachers
- Reviewing the link between numeracy goals and 21st century competencies on a regular basis and connecting EML to inquiry learning and We Rise Together/equity work
- Aligning the school's theory of action with specific EML elements
- Collaboratively personalizing the six innovative elements to reflect a particular school
- Providing all students with an introductory package that focuses on applying problem solving skills and interconnecting mathematics with other curriculum areas and real world problems through open-ended questions
- Reflecting EML in the mission, vision, and goals of the school and using it as a central guidance for staff
- Having an innovation head whose role is to bring EML to the forefront of all school work for both staff and students
- Using We Rise Together, Indigenous awareness, and Engage Math to develop, promote and understand the innovative elements of EML
- Working with instructional coaches to integrate EML and student voice into school success planning

- Recognizing students every month for not only their academic success but also for their continued demonstration of the Peel character attributes
- Having a 21st century teaching and learning cross-curricular department head.

Well-being and mental health are perceived as an integral part of the EML vision. School teams made many references to the activities, spaces, and tools intended to contribute to the holistic well-being of all students including self-regulation, mindfulness, yoga, and outdoor activities.

Despite the endorsement of EML as an umbrella in some schools, there are still many schools where EML is perceived as an isolated initiative that is competing for time and resources with other initiatives. For instance, staff meeting agendas often have separate slots for each of the three Es (EML, Equity, Engage Math) with little integration.

The EML Look Fors Survey results indicate that approximately 50% of schools reported that they *often or almost always* integrate modern pedagogies into their professional practice. However, only one third of the schools *often or almost always* align their professional practice with the EML components with the purpose of supporting the four goals of the PDSB's Plan for Student Success. Moreover, only 28% of school teams indicated that they *often or almost always* embrace the EML vision as the centre of all projects and initiatives, whereas 23% responded that they *almost never or rarely* do so.

Reach and Reaction (audience reached, increased awareness, interest, satisfaction, resistance and acceptance)

School teams have been planning and implementing lessons and strategies based on their EML needs. In some schools, professional growth is supported through teacher leaders, and this is built into the school timetable. School teams indicated in their open-ended responses that they are trying to collectively unpack and examine the EML document and also attend and organize EML professional learning sessions. Administrators and teachers who attend professional learning and ask for in-house training are individuals who already believe in the EML vision.

The EML Implementation Measurement results revealed that 76% of school teams indicated that they are *moderately familiar or very familiar* with the EML belief statements and elements. Additionally, 42% of school teams specified that they *often or almost always* reflect on their professional practice and application of modern pedagogies.

Educators who have a growth mindset are open to learning as they go. There are teachers who believe in the EML vision and are already implementing EML activities and willing to learn more. If superintendents and administrators are willing to admit that they do not know everything, they create an innovative and risk-taking learning culture for teachers. Administrators are more likely to implement the EML document if the vision has been endorsed by their superintendents and if they themselves believe in the core EML values and are comfortable with the EML competencies. Without the internalization of the EML values and comfort with the EML competencies, administrators are less likely to implement it in their schools.

Conversely, if teachers are not responsive to the EML vision and not ready for its implementation, administrators' efforts are often not very effective. There are teachers who are resistant to change, are sceptical of the EML vision and may think of it as just "another initiative." Some are also hesitant to explore and engage with the vision because they feel overwhelmed by it. For instance, there are teachers who are not comfortable with the use of technology and are not willing to step outside of their comfort zone, (i.e., admit their lack of knowledge and be open to students teaching them about technology). In schools where EML has not been widely accepted, teachers who are interested in EML collaboration are not able to seek support from their colleagues.

Instructional coaches, coordinators, and resource teachers reported that teachers typically focus on at least one or two EML elements, however, there are also teachers who have never seen the document nor understand how EML can inform and transform their teaching and learning practices.

Capacity Change (change in knowledge, skills, aspirations, and commitments)

Superintendents reported that school teams work collaboratively on developing a deeper and more conceptual understanding of the innovative EML elements. One half of the school teams indicated that they *often or almost always* attempt to deepen their understanding of the EML components. Additionally, 44% reported that they *often or almost always* think about how to incorporate the EML components and modern learning pedagogies into their professional practice. School teams are focusing on specific EML elements and are strategically planning and implementing their professional learning. Staff are inspiring and supporting each other and are co-planning curriculum activities. Many schools have EML committees or working groups that organize in-school professional learning activities. Some administrators devote a full day or an entire staff meeting to the EML vision and invite MLRTs to deliver professional learning. Furthermore, school teams are scaffolding their work for each EML element and are making conscious efforts to align all their work to the various EML components.

As a function of EML implementation, teachers are changing their mindset and shifting from 'keepers of knowledge' to 'a community of knowledge builders' and are truly valuing what students bring to the learning community. In innovative schools, there is a school culture that allows educators to fail forward (i.e, seeing failure as a necessary process for moving forward with EML implementation). As a result of this culture shift, innovative schools are always revisiting and reflecting on their EML work.

Teachers who are innovators have made use of EML resources and professional learning, and some of them use EML as a confirmation for their innovative practices. If they have release time, they are willing to engage in professional learning about EML. In order to support EML implementation, teachers use co-learning partners, the guidance of EML leads and other support personnel.

On the other hand, there are still teachers who have not examined the EML document due to the lack of time or lack of promotional activities in their school. Some teachers perceive the EML vision as a concept that is remote and too big to implement. Others feel that they need to

cover the prescribed curriculum first and then figure out how the vision aligns with it. Despite reviewing EML best practices, some educators still do not understand the EML components and the interconnectedness among them. They are unable to link the EML vision to the curriculum and the day-to-day classroom experiences. Due to their existing commitments and the magnitude of the EML components and new language, some teachers do not feel comfortable incorporating the EML vision into their philosophy/pedagogy. There are many teachers who feel comfortable teaching the modern learner and there are also those who still think that EML only involves the use of assistive technology.

Instructional coaches, coordinators, and resource teachers observed that many teachers are very comfortable supporting students with the EML learning culture and regularly discuss growth mindset. Most teachers are also comfortable with the language of EML learning goals and EML success criteria. However, some teachers are at the beginning stages of using the EML elements with an equity standpoint or as a collaborative tool to help students further their learning.

Although many school teams are reporting an increasing number of teachers that are willing to deprivatize their practices and collaborate with their colleagues, resource teachers noted that there are many teachers that close their classroom doors and perceive EML as an evaluative and competitive initiative.

Based on the feedback from the Leadership Council, school teams are digitizing their work flow and are comfortable using Google Suite and mobile devices in their work but also recognize that the focus should be on both technology and teaching. Administrators and teachers who have limited knowledge of how technology can assist teaching and learning often believe that technology is a distractor and as a result of this, they are not likely to use technology in their school or classroom.

Because of the complex and transformative nature of the EML project, it has been noted that implementation levels vary significantly across schools and among teachers. Some schools have only begun to introduce EML, whereas others have implemented it school-wide. Also, implementation has not been consistent within schools. There are grade, division and subject differences in EML implementation. School teams constantly report that stakeholders are not all on the same page with regard to EML implementation.

These findings suggest that there is a need for ongoing EML capacity building. Many school teams identified a need for additional funds and release time in order to engage in school-wide professional learning opportunities.

Behavioural Change (adoptions of EML practices and their sustainability over time)

Teachers are starting to take a more integrated approach to the Ontario Curriculum expectations as evidenced by the high level of co-planning, co-teaching, and sharing of best practices. The focus of this integration is on giving students an active role in their learning and helping all of them achieve personal excellence. Some schools have community circles with students to share their knowledge so that teachers are not perceived as the exclusive

knowledge bearers. Teachers are collaborating when planning and leading EML competencies in order to help students become engaged global citizens (e.g., reflecting on the history of Indigenous Peoples in Canada). They work collaboratively with colleagues to design innovative approaches that reflect the beliefs outlined in EML and honour the voice of the modern learner. Staff work with modern learning resource teachers, student achievement officers, and instructional coaches to develop an "integrated spiraled curriculum" that reflects modern learning approaches and builds skills in collaboration, teamwork, and problem solving. Different staff are becoming experts on different technology platforms (D2L, Google Classroom) and then sharing their experiences and learnings with other school staff members.

Teachers are implementing transformational practices by incorporating EML into lesson planning and assessment/evaluation. Educators are taking risks with regard to models of learning, reflecting and asking questions about assessment and rethinking the effective use of technology as an everyday tool to support teaching and learning.

For example, educators are experimenting with different ways of assessment by using technology to document student learning. They are moving beyond the evaluation of final course/subject products and assessing the process of learning. Staff provide students with multiple opportunities to demonstrate their knowledge through different forms of assessment, including feedback, observations and conversations. Some teachers are moving away from putting grades on student work and are moving toward descriptive and observational feedback. Schools are focused on creating relevant and meaningful final evaluations that are flexible and more experimental with different modes of learning and assessment. Ways of capturing learning have widened with increased access to technology and hands-on learning materials (moving away from paper/pencil).

Students are involved in inquiry-based learning that supports the philosophy of the EML document. Educators encourage collaborative learning, use action-oriented approaches, open learning groups, and backward design with the lens of 21st century skills development. Some teachers are re-writing curriculum into student friendly language and asking students to create EML learning goals and tasks. An innovative model of learning used by many school teams is the DICE program (Discover, Innovate, Create, Empower), which is a locally developed program to support students in taking greater ownership of their learning. The program goes beyond the typical structures and formats of learning, building cross-curricular curriculum maps, taking equity into account, final assessments that are focused on inquiry based learning, utilizing universal design for learning, and creating learning spaces to support mental health and well-being. Teachers are constantly using EML terminology in the classroom and promoting a growth mindset and a supportive learning culture that allows students to take risks, explore possibilities, make mistakes, and experience success. The implementation of Self-Regulation and Restorative Practices were also being used within a 21st Century EML competencies framework.

Staff are using technology in very innovative ways. They are using technology to empower the learner. Students are using technology for specific purposes and understand when it is helpful/purposeful in their learning process (e.g., using Skype in language classes to connect

with book authors, robotics and coding activities). They are embedding technological devices in their daily learning process and are using technology to demonstrate their learning process (e.g., Google Classroom, Seesaw, ClassDojo). Teachers are taking a more modular and flexible approach to teaching and learning due to the existence of various hardware supports (e.g., Chromebooks, various Robotics kits, 3D printing, Raspberry Pi) coupled with new software and online platforms. Schools are also going much deeper with the integration of technology and its use in skill development (e.g., collaboration, communication, critical thinking). For example, technology is constantly being used as a learning tool for the development of student creativity and innovation skills.

Educators are fostering the inclusive learning culture which is rooted in inquiry, and allows for regular opportunities for collaboration, investigation, and curiosity (e.g., incorporating STEAM activities into program through cross-curricular connections, using ALE in the classroom to support belonging and well-being). Teachers are ensuring that the student voice is represented and is at the forefront of teaching. Students are empowered by technology to take risks and ownership of their learning, and are engaged in their learning at home and at school. Technology is also used for communication with students and parents. Technology use supports the creation of a learning culture that is consistent with the belief statements and the EML vision.

Schools are creating dynamic and inclusive EML learning spaces that support all students. When setting up classrooms, teachers are mindful of the physical set up of the classroom and alternative learning spaces, including the use of outdoor schools. Teachers are thinking more critically about changing their learning environment, which influence their physical space and the structure or flow of their lessons. Some examples include Makerspaces, Library Learning Commons, labs, courtyard, pods, lunch clubs, flipped classrooms, Google Classroom, open-ended Math and Literacy inquiry centres, hallways for physical activity and virtual environments as well as alternative learning spaces that promote mental health and wellness.

Some teachers are not fully embracing the integration of EML concepts into their instructional practices because of a lack of fully understanding EML elements, a lack of resources, and the lack of opportunity for engaging in EML professional learning.

Student Achievement/Learning Change

Educators indicated that when students are presented with opportunities to pursue their passions, they become motivated and engaged in their learning. They highlighted the need to create a culture in the classroom that resembles the EML values. They viewed this as a necessary pre-condition to facilitating student learning and adoption of the 21st century EML competencies (i.e., innovation, creativity, problem-solving, risk taking). Students are generally flexible and open-minded to new experiences and different ways of learning, but they need to see how teachers are shifting their practices and giving students an opportunity to be active participants in their own learning. Instructional coaches, coordinators, and resource teachers reported that students need time to acquaint themselves with the EML vision, to understand what the elements look like in the classroom, and to shift from valuing “marks driven”

education. They need time to become accustomed to taking more responsibility for their own learning and to start engaging in inquiry-based models of learning. Students also need to be taught how to use technology for educational purposes and to think about modern learning beyond the use of technology. As a function of adopting EML concepts at the school and classroom level, students are starting to engage in inquiry based learning and are using new and unique ways to share their learning. They are becoming more reflective, divergent thinkers and collaborative learners.

Students who are not immersed into the EML learning culture, and are being taught in a traditional learning environment that is characterized by prescribed instructions and learning formulas are often reluctant to take risks, initiative, and explore new learning styles. They may also be influenced by teachers and parents who traditionally reward providing the “right answer” or “doing a good job.” These factors are seen by educators as sources of resistance to the full implementation of the EML elements and also as key factors that limit the production of EML student outcomes.

Assessing the Rigour of the Contribution Analysis and Limitations

In order to demonstrate the objectivity and rigour of the contribution analysis, a number of steps were employed. The first approach was to examine the consistency of data collected across multiple perspectives (Riley, 2017). The conclusions from the narrative contribution analysis is supported by the consistency of responses from multiple data sources (e.g., Leadership Council, school teams, MLRTs, instructional coaches, coordinators, resource teachers). It is evident from the comparison of the major themes derived from these data sources that there is a considerable overlap across all stakeholders with respect to EML implementation, EML activities, EML challenges and supports and the EML language that they use.

The rigour of the evaluation design employed and the resultant contribution analysis was established by adoption of the following research analytical process:

- *Triangulation* - the collected data from multiple stakeholders allowed for participant and data triangulation (same phenomena were described in a consistent manner by all stakeholders).
- *Complementarity and Expansion* – multiple methods (qualitative and quantitative) were used to describe different aspects of the same phenomenon (i.e., EML implementation) and to increase the depth, and
- *Initiation* – we did look for contradictory findings and used the results of different methods to explain some discrepancies (Graeme, et al. 1989, Plano, Clark, & Creswell, 2008).

Student voice was not part of the data collection in Phase 1 of the EML implementation. The evaluation would have been improved by capturing student perspectives of the EML vision and their experiences with the EML implementation in the classroom.

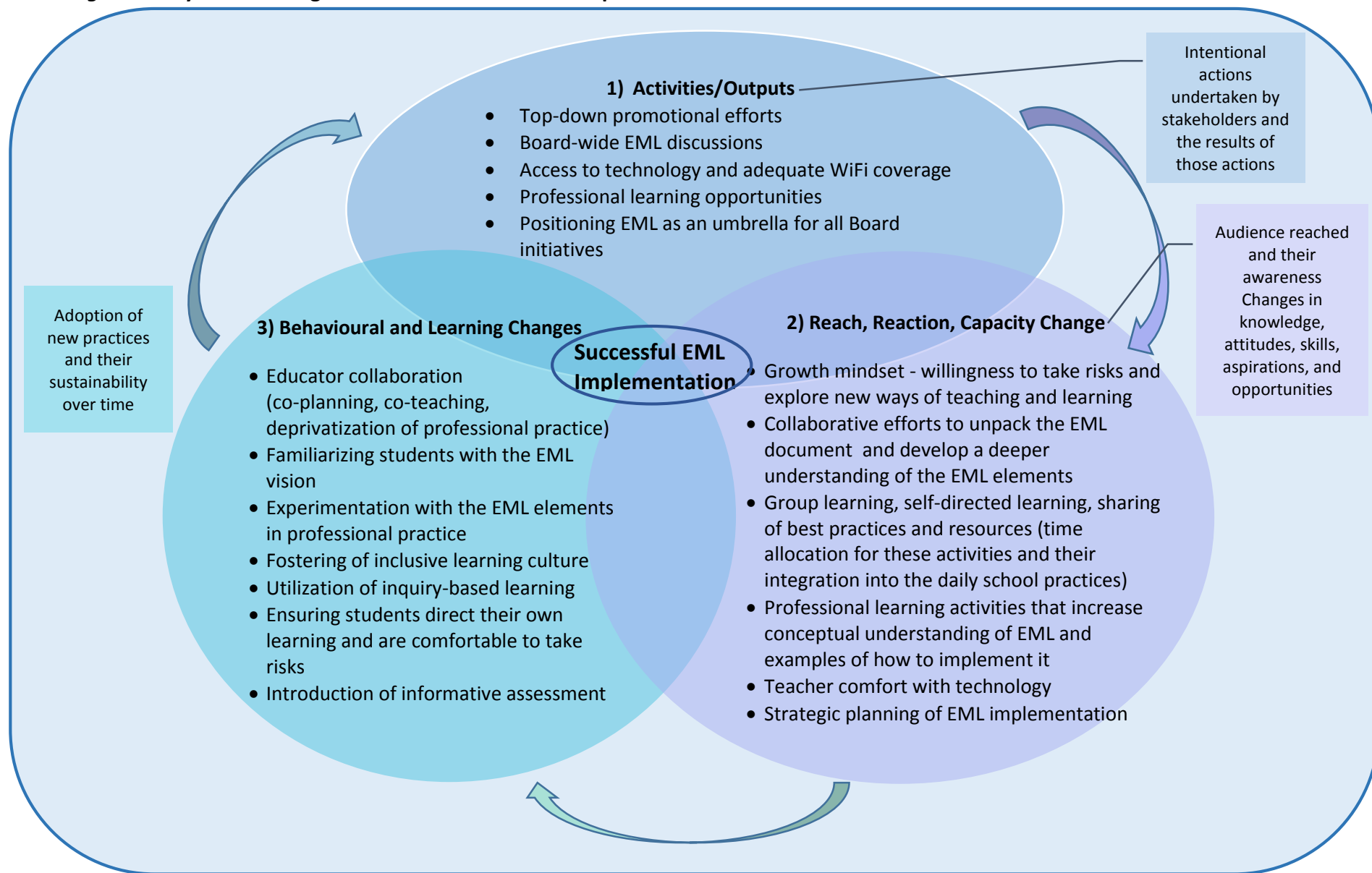
Conclusion

The contribution analysis was written in narrative form in order to provide a comprehensive description of the contribution that multiple activities, contexts, and players have made in the successful implementation of the EML project. In the EML context, the CA has revealed that:

- (1) There are multiple contributing factors that have led to the successful implementation of the EML initiative at the PDSB. Each factor interacts with and influences all other factors.
- (2) There are competing and conflicting interests and levels of readiness that impact the implementation of the EML project.
- (3) There are different perceptions of EML implementation and the impact that it has on teaching and learning.
- (4) There is no single explanation (cause) for successful EML implementation. It is a complex and iterative process that requires capacity building, resources, supports, professional learning and the will to transform the educational landscape. Successful implementation of EML is site specific and resource dependent.

Figure 7 provides a summary graphical representation of the factors that are contributing to the successful implementation of the EML project at the Peel District School Board.

Figure 7. Key Contributing Factors to Successful EML Implementation at the Peel District School Board



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Appendix A
EML Implementation Step Rubric

Steps	Awareness	Understanding	Experimentation	Integration	Innovation
Steps on the EML Rubric	Awareness of the EML Vision	Conceptual understanding of the EML vision	Experimentation with the EML vision in professional practice	Integration of the EML vision into professional practice	Creative and innovative application of the EML vision in the classroom, school, and beyond
Examples	(e.g., reading the EML document, familiar with EML components, attending professional learning sessions, awareness of the need for 21 st century learning)	(e.g., unpacking the EML components, asking questions about EML, discussing EML components with colleagues, developing plans on how to incorporate the EML components into professional practice)	(e.g., trying the EML components in one's own teaching, making connections between the EML document and professional practice, reflecting on one's own professional practice and recognizing/ identifying EML elements, engaging in additional self-directed learning about the EML components)	(e.g., aligning the EML vision with professional practice – making changes in lesson planning and teaching, finding ways to make EML components an integral part of professional practice, guiding/mentoring others on EML concepts, promoting EML, engaging in designated EML communities of practices)	EML part of the school lived culture (e.g., putting the EML vision in the centre of all projects and initiatives, seeking innovative ways and models of incorporating EML into professional practice)
Overall Descriptors	Building awareness and capacity around the EML vision	Learning, inquiring about, discussing, understanding, and planning for the application of the EML vision	Connections and initial attempts to make relationships between the EML vision and professional practices	Continuous efforts to integrate the EML vision into professional practice and make it part of the learning culture	Going beyond the consolidated EML practices and inventing new ways to empower modern learners



Research and Accountability
putting research into practice
