Research Report
for 2016-17

Teacher Learning & Leadership Program

Research Report
for 2016-2017

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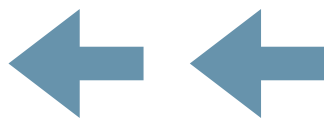Joelle Rodway with
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1. Introduction

Launched in 2007, the Teacher Learning and Leadership Program (TLLP) is a joint initiative through partnership between the Ontario Teachers' Federation (OTF) and the Ontario Ministry of Education with shared goals to:

- support experienced teachers to undertake self-directed advanced professional development;

- develop teachers' leadership skills for sharing their professional learning and exemplary practices; and

- facilitate knowledge exchange for spread and sustainability of effective and innovative practices.

Following completion of our initial research study of the TLLP (Campbell, Lieberman & Yashkina, 2013), we were invited by the Ministry to submit a proposal for a longitudinal study, beginning in 2013-14. We provided a report of findings and work on progress during 2013-14 (Campbell et al., 2014), 2014-15 (Campbell et al., 2015) and 2015-16 (Campbell et al., 2016). This Research Report provides our findings for research conducted during the 2016-17 year of research.

2. Research Questions

The research questions for the current study are:

1. What are the impacts of TLLP projects for:
   a. Teachers' professional learning (TLLP teacher leaders, TLLP project teachers, teachers beyond TLLP project)?
   b. Teachers' knowledge, skills and practices (TLLP teacher leaders, TLLP project teachers, teachers beyond TLLP project)?
   c. Teachers' leadership skills and experiences (TLLP teacher leaders, TLLP project teachers, teachers beyond TLLP project)?
   d. Other adults affected by the TLLP projects (school and district staff, school and district administrators, parents, community members, others as relevant)?
   e. Student engagement and learning?

2. How is learning being shared beyond the TLLP project team?
   a. What approaches to sharing learning are being used?
   b. How does the sharing of learning affect participants?

   c. What approaches appear to support the spread of knowledge and changes in practice?
   d. What approaches appear to support implementation and sustainability of improvements in practice?
   e. What successes can be identified?
   f. What challenges are encountered? And how can they be mitigated?
   g. What is unique about the TLLP approach for knowledge exchange and sharing of successful practices?

3. What longer-term impacts of participating in TLLP projects can be identified (for TLLP teacher leaders, for TLLP project team members, for schools, for districts and for other participants affected)?

With funding support from the Ministry of Education, it was agreed that the TLLP research would extend to include a case study of TVOntario's Teach Ontario in 2015-16 and 2016-17.

Our 2015-16 report concluded that:

> *2015-16 was a "milestone year" for the TLLP; in many respects, the TLLP became larger during 2015-16 in terms of scale, awareness, influence, and impact. (Campbell et al., 2016, p. 135).*

Building from this milestone year and the launch of the 10th cohort of the TLLP, our 2016-17 research indicates that the TLLP further increased its strengths, influence and impact this year. In the following report, we detail our findings and offer our most recent conclusions.

3. Research Methods

The following research methods were used for the 2016-17 TLLP research:
1. Review TLLP data for approved project and Final Reports for Cohorts 9 and write a final report for all 9 cohorts.
2. Mini Surveys – analysis of 2015-16 data.

2015-16 was a "milestone year" for the TLLP; in many respects, the TLLP became larger during 2015-16 in terms of scale, awareness, influence, and impact. (Campbell et al., 2016, p. 135).

3. Provincial Knowledge Exchange (PKE) – analysis of logs and end of year reports for 2015-16.
4. Case studies - write and update case study report for 2015-16 case study (Ultimate Potential Math).
5. Analysis of NING data for 2016-17.
6. Case study of TeachOntario.
7. Focus group with provincial TLLP teams in the OTF and Ministry of Education.
8. Attend Leadership Skills for Classroom Teachers training and Sharing the Learning Summit.

Two of the above methods are not reported on in detail in this report: analysis of NING data and evaluations of the Leadership Skills for Classroom Teachers training and Sharing the Learning Summit. In consultation with Jim Strachan, Ontario Ministry of Education, we have been advised that the TLLP activity has moved from the NING to TVO's TeachOntario, therefore monthly reporting and analyses of NING data is no longer appropriate. In our 2017-18 Final Report, we will provide an overall analyses of NING data from 2013-2017. In this report (2016-17), we focus on TeachOntario as the primary source for online sharing. The

research team attended the Sharing the Learning Summit in November 2016 and the Leadership Skills for Classroom Teachers training event in May 2017. We plan to provide an analyses of all evaluation forms from 2013-2017 in our 2017-18 Final Report.

The current report, therefore, presents the findings from: TLLP Cohort 9 data; Mini survey data for 2015-16; PKE logs and reports from 2015-16; the Ultimate Potential (UP) Math and the TeachOntario case studies; and focus groups with OTF and Ministry TLLP teams.

4. Research Findings

4.1 TLLP Cohort 9 Data

In 2016-2017, we updated the analysis of TLLP cohort data for approved projects and Final Reports by conducting a descriptive analysis of the provided data for all 2015-2016 TLLP projects and by analyzing a 20% sample of Final Reports for Cohort 9. The sampling, coding and analyses of Cohort 9 data are consistent with the procedures developed for the Cohorts 1-8 data. We also use

a similar reporting format and make comparisons across all of the Cohorts where possible and/ or of particular interest. First, we will present our descriptive analysis of data on all projects, and then we will present a more detailed analysis of a sample of the projects.

4.1.1 Project Descriptions

4.1.1.1 All Projects in Cohort 9 (2015 – 2016)

First, we conducted a descriptive analysis of all 101 projects from Cohort 9 to examine how many projects were undertaken and in which education system, in which panel, what was the project size (in terms of project team and budget sizes), and what were the main project themes. We report results of the analysis of Cohort 9 projects alongside previously reported results for the first 8 Cohorts to allow for comparison and further analysis.

Education System
As indicated in Table 1, a total of 788 projects were conducted during the first eight TLLP Cohorts. In recent years, the number of funded projects increased significantly. The number of French sector projects has also increased.

Table 1: Cohort 1 – 9: All Projects by Education System

Cohort	English Public	English Catholic	French Public	French Catholic	English/ French	Public/ Catholic	School Authorities	Total
Cohort 1	42	30	1	3	72/4	43/33	3	79
Cohort 2	35	28	1	5	63/6	36/33	0	69
Cohort 3	32	31	3	6	63/9	35/37	2	74
Cohort 4	41	28	4	4	69/8	45/32	3	80
Cohort 5	42	36	2	4	78/6	44/40	2	86
Cohort 6	37	37	0	2	74/2	37/39	2	78
Cohort 7	50	48	3	4	98/7	53/52	1	106
Cohort 8	58	45	2	8	104/9	60/53	2	115
Cohort 9	41	45	5	7	86/12	46/52	3	101
Total	378	329	21	42	190/21	106/105	18	788

Panel

This is the second time we were able to analyze the panel information for all projects, thanks to the data that is being collected. The majority of the projects in Cohort 9 are elementary panel projects – 68 projects (67%); 25 projects (25%) are secondary panel; and 8 projects (8%) are cross-panel projects. These percentages are similar to the ones observed in Cohorts 7 and 8.

Project Size

The projects range considerably in size, in terms of the number of people involved in the project team as well as the size of the project budget. In Cohort 9, the number of people on the team ranged from 1 to 20. There have been some changes to the size/structure of a TLLP project team observed. The number of single-person projects remains low – 4% in Cohort 9, which is comparable to 5% in Cohorts 7-8,

and is much lower than those in the first 6 cohorts (17% in Cohorts 1-4 and 13% in Cohorts 5-6). The number of larger team projects has increased even further: the percentage of teams with 5-10 people has increased from 10% in Cohorts 1-6 and 30% in Cohorts 7-8 to 33% in Cohort 9; the percentage of teams with over 10 people has increased from 2-4% in Cohorts 1-8 to 9% in Cohort 9. Small team (2-4 people) projects, however, are still the majority, being 54% of all projects.

The total number of direct participants has increased recently (see Table 3). The average number of people on a team has slightly increased as well (from 4.2 people in Cohorts 1-8 to 4.9 in Cohort 9). It is important to note these numbers of TLLP participants refer to identified TLLP group applicant members. This does not include the much wider array and

number of people potentially affected by a TLLP project.

According to Table 3, the overall expenditure on TLLP projects has increased over the years, from under $1 million in early years to over $2.5 million in last two years. The average project budget has increased significantly as well (from $14,412 in Cohorts 1-6 and $21,224 in Cohorts 7-8 to $26,439 in Cohort 9). While the amount of smaller budget projects (≤$10,000) has decreased further (from 32% in Cohorts 5 and 6, and 15% in Cohorts 7 and 8 to 10% in Cohort 9), the amount of larger budget projects ($10,001 - $49,999) has increased (from 67% and 79% to 87% respectively). 3% (3 projects) had a budget over $50,000 in Cohort 9.

To sum up, the size of an average TLLP project has increased over the years both in terms of people in the core team and project budgets.

Table 2: All Projects by Team Size

Team Size	Cohorts 1-4	Cohorts 5-6	Cohorts 7-8	Cohort 9
Single (1 person)	17%	13%	5%	4%
Small team (2-4 people)	70%	75%	61%	54%
Medium team (5-10 people)	10%	10%	30%	33%
Large team (>11 people)	3%	2%	4%	9%

Table 3: Cohort 1 – 9: All Projects by Approved Number of Participants and Budget

Cohort	People Sum	People Average	$ Sum	$ Average
Cohort 1	158	2	$982,051	$12, 341
Cohort 2	406	5.9	$818,006	$11,855
Cohort 3	350	4.7	$1,125,308	$15,207
Cohort 4	342	4.3	$1,257,925	$15,724
Cohort 5	373	3	$1,231,079	$14,315
Cohort 6	255	4.8	$1,301,929	$16,691
Cohort 7	481	4.5	$1,953,921	$18,433
Cohort 8	513	4.5	$2,736,613	$23,797
Cohort 9	491	4.9	$2,670,326	$26,439
Total	3,369	4.3	$11,406,832	$16,604

Project Theme

TLLP projects include a range of priority themes with projects generally including multiple themes and areas of activity. Over time, the OTF and Ministry have asked TLLP teacher leaders to self-identify up to three main themes for their projects. Two new themes – Safe Schools and Equity/Social Justice – have been added to the application forms recently. Table 4 indicates the most prevalent project topic themes. Overall, Technology and Differentiated Instruction have been the most prevalent areas of foci. Nevertheless, there have been some shifts over the cohorts. The number of projects on Technology has increased greatly (three times those in Cohorts 1 and 2) and remains a high priority. The number of Literacy projects continues to decrease, which may be a reflection of shifting provincial priorities. The number of PLC, and Math Literacy projects have started to decrease as well. However, as a more detailed analysis of the Final Reports suggests, there is a growing number of projects related to the use of new pedagogies (such as inquiry-based learning, experiential learning, etc.) and student well-being (mental, emotional, and physical wellness). We strongly suggest adding these two themes (Pedagogical Change and Student Well-being) to the list of themes in the Proposal and Final Report forms. In addition, while the number of projects targeting students with special needs (e.g., students with various learning difficulties, and mental, behavioural, and emotional problems) remains substantial, projects targeting students based on their gender have completely disappeared.

4.1.1.2 Sample Projects from Cohort 9

Sample Description

Using the sampling criteria developed previously, we selected a purposive sample of 20% of the final reports (total of 20 projects) for more in-depth analysis of the projects undertaken and the reported successes, challenges and overall impacts. The sampling criteria included: representative distribution across English Public, English Catholic, French Public, French Catholic, and School Authorities; elementary and secondary schools; regional distribution; size of project in terms of dollars and also in terms of people on teams; and range of types of project theme. Board Type: All types of boards are represented in the sample.

Table 4: Cohort 1 – 9: All Projects by Project Theme (Rank Order)

Theme\Cohort	1	2	3	4	5	6	7	8	9	Total #	Total %
Technology	**22**	**19**	**29**	**23**	**37**	**41**	**51**	**67**	**65**	354	45%
Differentiated Instruction	**26**	**17**	**34**	**33**	**42**	**38**	**58**	**50**	**41**	339	43%
Literacy	38	22	21	15	26	26	29	24	17	218	28%
PLC	27	25	20	16	23	22	34	33	18	218	28%
Math literacy	11	15	11	14	19	17	28	34	22	171	22%
Student Assessment	18	14	20	13	14	19	25	25	22	170	22%
Student with Special Needs	10	9	9	7	13	13	10	11	13	95	12%
Student Success/ Transition years	5	6	13	10	10	7	12	14	13	90	11%
Media literacy	4	5	2	5	10	5	7	4	3	45	6%
French	3	7	5	2	8	3	8	4	5	45	6%
Arts	1	5	6	6	5	3	7	3	3	39	5%
Gender-Based Learning	4	5	5	7	2	2	1	0	0	26	3%
Safe Schools	-	-	-	-	-	-	2	4	5	11	1%
Equity/Social Justice	-	-	-	-	-	-	-	5	6	11	1%

Table 5: Sample TLLP Projects by Board Type

Board type	Cohort 9
English Catholic	9 out of 45
English Public	8 out of 41
French Catholic	1 out of 7
French Public	1 out of 5
School Authorities	1 out of 3
Total	20 out of 101

Region: All regions are represented in the sample. In total, there are 5 from Ottawa, 4 from Barrie, 3 projects from London, 3 from GTA, 2 from Sudbury, 2 from Thunder Bay.

Project Size: The sample for Cohort 9 includes projects of all TLLP team sizes (single person, small, medium, and large team), ranging from 1 to 14 people.

The sample includes projects of low and average budget sizes. Due to a limited number (3) of projects of large project size (over $50,000), there are no large budget projects in the sample, but there are three projects with budget sizes that are close to $50,000. The budget sizes of the

sample range from $6,591 to $46,971.

Panel: Both types of panels as well as cross-panel projects are represented in the sample.

Themes: There is a good representation of various themes in the sample. In addition to the themes specified in the final report form, 3 themes identified by the researchers are added:
- New Pedagogies – which refers to new approaches to teaching and learning such as inquiry-based learning, collaborative learning, authentic and experiential learning, flipped classroom, etc.;
- Student Well-being – which refers to supporting student (and teacher) mental

and emotional wellness through developing safe spaces within schools and classrooms and educating students about self-regulation techniques;
- Community/Parent Engagement – which refers to establishing links with families, engaging parents, educating parents, developing partnerships with community organizations; and
- Environment/Outdoors – which refers to using outside space for various classes and events, and/or learning about nature and environment.

Table 6: Sample TLLP Projects by TLLP Team Size

Team size	Cohort 9
Single (1 person)	1
Small team (2-4 people)	9
Medium team (5-10 people)	8
Large team (>11 people)	2

Table 7: Sample TLLP Project by Budget Size

Budget	Cohort 9
Small (≤$10,000)	3
Medium ($10,000<X>$50,000)	17
Large (≥$50,000)	0

Table 8: Sample TLLP Projects by Panel

Panel	Cohort 9
Elementary	13
Secondary	5
Cross-panel	2

Table 9: Sample TLLP Project Themes

(as identified by the TLLP leaders and researchers)

Theme	Cohorts 9
Technology	**11**
Differentiated Instruction	**10**
New Pedagogies*	**10**
Well-being*	6
PLC	5
Student Assessment	4
Student with Special Needs	4
Literacy	3
Student Success/Transition years	3
Community/Parent Engagement*	3
Math literacy	2
Equity/Social Justice	2
Environment/Outdoors*	2
Media literacy	1
Arts	1
French	1
Safe Schools	1
Gender-Based Learning	0

* Themes identified by the researcher

While Technology remains the top priority theme, the analysis suggests that it no longer plays a central role within the project (and is not an end in itself), but is now more of a tool used to reach project goals. The same logic, we feel, can be applied to the role of professional learning communities. Even though the majority of the projects participate in PLCs during their projects (see Table 11), they do not use projects to create PLCs, but rather use PLCs for the purposes of the project. New pedagogies and Student Well-being are themes that are gaining popularity, and thus, we suggest, should be added to the list of themes in the TLLP proposal and Final Report forms.

4.1.2 Professional Learning in the TLLP

We conducted a thorough analysis of Final Report Forms (along with Project Summaries to obtain missing information) of the sampled projects in Cohort 9. In this section we present the results regarding professional learning goals, professional learning activities, and sharing of knowledge and practices beyond the immediate TLLP team. The statistics reported in the Tables below are based on the mix of the emerging themes in qualitative data and quantitative data reported in

Final Reports and thus, should be interpreted with caution. The prominence of the themes derived from qualitative data might be underestimated, since project leaders might not have thought to include information regarding those themes in their Reports. Therefore, it is possible that the information provided in the Final Reports does not present all of the activities that took place.

Professional Learning Goals

Since TLLP participants are no longer required to state their project goals in their Final Report forms, we acquired the information on professional learning goals from Project Summaries. The analysis of the relevant data helped identify several common professional learning goals, which are reported in Table 10.

Consistent with previous research, the top three professional learning goals for the TLLP projects in Cohort 9 were to develop and improve understanding and knowledge (75% of projects), develop strategies or an approach (75%), and develop or improve skills or practices (35%). These goals were mostly focused on improving student academic success, engagement, or well-being – such as learning about a new pedagogical

approach and developing strategies for its implementation (e.g., flipped classroom, spatial reasoning, inquiry-based learning, etc.), creating a Makerspace room or a self-regulation corner filled with all the appropriate tools and activities, and improving literacy or numeracy teaching capacity or technological skills. The following is an example of a goal of one mid-sized TLLP project in an elementary school:

The project will be an opportunity for our staff to focus on creating more relevant, applied and innovative learning experiences that will spark our students' curiosity and inspire them to be innovators. This will be achieved by converting an empty room in our school into a Makerspace which includes tools such as Legos, clay, magnets, computer/ tablet software and other creative prompts for beginner students. For the intermediate or more advanced student, they will have access to a variety of more complex tools such as 3D Printers/Scanners, Drawing Programs, electronics and audio/video editing equipment.

Goals for developing resources (stated in 35% of projects) included creating resources

Table 10: Sample Projects: Stated Professional Learning Goals (Rank Order)

Professional Learning Goals	Projects	
	#	%
Improve understanding/knowledge	15	75%
Develop strategies/approach	15	75%
Develop/improve skills/practices	7	35%
Develop resources	4	20%
Establish relationship with community	2	10%
Develop professional collaboration	1	5%

for classroom use, for training or informing others, or for sharing. Examples of such resources include lessons/lesson plans, activities, demo videos, and teacher toolkits. While more than 35% of the projects developed resources during the projects for personal use or sharing, development of such resources was not stated as a goal in the data to which we had access. Less common professional learning goals included connecting with families and community (2 projects) and developing professional collaborations between educators (1 project). The number of projects aiming to develop professional collaborations is significantly lower than the ones reported before (23%-42%). A possible explanation (based on qualitative data in Final Reports) is that professional collaboration had been already in place before the start of the project and thus, while almost all projects engaged in some kind of professional collaboration during the course of the project (see Table 11), they did not set it as their goal.

Professional Learning Activities

The question in the Final Report about professional learning activities that were undertaken offers multiple response options. The quantitative data from this multiple-choice question composes most of the statistics found in Table 11. The themes marked with an asterisk were added by the researcher and are based on the qualitative data from the reports. All other themes are the items listed as the response options to the professional learning activities question.

The TLLP participants engaged in a number of professional learning activities during the course of their project. By far, the most common activity was teacher collaborative learning. In 95% of projects educators engaged in some kind of collaborative learning to acquire new knowledge or skills or to develop new strategies or resources. Collaborative inquiry, observation with colleagues, community of practice, and Professional Learning Community were the most common

collaborative learning activities, with the majority of the projects engaged in them. One of the project leaders commented on the opportunities for collaboration that the TLLP offers:

I feel that this provided me the opportunity to collaborate with like-minded Core French teachers. As a Core French teacher, you already often feel isolated because in most cases you're the only Core French teacher in the school. This gave us the chance to collaborate, share ideas, problem solve as a group with others who teach the same subject.

In 70% of the projects, TLLP leaders chose to learn directly from or with an expert/specialist in the area such as a professor, a psychotherapist, a technology expert, or a local artist. In one project, for example, services and expertise of architects were utilized to create an outside space that would be used for classes and events.

65% of the projects in the sample referred to literature and research to improve their knowledge and understanding of the topic, which is similar to what was reported before.

Table 11: Sample Projects: Professional Learning Activities (Rank Order)

Professional Learning Goals	Projects	
	#	%
Teacher Collaborative Learning*	19	95%
• **Collaborative inquiry**	17	85%
• **Observation with colleagues**	15	75%
• Community of practice	14	70%
• Professional Learning Community	13	65%
• Lesson study	5	25%
• Study group	2	10%
Working with content experts	14	70%
Literature reviews/research	13	65%
Online learning	12	60%
Conferences	11	55%
Training/Courses	8	40%

* Themes added by the researcher:

• **Teacher collaborative learning is a composite measure based on the six items from the multiple-choice list;**

• **Training is training opportunities other than courses mentioned in the Reports.**

To increase their level of knowledge and/or to gather ideas and make connections, over half of the projects in the sample sent one or more of its members to attend a conference on the topic of interest and 40% of the projects provided its member(s) with some kind of training, such as courses or workshops.

The connections made during such conferences and trainings enhanced TLLP participants' learning and helped them achieve their goals. One TLLP leader commented on the levels of networking and its benefits:

We networked with educators in our school, our board, and from other boards in the province (and in one case, on another continent), to help us reach our goals.

We were very fortunate to cross paths with many educators that shared valuable professional knowledge with us that saved our team a great deal of time and effort in reaching our goals. In many cases, these individuals had not shared their knowledge on any form of social media or in any professional learning communities, and so it was only because we met face to face that they were able to pass along what they knew. We may feel that our learning is very specific, or that our goals are not shared by many, but if we keep our learning to ourselves, it will result in future educators wasting their limited funding and time just to reinvent the wheel, when they could be standing on each others' shoulders and getting to the next level.

Twelve projects in the sample indicated engaging in online learning, but the nature of this learning was not specified. This online learning activity can be a part of other learning activities, such as browsing the internet for relevant literature and sources of information, engaging in networking and collaborating online, etc. It would be helpful to ask for further explanation on the report form.

In addition, at least two projects engaged in collaborating with community organizations, families and other stakeholders.

4.1.3 Sharing of Knowledge and Practices

The TLLP requires its participants to share their learning beyond the immediate TLLP project team. Table 12 present the results of the analysis of the multiple-choice question on the level of sharing as well as the analysis of the relevant qualitative data, which is presented in the last two themes in the table. Our analysis indicates that nearly all of the TLLP projects in the sample shared learning and spread practice within their own schools (95%) and with other schools/educators in their school board (95%). There is a slight increase in the number of projects sharing their learning within the board, compared to previous years. In 40% of the projects in the sample, the exchange of learning also happened between school

boards when the participating school board shared strategies and approaches with another board that was already implementing similar strategies or was interested in doing so. Two projects indicated sharing their learning and practices in person beyond their immediate educational community. Such sharing happened via presentations at provincial and national conferences. We would like to add that sharing with the larger educational community happened in many more projects through sharing of information and resources online via social media, blogging, and project websites among other means.

The project leaders were asked to estimate the number of educators they shared their learning with in person and online. 17 reports provided estimates for face-to-face sharing: the numbers ranged from 2 to over 400. The wide range in the estimates may be explained by the size and sharing goals of the project, the nature of sharing (mentoring vs. conference presentations) and the way the estimates were made. There were only 8 estimates for online sharing and the range was even wider: from 8 to over 600 people. Generally, those who indicated smaller numbers calculated direct contacts (more close

collaborative relationships) while those who provided higher estimates used website/blog visit statistics.

Knowledge exchange involves consideration of audience. In all projects in the sample, the main audience for sharing was teachers, which is expected and is consistent with the goals of the program. TLLP teacher leaders also reported sharing with school and district administration. Some projects shared their learning with parents, students, and community partners. The following is an example of successful sharing occurring at different levels and involving various audiences in a project on mental health and wellness:

When we shared our evidence at our school, every single teacher in our school ended up climbing on board in some capacity! We could not believe the enthusiasm and difference to our school climate – both for the adults and kids! When this information was shared board-wide to

Kindergarten teams, we received positive feedback and interest to collaborate further. After sharing to upper administration, our staff felt supported to spend time daily to help students gain mental health strategies and well-being. The impact was also noted by the parents in our school. Parents acknowledged that their kids were using the strategies at home and started to ask for more information in order to help their kids practice strategies at home. Some children also reminded us the need to practice strategies on a daily basis!

To make sharing of learning and practices more useful for others, numerous resources which were developed, adopted, researched, and acquired during the process of the project were shared. Examples of these resources are lessons, lesson plans, demo videos, activities and materials for classroom use, toolkits, and tutorials. Teacher/school toolkits were compiled and distributed online and

physically in 12 projects (60%). Multiple written resources were shared in 13 projects (65%).

Various methods were used to share learning and resources; the main ones are reported in Table 13. The use of online methods of sharing has been increasing over the years, reaching its highest (85%) in Cohort 9. The most common online method is blogging. TLLP participants used it in 45% of the projects to recount their personal or their team's learning journey, share ideas and resources, reflect and seek feedback. They also spread word about their project via social media, such as Twitter, FaceBook, LinkedIn, or Instagram (30%), a project website (25%), an online learning platform, such as Google Drive, district portal, NING Mentoring Moments, or TVO's TeachOntario, as well as via online conferencing, webcasting, and a district website.

Table 12: Sample Projects: Level of Learning Sharing

Level of Sharing	Projects	
	#	%
Within own school(s)	19	95%
Within own school board	19	95%
With other school boards	8	40%
Provincial/National*	2	10%
Community/Public*	5	25%

* Themes derived from the qualitative data in the Reports. The prominence of these themes might be underestimated.

Table 13: Sample Projects: Methods of Learning (Rank Order)

Method of Sharig	Projects	
	#	%
Online *	17	85%
• Blogs	9	45%
• Social Media	6	30%
• Project website	5	25%
• Online education platform*	5	25%
• Video conferences	2	10%
• Webcasts	1	5%
• School board website	1	5%
Working with other teachers in their classroom	17	85%
Workshop	13	65%
Conference presentation	4	20%
Community event*	3	15%

* Themes added by the researcher:

- **Online is a composite measure based on the five items from the multiple-choice list and other online sharing opportunities mentioned in the Reports;**

- **Themes derived from the qualitative data in the Reports. The prominence of these themes might be underestimated.**

Another method of sharing that is used in the vast majority of projects (85%) is "working with teachers in their classroom". It includes classroom visits, demoing new strategies and techniques, coaching, and co-teaching. Workshops/training sessions (which were the most popular method of sharing in Cohorts 7 and 8), are still very common and were used in 65% of the projects. To reach a wider educational community, many TLLP members presented at board-level, provincial, and national conferences (e.g. Connect16) in 20% of the projects.

Several projects also attempted sharing their knowledge with the local community online (via district or project website), or by organizing various community events, distributing newsletters, and working with a local radio and a newspaper. For one project, focusing on the use of "photography as a vehicle for student expression of academic and emotional expression", a community event was a very important and successful sharing activity:

The photography exhibition at XXX Art Gallery was extremely successful. The administration of the art gallery has requested that we develop an annual exhibition of student photography.

4.1.4 Impact of the TLLP

In this section, we present the results of the analysis regarding impact of the program on TLLP participants as teachers and as leaders. In addition, we will also discuss the impact on other educators, students, and schools.

Impact on Participants as Teachers

Table 14 outlines the main impacts of the program on participants as teachers. These themes were derived from the analysis of the qualitative data in the sample of 20 Final Reports. We would like to remind the reader that some impacts might be underestimated, since the calculations are based on the information reported in the Final Reports. Some TLLP participants might not have mentioned all of the impacts.

The outcomes of the program on the TLLP participants were overwhelmingly positive. The top identified outcomes were new/improved knowledge/ understanding and improved instructional and assessment practices. In 95% of the projects, TLLP project participants acquired new knowledge or improved their knowledge/ understanding regarding a particular approach or strategy, such as integrating spatial reasoning or coding, or regarding teaching and learning in general. 90% of projects reported improvement in participants' instructional and assessment practices. The degree of changes in teaching practices varied. In some cases, teachers integrated a new strategy or tool into their classroom practice, and in other cases, teachers'

established approaches to teaching and learning were completely overhauled by the newly acquired learning and understanding. One TLLP leader described in full detail how his philosophy of teaching, his teaching practice, and even the look of his classroom completely changed after he learned about new approaches to teaching and learning during his TLLP:

The greatest impact on my teaching through this TLLP project has been my role in the classroom. Before beginning this project I was a lecturer. Based off of student feedback they enjoyed my class and my lecturing style and I would take these compliments of my 'teaching' as a reflection of their learning. After beginning this project through a literature review of Physics Education Research (PER) I quickly came to the realization that the students liking me was not directly correlated to their learning. I decided that this TLLP project would be the best way for me to change my role in the classroom from 'sage on the stage to guide on the side'. This required me to relinquish my control of the content to the students and drastically change how my classroom operated. My symmetrical rows and columns of desks were replaced with tables and chairs where the students faced each other instead of me and had a large white board on it to 3z: as a common space for sharing ideas. My big binders of notes were neatly filed away and replaced with EDpuzzle videos that student interacted with at home. My class time become filled with inquiry based laboratories using sensors, simulation software for circuits, cooperative group problem solving sessions and

peer discussion of multiple choice questions. My classroom went from being filled with my voice to being filled with 20 - 30 voices actively being engaged in Physics discussions for 75 minutes. In effect, I feel like I actually became a teacher after 9 years of teaching. My focus was now shifted from teaching to helping students learn.

TLLP teacher leaders reported improvements in other areas related to teaching and learning, such as technological skills (e.g. using iPads, online learning environments, blogging, coding, etc.), classroom management, and planning practices. The following is an example of TLLP-related professional learning resulting in increased technological capacities:

We became more comfortable and aware of a variety of technology programs that allowed us to incorporate questions into our video that students could answer on line and we could track.

Improved professional collaboration and communication among and between educators and other staff were reported in a third of the projects. One TLLP project leader, whose goal was to enhance students' e-learning experiences, commented on how the project impacted communication and professional dialogue around the issue:

A better understanding of the e-learning environment and the challenges associated with it, as well as enhanced communication with on and offsite staff involved with e-learning are all benefits of our TLLP. It has further developed communication with our colleagues and opened dialogue regarding our e-learner students in our school.

Teachers' attitude to teaching also changed. In at least 30% of the projects, teachers felt excited to teach again, inspired to take risk, eager to share and collaborate. In five of the *sample Final Reports, TLLP leaders commented on improvements in their professional confidence and sense of self-efficacy. Program participants felt more confident*

as teachers, technology users, collaborators, and learners. We believe that the above statistics are significantly underestimating the impacts in these areas: many more educators might have had similar experiences but did not mention them in their reports.

And finally, in at least one case, educators' well-being was improved as well. One TLLP leader commented on how the team's efforts to improve students' well-being resuled in improvements in the staff's well-being:

Through professional reading and on-line certification ..., co-planning, co-teaching, reflecting, assessing, professional dialogue in Professional Learning Communities and reporting, we were able to better learn, provide, develop and practice mental awareness and self-regulation strategies as a staff and with students. We also realized how much the new learning positively affected the staff's mental wellbeing as much as it positively affected the students! Our practice of mental wellness strategies quickly became as important as our students' practice!

All of the projects in the sample used multiple formal and informal techniques to measure their learning and progress. In 90% of the projects, dialogue with colleagues was used to help reflect on personal and or/group learning. In all projects, feedback from colleagues, students, and/or parents served as a measure of teacher learning. In 60% of the projects, TLLP participants kept reflective journals to monitor their learning. More formal measures were used as well, such as surveys (60%), student achievement data (55%), and portfolios (35%). In some

Table 14: Sample Projects: Stated Impacts on Participants as Teachers (Rank Order)

Impact on Participants as Teachers	Projects	
	#	%
Improved knowledge and understanding	19	95%
Improved teaching practices	18	90%
Improved technological skills	10	50%
Improved collaboration skills/practices	7	35%
Inspiration/enthusiasm	6	30%
Increased self-efficacy	5	25%

projects, photos, videos, number of website page visits or posts, and work samples were used as evidence of professional growth and its effects.

Comparing to Cohorts 1-6, we found that in Cohorts 7-9, the number of TLLP projects undertaking formal and other approaches to monitoring their learning increased. We recommend that the provincial TLLP partners continue emphasizing the importance of these attempts via continuing to emphasize monitoring and reporting in TLLP Leadership Skills for Classroom Teachers sessions and in Ministry reporting procedures.

Impact on Participants as Leaders

Fostering teacher leadership is one of the TLLP's overarching goals. Starting with Cohort 7, the Final Report form has included a separate section on Teacher Leadership. Project leaders are requested to identify the key areas of teacher leadership they learned about throughout the project (a multiple-choice question) and describe the program's impact on them as teacherleaders (an open-ended question). Table 15 presents the results of the analysis of the first question.

We are pleased to report that all (100%) of the projects in the sample indicated TLLP participants' growth in multiple leadership areas. Most common areas of growth (reported by more than three quarters of the projects) were related to communicating, collaborating, and facilitating learning sharing. These areas were also highly rated by Cohorts 7 and 8. Project management, administrative, and organizational skills were rated slightly lower than in the previous years. The majority of the project leaders also reported getting better at building a strong team of leaders (team building, empowering others, building trust); similar results were reported for Cohorts 7 and 8. One project leader commented on realizing the importance of building on each other's strengths:

It [TLLP] has … helped me wrap my head around what kind of leader I want to be. I believe that we need to empower our colleagues, help one another find our strengths and draw on those. I have learned that it is about working together, sharing ideas, being team players, not one person telling everyone else what to do. It should be a guided discussion where everyone's ideas and opinions are valued.

Table 15: Sample Projects: Areas of Leadership Growth (Rank Order)

Areas of Leadership Growth	Projects	
	#	%
Collaborative problem solving	20	100%
Communication	18	90%
Facilitating sharing of learning	17	85%
Collaborative decision making	16	80%
Presentation skills	14	70%
Team building	14	70%
Empowering others	13	65%
Facilitating adult learning	13	65%
Organizational skills	13	65%
Project management	13	65%
Administrative skills	12	60%
Mentorship	12	60%
Building trust	11	55%
Research skills	11	55%
Managing the change process	10	50%
Co-teaching	9	45%
Listening	9	45%
Conflict resolution	5	25%
Debriefing	5	25%

A seasoned TLLP project leader commented on how her previous TLLP experiences have made her a better leader by empowering others and sharing leadership and responsibilities:

This is the third TLLP I have been a part of and the second as lead. During this specific TLLP project I learned how to make the best use of the strengths and areas of interests of our teachers. I really enjoyed having a larger group of teachers to work and collaborate with. In past projects I found that I ended up taking on too much responsibility and I needed to improve on delegating tasks and projects to others. Based on my learning from past TLLPs, I made a conscious effort to create clear roles for each group member.

It was to the benefit of not only my own learning but that of the other teacher participants as well. Teachers really became experts in their own areas of skill development and adaptation that they were responsible for. As a result, the sharing of our learning with other professionals was much more effective and frequent.

The findings and examples presented above confirm TLLP's positive influence on teacher leadership.

Impact on Other Educators

Our analysis of the sample of Final Reports identified several benefits of sharing learning from the TLLP project with a wider group of people, as outlined in Table 16. It is important to remember that Table 16 refers to explicitly listed benefits in the Final Reports.

The impact on other adults varied from project to project depending on the nature of the project and the goals and the nature of sharing activities. While some projects were able to generate interest, and expected more impact to happen in the future, others were already able to evidence the effect of their sharing on their colleagues' practice and even on students of those colleagues.

The main benefit of the TLLP for other adults is improved knowledge and understanding, which was reported by 75% of the projects in the sample. 55% of the Final Reports stated that educators (outside of the TLLP team) who received new learning were inspired to make a change in their practice (by trying out the newly learned strategies, tools, or shared resources) or in their professional learning experiences by taking more risks, engaging in collaborative learning, or applying for a TLLP grant. For example, a leader of a project on integrating a flipped classroom described how other teachers became interested in his ideas and were considering implementing them in their practice:

After completing each of my three workshops, my OAPT presentation and my PD Day Tech Presentation I issued exit cards to the participants. The results were very positive with many of the participants finding the information that I was sharing to be immediately beneficial to their teaching and would consider implementing some of the ideas. Most teachers found the research to be very compelling and were interested in putting into practice; however, they were reluctant to relinquish control of their classroom. One of the most well received ideas was the use of EDpuzzle as a method for flipping the classroom fully. Although not all teachers wanted to completely flip their classroom, many thought this program could be used in various roles throughout the year. Although not all teachers wanted to completely flip their classroom, many thought this program could be used in various roles throughout the year.

While leaders of only three projects reported observing changes in practice of other educators as a result of their sharing (which is lower than the results reported previously), many more mentioned expecting to see such changes occurring in the near future.

It is challenging to measure the impact of sharing of learning and practices, particularly beyond the immediate TLLP project team and their school(s). Nevertheless, in our analysis of the sample of Final

Table 16: Sample Projects: Impact on Other Adults (Rank Order)

Impact on Other Adults	Projects	
	#	%
Improved knowledge and understanding	15	75%
Inspired to make a change	11	55%
Change in practice	3	15%

Reports, 7 projects (35%) explicitly mentioned utilizing some formal measures of the impact of sharing learning. Of those, the most common were workshop feedback forms or exit cards. There were also surveys of teachers and parents. In some cases, teachers produced evidence of changes in their practice, such as developed artifacts and samples of students' work. At the same time, the majority of the projects (at least 70%) seemed to rely solely on non-formal assessments such as personal conversations and personal observations, expressions of further interest, blog comments, and website visit statistics. While these less formal methods might provide less accurate data, they still can provide some insight into other adult learning and practice.

In comparison to Cohorts 5 and 6, fewer projects in Cohorts 7-9 reported undertaking formal approaches to monitoring the learning of others, while more projects seemed to use less formal measures. The TLLP leadership team should continue emphasizing the importance of these measures via training sessions and reporting procedures.

Impact on Students

While the TLLP is primarily focused on teachers' learning and leadership, the intended improvements in TLLP participants' professional knowledge, skills and practice are anticipated to benefit their students: either the entire population of students, which was the case for 80% of the projects, or a particular group of students (i.e. students with learning difficulties, at-risk students). The Final Report form for Cohorts 7-9 requests information on impact of the project on students as a part of another question about the program's general impact on the participant, his/her students, and school. It is recognized that TLLP is one of many factors affecting students' learning and development. Establishing a direct relationship is problematic and caution should be used in interpreting the results.

Despite the absence of the specific section on student learning in the Final Report form, 18 projects (90%) discussed the impact of the project on their students in at least one section of the report. Improved learning experiences (more engaged, deeper, and more applicable learning) and skills (e.g., "21st century learning skills such as critical thinking, creativity, collaboration, and communication" or being "more technologically literate") were observed in 90% of the projects. These improvements were reached via different methods: by passing "the control of learning to the students", "giving students a chance to succeed at their own level", using real-life problems, changing learning environments, using technology, and sharing "with them on the research about how they learned best".

The majority of the projects (55%) also reported improvements in student engagement, attendance, and attitude. In their comments, the project leaders spoke about students becoming "so much more engaged in their learning", taking "ownership of their learning goal", having "compassion for learning". One project leader described the drastic changes in his students' engagement levels after he changed his approach to teaching:

I observed student truly engaged for 30-45 minutes while they solved a difficult problem. It just reinforced my commitment to active learning, since the students were actually doing Physics for an entire class rather than being passive bystanders while an 'expert' told them how to solve a problem.

Seven projects reported improvements in student well-being: emotional and mental wellness and self-control skills. The improvements in student well-being also effected classroom, school, and even home environments, according to parents' testimonies in one of the projects:

We have many parents who can't wait to set foot in our classrooms and talk about the trickle down effect of our project at home ("I just walk in here and feel the stress leave …", " We are using breathing at home, talking about feelings and things are better", "Last night Xander asked for a hammock for his birthday so he could relax when he's upset like he does at school!").

These improvements also led to enhanced engagement and even academic success, in at least one project.

Table 17: Sample Projects: Impact on Students (Rank Order)

Impact on Students	Projects	
	#	%
Improved learning experiences and skills	18	90%
Improved engagement and attitude	11	55%
Improved well-being	7	35%
Improved achievement	3	15%

Improvements in academic achievements were reported in only three projects. In comparison to previous years, the percentage of projects reporting improvements in student achievement has slightly decreased, while the percentages of the projects reporting improvements in student engagement, learning experiences, and general well-being have increased. These results can be explained by the nature and ultimate goals of the projects in the Cohort 9 sample: very few projects focused on raising student achievement, but most focused on improving student engagement and learning experiences, which are very important and are key to student success. In words of one of the TLLP participants:

Our students became leaders and motivators. Our students became engaged and committed. Our students became learners.

Fourteen projects reported utilizing some measure for monitoring changes in students. 40% of the projects in the sample reported utilizing a formal measure (student assessment, student work, or survey) to monitor student learning and development as well as validate implementation of new strategies/tools. Others relied on less formal measures such as teacher observations, anecdotal records, informal parental and student feedback. While it might be more difficult

to measure student outcomes in some cases than in others, TLLP teacher leaders should continue receiving advice and support for developing appropriate methods for monitoring student learning and development, especially during the initial Leadership Skills for Classroom Teachers training session.

Impact on Schools

The Final Report form for Cohorts 7-9 requests information on impact of the project on schools as a part of another question about the program's general impact on the participant, his/her students, and school. All of the projects mentioned school benefits in their reports.

In the majority of the projects, TLLP-related activities helped develop or improve the "open-door" or collaborative culture within a division, a department, a school, or even across a board. A TLLP project leader who had successfully created professional collaboration of Physics teachers across the district commented:

Before I was the only Physics Teacher at my school and I viewed myself as an island into which I was responsible for developing all the activities and content for my students. Now having begun to develop a physics community of teachers within my board, I view myself as part of a larger team. This team

now has a forum to share ideas and enlist each other's help when developing curriculum.

Improved relationships with families and community members were reported in 35% of the projects. In one project, for example, by partnering students and social agencies, stronger relationships between the school and community were developed:

Goodwill has been created between the school and the agencies involved in the projects. Feedback from the students and agencies indicated that there was greater understanding of the 'other' as a result of the interaction between students, teachers and agencies.

A safer, more welcoming, learning-induced environment was developed in at least five cases. In a project promoting student mental health and wellness, a healthier school environment was developed:

There have been significant positive changes including a more welcoming school and classrooms, happier students and school staff, academic and mental health growth due to better wellness and awareness, appreciation and the support that we all need to work on this every day! Our staff has become closer, more trusting and keen to continue to collaborate as we continue on our learning journey.

Table 18: Sample Projects: Impact on Schools (Rank Order)

Impact on Schools	Projects	
	#	%
Culture of collaboration	13	65%
Partnership with parents/community	7	35%
Enhanced learning environment	5	25%
Teacher-student relationship	5	25%
Partnership with other schools	4	20%

Five projects reported improved relationships between teachers and their students. TLLP projects helped strengthen connections between and across schools and panels in at least four cases.

Other school benefits included development of a shared school vision and development of a stronger community of students as well as teachers. In one case the TLLP project completely changed the culture and the image of the school:

Teacher collaboration is at an all time high at the school. There are many cross-curricular learning opportunities taking place, and both staff and students have benefitted from this. There is an obvious common vision and goal in our school, that supports an authentic learning model for all students, and I believe this is a direct result of the TLLP project. …[Our] school has had to rise above perceptions, and often misconceptions, as many people believe that our school is strictly a school for lower functioning students, disengaged students and students involved in criminal activity. These past two years, we have worked hard to dispel these notions, and demonstrate that our students can make a difference locally and globally. The TLLP share project allowed us to demonstrate high-interest knowledge and skills to our elementary feeder schools, creating a more positive image for our school and students. Our staff and students have been able to provide quality leering in an environment that is engaging and unique.

In addition, five Final Reports talked about TLLP projects leading to board-wide changes in policies, approaches, and culture. A leader of a project on developing a more meaningful Physical Education program for students with special needs noted the impact of the TLLP project on her board:

The most significant evidence we have of the impact of our sharing is the program that will now be in place for all of students with special needs for the upcoming school year. Because of the sharing of our learning our board has dedicated a 0.7 teaching position for the specific instruction of Physical Education, using the programs that we developed throughout or project and the adaptive equipment purchased throughout our TLLP. As a result of the enthusiastic interactions between students, parents, and educators, … [the school board] has begun to craft a plan to have the same technology available to all of the Kindergarten classrooms across the Board and has moved to bring this set up into many of the primary classrooms as well, with an aim to expand into higher grades in the coming years.

4.1.5 Challenges Experienced by TLLP Participants

As with all initiatives, challenges were encountered by TLLP participants. Nevertheless, TLLP project leaders found a way to deal with those challenges and accomplish their goals fully (30%) or mostly (70%). Due to various unforeseen circumstances, such as labour unrest, delayed access to technology, change in the project scope (where more or fewer than expected people/schools got involved), or simply newly acquired knowledge, these projects were not able to fully explore one of their original learning or sharing

goals and/or they had to refocus and change their goals/scope. The following is an example of a project whose goal was changed due to newly acquired knowledge:

The goal changed during the course of this TLLP. Originally the plan was to share how I used sensors to build an inquiry based classroom, but after giving workshops to Physics teachers within my own board I found that in order to actually develop an inquiry based classroom you needed more class time with the students. This led to major discussions on how to effectively flip the Physics classroom. While attempting to flip my own classroom I discovered a program called EDpuzzle. The program allowed me to track the students' progress while watching videos and assess their understanding of the topic extremely efficiently. As such my presentation at the OPT and the one at STAO are centered around how to use this program to build a flipped classroom.

Encouragingly, not a single Final Report reviewed had "partially" or "not at all" marked when reporting on the degree of the goal accomplishment.

A number of challenges were mentioned in the Final Reports. The mains ones are listed in Table 19. Challenges identified in Cohort 9 are similar to the ones identified previously. The most often cited challenge is time. Throughout the nine cohorts, time has always been the number one challenge, which was experienced by the majority of the analyzed projects. Time was an issue in 75% of the projects in Cohort 9, the highest percentage yet. TLLP leaders commented on underestimating the time that managing a project, building a team, installing technology or equipment, or acquiring a new learning would take.

Staying focused and organized, setting manageable goals, looking for ways to be more efficient, delegating tasks, requesting help, and being persistent, patient, and flexible were some of the strategies that were used to overcome time-related difficulties. A leader of a project focusing on building positive mindsets with students around number sense commented on her team's strategies to deal with time and workload pressure:

We learned to delegate and divide responsibilities to complete all components of the project. We learned to seek and accept help outside our project group members to accommodate time challenges [and used] flexibility to alter the original plans to meet the needs of the project.

When the project leaders found themselves in a situation where they could not achieve all original goals within the TLLP project time frame, they either decided that they would focus on these goals in the future or requested an extension, as occurred in three projects.

Project management was identified as a challenge in half of the projects in the sample. Those new to project management commented on underestimating how difficult and time-consuming it may get. Those already familiar with it, commented on continuing to learn to be more efficient at it. In most cases, TLLP leaders learned to deal with such challenges and became better at it, as is evidenced by reported improvement in project management skills in 65% of the projects.

The scope of the project, which has been one of the three top challenges throughout the years, appeared to cause difficulties in 40% of the projects in Cohort 9. Project scope turned out to be either too ambitious for the given time and/or budget frame, or too small for an increasing unanticipated level of interest. In some cases, the project scope difficulties were solved by adjusting the scope or requesting assistance from the board or TLLP team in terms of additional funding, timeframe extension, or advice. In

others, sharing of responsibilities/leadership, and making more manageable goals were the solutions, as was the case in a project on developing safe spaces within classrooms, as its scope grew significantly due to high interest within the school and the board:

Having the scope change to a much bigger area was very exciting, but also time consuming at times. ….[One of the] strategies we used was the decision to use the TLLP funding and time to the best of our ability by prioritizing and accomplishing as much as we could, but acknowledging we would continue to work on our project beyond the TLLP timeline. We also decided to try and empower the teachers in our school to learn and make changes on their own and share back.

Communication and relationship issues within the TLLP team or with the board were less common, but still present in several projects.

Table 19: Sample Projects: Challenges (Rank Order)

Challenges	Projects	
	#	%
Time	**15**	**75%**
Project management	**10**	**50%**
Project scope	**8**	**40%**
Communication	7	35%
Funding	6	30%
Technology	5	25%
Resources	4	20%
Logistics*	4	20%
Sharing challenges*	3	15%
Relationships	2	10%

* Themes derived from the qualitative data in the Reports.

Establishing open lines of communication and building trusting relationships were considered to be important for the success of a project on community outreach:

We learned that not everyone is as excited about our ideas as we are. We need to do a better job of communicating the value of what we do and why we do it...We learned that in order for success, all of those impacted have to be involved at all levels of planning... More honest, open communication with colleagues may have helped to navigate the challenges within the professional environment.

Lack of funding and resources appeared to be an issue in about a quarter of the projects in the sample. Requesting assistance, negotiating, and being flexible and creative with already existing resources were the main strategies to deal with these issues.

While technology remains the top priority theme, our research suggests that fewer projects reported technology related issues (25% in Cohort 9, compared to 48% in Cohorts 7 and 8). This change can possibly be explained by the smaller number of projects needing to acquire and install technology for the purposes of their projects, as well as improvements in the access to technology and better infrastructure and support in schools these days. Nevertheless, in five projects, TLLP participants reported having to deal with delays in the acquisition of technology or limited use of it. In these cases, project leaders usually engaged in negotiations with the IT department and the board to find a solution. If those strategies did not work, they had to request additional funds and/or an extension to be able to complete their goals, as was the case in a project focused on developing authentic learning experiences through arts and technology, where timely acquisition

and use of iPads was key to the success of the project:

Our biggest challenge was working with other departments within our school board. We learned that despite our project being recommended by our board and the support expressed by this recommendation from the superintendent and curriculum consultants, this did not translate into support from Finance and IT. We had to wait 5 months to receive our iPads which resulted in having to apply for additional funds, delaying the technology aspect of the project and extending the time frame for the project.

Logistical issues, such as finding a common meeting space and time and scheduling a sharing session, were reported in four projects as well. Creating an online space where team members could share their schedules and organize meetings worked in one case. In another project, where "it was at times difficult to get all of our group members at each meeting, we often broke into smaller working groups that met more often and then conducted longer but less frequent whole team meetings."

Sharing learning among others presented its own challenges. For example, leaders of a project on integration of coding and gamification in various areas of curriculum came across a lack of interest on the part of some teachers who were discouraged by the technology and skills that were required. They learned to make their ideas more attractive to others by showing how effective they could be:

The prospect of introducing coding into a class other than Computer Science can be daunting for most teachers. Very few teachers were willing to consider using our assessment

tool at the outset. However, after successfully implementing it into our own classrooms, we were able to provide exemplars and tips on how to make the experience more rewarding. We also posted an invitation for educators on LinkedIn to participate in our project and try out coding in their own classrooms, and some teachers got in touch to say that they were interested. Some educators (mostly those from other school boards) felt that this was a project they needed to focus on acquiring more hardware and access to Wi-Fi in their districts/ schools before they could decide how to allocate those resources. We had hoped that the bulk of the year would be spent supporting teachers in classrooms where coding and gamification had been introduced, but instead it was spent sharing the successes of our own classroom experiences, and convincing teachers to try it out next year.

The project leaders were able to deal with many of the challenges described above by applying one or more of the following approaches: developing open lines of communication; negotiating; requesting assistance and support from colleagues, administration, OTF or Ministry; setting manageable goals; being more organized by setting timelines, schedules, agendas; fostering relationships, building commitment, and sharing leadership and decision-making; using existing resources; being flexible and creative; being resilient and persistent; and being patient when waiting for uncontrollable issues to resolve.

To sum up, even though TLLP participants confronted many challenges during the course of their projects, they managed to find ways to deal with most of them. These challenges can also be considered new learning and leadership

development experiences for TLLP participants. We believe that training and continued support in the above-mentioned areas of challenge are crucial to the success of TLLP projects.

4.1.6 TLLP Project Sustainability

Even though it is not a requirement for participating in the TLLP program, there is an expectation that the learning and sharing happening during the course of the project will continue beyond the TLLP project's implementation period. To learn about TLLP participants' plans for sustaining the projects' learning and practices, starting with Cohort 5, the Final Report form includes a section on ongoing elements of the project.

Our analysis of 20 Final Reports revealed that those expectations and hopes for sustained learning and sharing were not ungrounded (see Table 20). All of the projects in the sample planned to continue learning, implementing, and/or sharing in the area of their project. All project leaders said that they would continue implementing the strategies, tools, or programs they had developed thorough the TLLP. In one project, however, there were concerns regarding the ability to

sustain the developed practices by some members of the team after TLLP funding is no longer available:

Some team members intend to include their project in future courses with modifications depending on the course and the agencies' needs. The connections made were generally beneficial and it would be nice to nurture them. Without funding, not all the projects will be viable i.e. transportation, materials, release time.

Three quarters of the projects also mentioned that they intended to continue learning and developing their skills, strategies, and resources in the area of the project. Leaders of at least six projects planned to expand the area of implementation by applying their learning in a new learning setting, a new curriculum area, or a larger setting such as an entire school or school district. Some of them also considered applying for another TLLP or a PKE grant to get support to expand the area of learning, sharing, and implementation. Leaders of half of the projects in the sample stated they were going to continue collaborating/networking with their colleagues/other experts in the area around the issue/innovation. Some mentioned that the professional collaborative relationships

developed during the course of the TLLP project would continue and serve as a basis for new endeavors.

Many project leaders intended to continue sharing their learning and practices with others. For example, the majority planned to share by providing support to interested schools and teachers in the board. Others intended to continue sharing their learning, practices, and resources online (45%) or at conferences (20%).

4.1.7 Conclusions from Analysis of TLLP Applications and Final Reports

Our analysis of the data on approved projects and Final Reports for Cohort 9 (and its comparison to the Cohorts 1-8 data) result in some interesting conclusions. The emerging trends observed in the recent Cohorts are the following:

Students at the center – The analysis of projects suggests shifts in the foci of the recent projects: from teaching to student learning and from student achievement to student learning and wellbeing. Such shifts are a reflection of latest trends in education provincially, nationally,

Table 20: Sample Projects: Project Sustainability (Rank Order)

Project Sustainability	Projects	
	#	%
Continuing innovation implementation	20	100%
Continuing learning in the area	15	75%
Responding to interest from others	11	55%
Continuing collaboration/networking	10	50%
Sharing online	9	45%
Expanding the area of innovation implementation	6	30%
Forthcoming conference presentations	4	20%
Applying/considering another TLLP/PKE	4	20%

and globally. In their attempts to raise student engagement, enhance their learning experiences, develop their 21st century skills, and improve their mental and general well-being, TLLP members sought to learn about and integrate new pedagogies (e.g., inquiry-based learning, experiential learning, flipped classroom) into their teaching, develop spaces to promote student innovation and wellness, and introduce self-regulation techniques. These attempts resulted in some profound positive changes in teaching and learning as well as classroom and school environments. We recommend continuing to support such projects. We also suggest adding Pedagogical Change, Student Well-being, and 21st Century Skills to the list of the priority themes and continuing to provide training and guidance regarding the use of appropriate methods to measure student outcomes.

Collaboration – With the increase in the number of the approved team projects (vs. single-person projects) and greater availability and use of technology for collaborating and sharing, the collaboration theme has become even more prominent in TLLP projects. TLLP members used various methods of collaborating to learn, lead, and share. They discussed and shared their practices with other TLLP project members and with their colleagues across schools, boards, the province and beyond. They built partnerships with community organizations and engaged professionals, experts, and parents in their journey. We recommend continuing to provide training and support in the area of team building, conflict resolution, and creation and use of sharing opportunities.

Teacher Leadership – The addition of a new section on teacher leadership in the Final Report form starting with Cohort 7 allowed TLLP project leaders to reflect on

their leadership experiences and growth throughout the course of the project. It has also allowed the TLLP provincial partners as well as us, researchers, to get a better insight into the impact of the program on participants as leaders. We are pleased to report that TLLP's influence on teacher leadership is overwhelmingly significant and positive. We recommend continuing to provide teacher leadership training and support.

Sharing Far and Wide – The research results suggest an increase in the level of sharing, with more projects sharing beyond their school as well as more projects sharing online via blogging, social media, project websites, various online sharing platforms, etc. With the help of technology, sharing opportunities are unlimited, allowing the project leaders to reach far and wide; but the effects of such sharing are harder to measure. It would be wise to educate TLLP participants about various online sharing opportunities and basic web analytics tools/ measures. Attending and presenting at conferences are also good ways to meet likeminded people and build networks; thus, attendance at conferences should be promoted as well.

TLLP Community – Continuing to foster a TLLP community and TLLP alumni are important. For example, one TLLP Final Report commented:

During this past year, we also kept in touch with other members of the TLLP community which we had met at the initial training session. We shared the respective challenges we were facing (which, as it turned out, were very similar), and encouraged each other to persevere. This sense of community among leaders, and leaders-in-training, is one of the most rewarding aspects of this project.

Developing a community of TLLPers can help TLLP participants feel like they are a part of something bigger. It can help connect TLLP participants with the same interests, ideas, and even challenges (and there are many of those who share the same interests and challenges, according to this research). It can also help establish links across Cohorts and create mentorship opportunities, where former TLLPers provide advice or mentor new participants. It will help to create a community of leaders, inspiring, supporting, and empowering each other. While TLLP events and TeachOntario are significant steps to creating and supporting such a community, the development of a TLLP community and an alumni network could be further developed.

4.2 Mini-Surveys

The purpose of the mini-surveys is to monitor changes in TLLP confidence levels in learning, leadership and practices over the course of the TLLP project year. TLLP project leaders rate their confidence levels in six areas (implementing practices from their TLLP project; sharing knowledge and practices with others; leading professional learning; leading their TLLP team; managing their TLLP projects; and being a teacher leader) before their project starts and after implementing it. The survey responses from the initial Leadership Skills for Classroom Teachers session in May 2015 established a 'baseline' and the survey responses from the Sharing Summit in November 2016 assessed reported changes in confidence. The total number of responses were 100 and 150 accordingly.

As indicated in Table 21, TLLP respondents already reported relatively high confidence in their teacher leadership capacities before they had started their TLLP; ranging from a low of 76.3% of

respondents being confident in leading professional learning to a high of 81.1% of respondents being confident as teacher leader. The high ratings in the baseline survey pre-TLLP project raise questions about whether participants who are successful in putting forward TLLP proposals are already confident in their leadership and how TLLP can support less confident participants to come forward and grow their leadership.

Open ended responses to the mini-survey indicate that, at the start of their TLLP, participants anticipated that leading a TLLP project would further develop their teacher leadership. For example:

Looking forward to pursuing a project that I am interested in and feeling the support and confidence that the ministry and OTF have in me as a professional to do just that.

I am 'leaning into the discomfort' as I explore this new area of learning with my team leader. Our project is so distanced from the normal path so our learning will be huge - but so valuable. I am confident we will be successful but have moderate confidence in the actual implementation since we haven't done anything like this before.

Responses to the second mini-survey, post-TLLP projects, indicates statistically significant growth in confidence being reported in five out of six of the leadership areas surveyed. The largest growth in confidence level occurred in the area of implementing practices from the TLLP project. Positive changes of medium degree were reported in the areas of sharing knowledge and practices with others, leading professional learning, and being a teacher leader. Small but still significant changes were observed in the level of confidence in leading a TLLP team. The survey results suggest no significant changes in the area of managing a TLLP project. This finding is difficult to explain. If we compare these results to the ones reported for the 2014-2015 project year, we observe a similar level of growth in confidence in the areas of implementing practices, leading professional learning, leading a TLLP team, and being a teacher leader. Much larger increases in confidence were observed previously in the areas of sharing practices (d=0.66) and, particularly, managing a TLLP project (d=0.41).

Open ended responses to the second mini-survey also indicate that TLLP teacher leaders perceived benefits for their own leadership, learning and practices:

The learning I experienced in this professional journey was transformational to my teaching practices. The benefits to students were not only measurable, they were palpable.

I've learned to go beyond my classroom and work more with colleagues at my school, board and province to be a better teacher.

This was an excellent experience for us. The TLLP helped to build our own teacher capacity and the capacity of teachers in our school. The TLLP allowed us time to reflect on what we do and why become intentional in our teaching and refine our teaching practice.

Nevertheless, TLLP teacher leaders also commented on some challenges experienced. Most of the comments concerning challenges referred to a perceived lack of support from their school board:

Very difficult working with our board. They need some in-service on how this is supposed to work. They made something that should have been celebrated a bad experience.

The current process of having the TLLP application pass through the

Table 21: Analyses of Changes in TLLP Teachers' Leadership Confidence During TLLP

Leadership Area	Before		After		Difference	Effect
	M	SD	M	SD	in Means	Size
Implementing practices	79.4%	11.5	86.3%	8.9	6.9*	0.67
Sharing practices	79.9%	12.5	84.9%	10.6	5.0*	0.43
Leading professional learning	76.3%	15.0	81.3%	12.5	5.0*	0.36
Being a Teacher Leader	81.8%	11.6	85.9%	10.1	4.1*	0.38
Leading team	79.1%	15.5	83.0%	11.7	3.9*	0.28
Managing project	80.4%	17.6	80.8%	13.0	0.4	0.03

Statistically significant difference, p < 0.05.

school board for approval before it is passed on to TLLP committee can limit teacher choice. Some boards limit teacher choice/ voice by denying certain applications.

Two TLLP leaders suggested developing a system of connecting current TLLP participants with previous TLLP leaders to seek guidance and further learning:

Have a mentor program to help us through this process (previous TLLP participants).

Would love to see an addition to TLLP that would allow previous year candidates to share and connect to continued learning to further develop our professional learning. It should have connections to learning that is inspired by the previous year's learning.

Overall, the majority of comments concerning the TLLP were extremely positive. In a third of the comments, TLLP participants expressed their appreciation of the program and their gratitude towards TLLP organizers:

Please continue this program. It is an outstanding opportunity to develop a passionate approach to teaching. So grateful for this opportunity.

Thank you for providing us with this unique and special opportunity to make our vision a reality! We could not have moved forward with our project without your support.

Merci beaucoup pour cette belle opportunité! Malgré les défis que nous avons rencontrés dans l'élaboration de notre projet, les expériences de développement professionnelles que j'ai eu la chance de vivre sont inestimables. Merci!

In summary, the results of the mini-surveys pre- and post-TLLP project implementation indicate that TLLP participants have relatively high levels of confidence in their leadership capacities at the start of their projects. However, they anticipate that the experience of the TLLP will further develop their professional learning, leadership skills and practices. Responses to the post-TLLP project survey provide extremely positive findings of significant growth in TLLP teacher leaders confidence in implementating practices, sharing practices, leading professional learning, being a teacher leader, and leading a team.

4.3 Provincial Knowledge Exchange (PKE)

4.3.1 Analysis of All Approved PKE Projects (2015-2016)

According to the information provided by the Ministry (in the form of PKE project proposal summaries), seven PKE projects were approved in 2015-2016. Of these, three projects are unique, while four projects have been continued for two to four years. The overall proposed budget for these projects is over $282,256.25, while the average is just over $40,000. The project budget ranges from $16,000 to $50,826. One project is from an English Public board, while the rest are from English Catholic boards. The projects focus on a variety of topics, including Mathematics, 21st Century skills, pedagogical change, use of technology, and student well-being.

4.3.2 Analysis of PKE-related Sharing and its Impact for selected PKE Projects (2015-2016)

To analyze PKE-related sharing and its impact, we used the following two sources:

1. Four Final Reports for PKE projects provided by the Ministry of Education

2. Three Sharing Logs/Info submitted by PKE project leaders

The PKE Final Report form has two fields related to sharing activities: a) plans for sharing, and b) impact of the project. Both fields are open-ended and the responses range from a few words to several paragraphs. All PKE project leaders were requested to submit information about PKE-related sharing activities: audience for sharing, level of sharing, method of sharing, and impact of sharing. A suggested template of a log of sharing activities was provided to project leaders. We received the information on sharing activities (in the form of the suggested log) from three projects. We analyzed this information along with the sharing-related information available in the four Final Reports provided by the Ministry. These Logs and Final Reports involved five PKE projects (71% of all projects); these projects are representative of board types, project budget sizes, and themes found in all PKE projects approved in 2015-2016.

In this section, we present the results of the analysis around the following areas: project goals, level of sharing, audience for sharing, methods of sharing, and impact of sharing.

PKE Project Goals

The primary goal of all projects is to share their learning and practices from past TLLP experiences with a wider group of schools and school boards. PKE project goals included improving teaching and learning (e.g. by promoting "the use of technology in inquiry-based learning" or best strategies in Math instruction and assessment). PKE projects also included goals to enhance student well-being (e.g. by promoting mindfulness practices or restorative practices). The projects intended to utilize various methods of sharing to reach multiple audiences from presenting at conferences to training teachers in new approaches to developing and distributing resources.

Level of Sharing

The most common level of sharing is within the board, all interested schools or all interested educators in the board. Within school sharing is less common (only mentioned in one project). It is possibly still happening, but is probably rather an extension of the collaboration/practices developed during TLLP, rather than a focus of a PKE project, which is intended to share more widely.

Two projects shared their practices and resources with other boards: in one case, the other board was interested in implementing similar approaches, and in the other case, a likeminded fellow "TLLP/PKEer" and his team shared and collaborated. Two out of five projects reported sharing with a larger educational community as well; mostly through presentations at provincial and Canada-wide conferences, use of social media, and making ideas and resources available online (e.g. via TVO TeachOntario, board online community). In at least two cases, project learnings were also shared within the local community (parents, community organizations).

Audience for Sharing

The primary target audience for sharing for all projects were teachers. School administrators and Board administrators and staff were also PKE project participants in a majority of the projects. In fewer projects, ideas and practices were shared with parents, students, university faculty, the Ministry, and community. The size of audience varied from project to project from one sharing opportunity to another. In general, projects were able to reach out directly to dozens of people and in two cases even hundreds (over 200 and over 400) educators through board and school presentations, workshops, multi-day sessions, coaching, and co-teaching/co-planning. Even more educators were effected through less direct means, such as presentations at provincial and national conferences, networking, and sharing of resources and learnings online.

Methods of Sharing

To share their ideas, learning, and practices PKE project leaders used a variety of methods depending on the purpose and targeted audience. Foremost, the projects worked on spreading their learning and practices among educators within a particular division, school, or board. The most common method of sharing was a workshop. The workshops were held by all five projects. In some cases, project facilitators managed to organize over 10 workshops in a year. During workshops the facilitators presented their ideas, demonstrated their innovations, shared materials, suggested available resources, and in some cases trained teachers in using new approaches/strategies/tools. The project leaders reported positive reaction to all their workshops. For even deeper learning, one-on-one coaching, on-site workshops, and online support were provided in addition to workshops. Table 23 lists some of the methods of sharing that were mentioned in the Sharing Logs and/or Final Reports.

Table 22: Level of Sharing in Selected 2015-2016 PKE Projects

Level of Sharing	#
	5
School	1
Board	5
Other Boards	2
Local Community	2
Larger Educational Community	2

Table 23: Methods of Sharing in Selected PKE Projects

Method of Sharing	#
Workshop/Training	5
Online platform	3
Mentoring/coaching	2
Conference	1
Social media	1

Project Impact

According to the Logs and Final Reports, the project sharing activities resulted in more knowledgeable, equipped, skillful, motivated and confident educators. For example, after analyzing post-workshop surveys, leaders of the PKE project on restorative practices concluded that their workshop participants "felt the learning they were involved in could be readily transferred to the classroom to benefit their students and to contribute to a positive school climate". In addition, teachers who participated in additional training and certification in restorative practices through on-site workshops and one-on-one support observed improvements among their students, such as: "enhanced listening skills, a stronger sense of connectedness within their classrooms, and greater empathy among students".

4.3.3 Conclusions and Suggestions

The analysis of the available PKE data showed that PKE projects are capable of providing meaningful learning and sharing of practices for educators across schools and boards and inspiring many more educators across the world with their proven-to-work ideas and accessible, ready-to-use materials. We suggest continuing to provide PKE grants to eligible projects. We also recommend improving the program management by developing a better system for tracking and storing of PKE Final Reports and other documentation. In addition, we recommend making changes to the Final Report form by requesting information on the nature and spread of PKE-related sharing activities that actually materialized (not just planned ones) and by requesting more details on the impact of the project on project

leaders/facilitators, educators, students, schools/board, and about future plans.

4.4 Case studies of TLLP/PKE projects

In 2013-14, we initiated a case study of a PKE on Balanced Math in Simcoe County District School Board. In 2014-15 and 2015-16, we continued to research the expansion and evolution of this work. In 2014-15, we began a case study of the PKE A Picture is Worth a Thousand Words – Using iPads and ePortfolios for Pedagogical Documentation and Parent Communication in Renfrew County Catholic District School Board. Our third case study, started in 2015-16, was UP (Ultimate Potential) Math at Monsignor John Pereyma Catholic Secondary School in Durham Catholic District School Board (DCDSB).

4.4.1 Introduction

In this report, we focus on the UP (Ultimate Potential) Math case study. Interviews were conducted with the TLLP and PKE project leader, the school principal who continues to support the PKE sharing and growth within the schools, two superintendents who initiated and continue to manage the board-wide implementation of Ultimate Potential Math, teachers who are part of the first cohort of DCDSB teachers to implement UP Math in schools outside of Pereyma, and students who have benefitted from the program and the growth mindset that arose from it.

4.4.2 Context

UP Math, a program that is well-known by educational administrators across Ontario, and that has gained recognition both nationally and internationally, is a grassroots initiative originating out

of Monsignor Pereyma Catholic Secondary School, a small school (less than 600 students) where approximately 40% of Grade 9 students have attended three or more elementary schools. Pereyma is located in Oshawa and is part of the DCDSB, which is situated an hour north-east of Toronto. The district is composed of 38 elementary schools, seven secondary schools and six Alternative and Continuing Education Sites, serving a total of 21,150 elementary and secondary students.

Pereyma, now heralded for its strong Math program, had the lowest Educational Quality and Accountability Office (EQAO) Applied Mathematics scores in the district when Leanne Oliver became department chair in 2008. With only 17 percent of the students achieving a level three (provincial standard) or above on the EQAO assessment, Leanne and her colleague, Kevin Hoadley, were determined to make significant changes in their teaching practices in order to address their students' needs. Frustrated with the lack of time and resources they required to impact outcomes and with the encouragement from the then principal, Patti Wilson, they applied for a TLLP grant.

Since the beginning of the UP Math TLLP journey, there has been a dramatic 56% point rise to 73% of students achieving the provincial standard in Grade 9 Applied Math and Pereyma is now, with the support of the PKE grant, sharing their successes on provincial, national and international platforms.

When asked what the motivating factor was in becoming involved in the TLLP/PKE program, Leanne Oliver, the TLLP and PKE lead, speaks to the emotional connection she has to her work and her students:

It's emotional, these are our kids. We saw that when these kids are falling behind in Grade 9,

the limitations that are placed on their life and on their further academic achievement are profound. And so, we need to remove those barriers. It had to change. It's our moral imperative. It must change. And we were sick and tired of waiting for this to happen.

Their first TLLP was based on pedagogical research concerning diverse learning needs theory and differentiated instruction. Using the DCDSB's Continuum Based Math diagnostic to determine gaps, they designed open and parallel tasks to suit individual students' proximal zones of development. In order to understand how their students learn best and to modify lessons accordingly, the Math Department conducted Collaborative Inquiries for Learning Mathematics, which involved co-planning, team observations, and lesson analysis. The team efforts and de-privatization of classrooms energized the department and there were marked improvements in student engagement and understanding. However, deep gaps in achievement persisted.

Maintaining the growth mindset that now characterises the school, the team engaged in a research review of the evidence-based relationship between mindset and achievement, leading to what is now the central guiding principal of UP Math - Gratitude. Acknowledging the positive role that technology could play in the classroom in creating gratitude artifacts and in engaging students in learning and sharing, the team applied for a second TLLP grant. With a class set of iPads, students began documenting and sharing their positive mindsets and leveraging educational apps to enhance learning and collaboration in Math.

The emphasis on a mind shift toward gratitude, combined with a collaborative Mathematics inquiry approach, technology supported individualized learning and traditional pedagogical strategies are what make the UP Math program unique and effective. Due to its evidenced impact and with the support of the PKE, UP Math was implemented in all seven DCDSB secondary schools during the 2016-17 school year.

4.4.3 Program Description

Students struggling to achieve standards in Grade 8 Math are encouraged to enrol in UP Math (registered as a learning skills course) for the Grade 9 fall semester, in lieu of an elective, so that they can gain the confidence and skills necessary to succeed in Grade 9 Applied or Academic Math the following semester. The first 21 days of UP Math involves a concerted focus on mindset, gratitude being of particular interest. This focal point is based on: the perceptual data from EQAO scores, which shows a direct correlation between positive attitudes towards Math and achievement; Alex Korb's research, which demonstrates that gratitude engages the parts of the brain that deal with stress and anxiety; and Carrie Howell's work, which focuses on how metacognition affects learning, and who is known for the quote, "If you think when you are thinking then you will all think better.".

The UP leader emphasizes the importance of "the stories we tell ourselves and the language used to do so" and that "the expectations we set for ourselves become self-fulfilling prophecies". Students learn that by focusing on gratitude and self-confidence, high expectations can be created and thus met. An enhanced sense of gratitude serves as the foundation for the students as they simultaneously build their academic self-esteem and their Math skills. Using iPad apps, students create gratitude journals, movies and storyboards to document their gratitude – artifacts that they can return to when they feel overwhelmed and anxious. Using technology to learn about a topic that is more easily engaging and that connotes positive feelings allows students to become familiar with it before leveraging the same technology for learning more challenging concepts in Math.

During the 21 days of gratitude, Math is introduced incrementally and with sensitivity. The continuum based Math diagnostic is used to determine gaps within the cohort. Results are not shared with students. The UP PKE leader commented: "The last thing we want is to hand them back something with another grade on it to reinforce the mindset that they are not capable. We put off any sort of assessment as long as possible."

A typical class would follow the Explore, Master, Share approach to learning Mathematics. During the exploratory phase, students engage with concepts without prior exposure to the rules using the Concrete-to-Diagrammatic-to-Symbolic approach. They collaborate to come up with questions, to experiment with various solutions, and to create rules and symbols that represent their thinking. According to the UP PKE leader: "You don't have to tell them anything. They figure it all out on their own." This takes place in an encouraging environment, where mistakes are embraced as learning opportunities. A focus on continuous descriptive feedback in both directions, from teacher to student and from student to teacher, makes both parties comfortable with learning from their mistakes and equips students to articulate how they learn best, and how both students and teachers can change their direction to improve learning.

The exploratory phase is usually followed by a technology-embedded lesson, after which students work on their iPads to solve problems individually or collaboratively. When a student has had sufficient time exploring the topic, has demonstrated mastery and can articulate their understanding, they may be designated as a class coach for that topic and their role becomes one of support for other students – a leadership opportunity in which UP students thrive.

Students are asked to demonstrate their learning, and there is a level of flexibility in how this is done. Students may use Apps such as iMovie, Edmodo or Padlets to record, expand on and share their learning. The UP teachers were resistant to testing as "tests are fixed measures of performance rather than of learning" (UP PKE leader), but parent expectations led them to eventually incorporate evaluations into the curriculum. Tests are presented as "opportunities for students to show what they have learned" and that de-stigmatization, along with the new positive learning experiences, allow tests to be experiences that are embraced as the students' progress.

4.4.4 Sharing

The culture of teacher engagement and collaboration at Pereyma has made the sharing of UP Math within the school an organic process. The culture of openness and growth has been partially attributed to the past and present principals who have strongly supported and encouraged teacher learning and sharing. Reflecting on the beginnings of UP Math, the UP leader recalls the support from her principal:

There was this feeling that we knew that we could figure out, with support, what was best for our kids, so let us try to do it.

And let us be accountable for that. And if it doesn't work then we need to change what we are doing. So, there was that real sense that we needed to change what we were doing and the principal allowing and encouraging us to take this direction was really empowering for teachers, and I think a lot of teachers in the building saw that too.

UP Math and the growth mindset that accompanies it have motivated teachers to collaborate and to take on leadership roles. Two teams of teachers are currently conducting TLLPs of their own and regularly share their learning through opportunities for collaboration that are now built into the school structure.

Chris Cuddy, the principal, explains that there is a push from Pereyma teachers to de-privatize classrooms. They no longer want to work in silos and they therefore create as many opportunities for collaboration as possible, including release time for co-teaching, full-school challenge days, and platforms at staff meetings for regular teacher sharing. According to Chris:

You might have great things going on in 10 different classrooms within a school. But if you're not sharing them, there is a great loss occurring. With TLLP, you have people identifying a need, going to the research to learn about best practices and then going through the cycle of learning and making attempts for improvement. And then once they're achieving, either successes or failures, they are sharing that as much as possible.

Sharing within the family of schools began during Pereyma's second TLLP where teachers from neighbouring elementary schools attended learning sessions at Pereyma in an attempt to become familiar with the UP course, the

technology being used, and the students' reactions to their learning. Leanne and her team co-taught with visiting teachers and had them engage directly with the technology. Elementary teachers could then excite enthusiasm amongst their students who may be good candidates for the course. The principal explained:

Elementary teachers introduce the course by saying, 'you have been selected by your Grade 8 teacher to be part of this program because you show a lot of potential. It's very successful and internationally known and we think you would be a great candidate.' What a way to enter high school, to feel like you've been chosen for something special!

Another factor that drives sharing amongst staff is the moral imperative felt by teachers with students facing challenging socioeconomic obstacles. The story of success through UP Math at Pereyma is inspiring and educators wish to broaden the scope of this success in order to impact students in need. One superintendent recognized the power of the success story at Pereyma and, in 2014, brought the UP leader into board meetings and System Implementation and Monitoring session so that she could share successful strategies for potential system-wide improvement in Grade 9 Applied outcomes:

The Pereyma story resonates so deeply with us in terms of our moral purpose and our moral compass. You look at a community where students and families struggle and who have a lot of socioeconomic barriers to overcome, and through that determination that they showed at that school, they were able to do this. I think that's a very compelling case. (Superintendent).

The program was officially implemented across all DCDSB secondary schools during the 2016-2017 school year, supported and directed through the board's capacity building framework. Prior to implementation, seven teachers – i.e. one teacher in each of the district's seven secondary schools – took part in an introductory symposium facilitated by the UP PKE leader and school principal, attended professional development sessions offered by Apple Education, and met informally as a group to determine the best approach to starting the year. One UP Math teacher says that although she was nervous at first, the relationships she formed with the UP team helped her build the confidence she needed and she is now deeply entrenched and motivated by the process and is looking forward to being a Math coach for the district in the 2017-2018 school year: "I'm so motivated by my students and by the success they have started to experience in this course." She credits the success of UP Math to the grassroots nature of the program: "We are learning about things we want to implement. Teachers know what they need to learn about."

The UP PKE leader, released by the board from her teaching duties for one section each semester, used the time to facilitate continued learning and support for the new cohort of UP teachers (one for each of the seven secondary schools in the district). Teachers communicated regularly through email and, supported by the PKE grant, were released once a month for face-to-face meetings where they would explore iPad technologies, co-plan lessons, team-teach, and debrief. The extra time also afforded the UP PKE leader the opportunity to organize the constant flow of visits from school, district, and Ministry leaders from across the province, and plan conference presentations and other formal sharing opportunities. During the 2016-2017 school year, in addition to the many board representatives who have visited in the past, 14 school board leaders from across Ontario and several school representatives visited Pereyma to learn about and engage with UP Math.

Members of the UP team have presented at several conferences, including Research to Practice Symposiums and an Apple Education facilitated Math "Boot Camp". During the 2016-2017 academic year, they shared their learning formally in the following ways:
- Presentation to representatives from Conexus, LearnLab companies and IMTEC (International Management Training for Educational Change) in Drammen, Norway
- Hosting visiting Norwegian and Albertan teachers at Pereyma
- Presentation at Quest Conference in York Region District School Board
- Presentation to visiting Norwegian educators, trustees and politicians, facilitated by Conexus/LearnLab and IMTEC representatives
- Presentation at International Congress for School Effectiveness and Improvement (ICSEI) in Ottawa
- Presentation at Council of Ontario Directors of Education (CODE) in Toronto
- Presentation at Ontario Association for Mathematics Education (OAME) in Kingston
- Presentation at Canadian Catholic Schools' Trustees Association (CCSTA) national conference in Niagara Falls

The Ministry and OTF have been credited for their support and mentorship throughout. Reflecting on the challenges associated with bringing the UP program to scale across the district and trying to spread it further across Ontario (challenges such as navigating knowledge mobilization processes across boards and the Ministry and engaging of key stakeholders), the UP PKE leader commented:

The Ministry has been so supportive of it all, as well as OTF. I just think it's incredible. The fact that there is the possibility of a direct line of connection when I have questions. I can actually, through my contacts established through TLLP, get in contact with someone at the Ministry who can provide feedback and support and mentorship. The OTF has been extremely supportive in terms of mentorship and trying to help make it happen and understanding the dynamics in a board and to help manage and cope with that.

The TLLP and PKE grants helped the UP team to grow and share the program to the extent that it gained attention beyond Ontario. In pursuit of their goal to support professional development in school communities that demonstrate innovation, collaboration, application of research, and impact on learning, Apple Professional Learning and the Apple Distinguished Schools program has provided open lines of communication, technical support and several professional learning opportunities for UP teachers. Apple Education has facilitated multiple week-long professional learning engagements for all Pereyma staff on leveraging Apple tools and resources to enhance learning, supported multiple on-site educator visits at Pereyma, and facilitated members of the team to visit Apple Distinguished Schools across North America. Apple Education collaborated with the UP team to create an UP Math Multi-Touch Book, which provides the full UP Math curriculum, as well as the Gratitude Attitude in Math Class iTunes U Course for UP Educators, both available globally through iTunes. The PKE leader, Leanne, communicates with Apple Education on a regular basis to troubleshoot,

discuss program direction and organize further opportunities for sharing UP. Eight teachers at Pereyma are now Apple Teachers.

NORCAN (Norway-Canada), a partnership between schoolsand teacher federations from Alberta, Norway and Ontario and the Ontario Ministry of Education that is focused on addressing inequity in Mathematics, has supported UP through sponsoring conference expenses and visits between partners. Within NORCAN, they are currently exploring teaching strategies that can support the development of a growth and gratitude mindset.

Despite the ongoing mentorship and professional support offered by the Ministry and OTF, there were challenges associated with sharing the UP learning. One challenge was the limited availability of time outside of the classroom, a common sentiment among many educators. The first TLLP afforded release time that was used to co-plan and teach, but as the program grew and gained recognition outside of the school, the allotted days were not enough to sustain the administrative responsibilities associated with organizing on-site visits and off-site presentation. The following TLLP and PKE grants included increased funding for release time which enabled Leanne to focus on liaising, co-teaching and presenting to potential users across Ontario and Canada. The UP team also faces financial challenges concerning keeping technology alive in the classroom. As technology advances, they will be left looking for funding to update and replace the technology, now that the TLLP and PKE grants have ended.

The following are available websites and documents connected to the UP Math PKE work:

NORCAN: Norway and Canada. An international partnership in pursuing equity in Mathematics http://www.norcan-pereyma.com/

UP Math Multi-Touch Book: https://itunes.apple.com/ca/book/u-p-math/id1213043323?mt=11

Gratitude Attitude in Math class iTunes U course for educators: https://itunesu.itunes.apple.com/enroll/DDZ-XWR-BXB

UP Math on TeachOntario: https://www.teachontario.ca/community/explore/tllppke/completed-projects/projects/up-ultimate-potential-math

4.4.5 Impacts and Outcomes

In secondary schools across the DCDSB, both student and teacher learning have been positively impacted by the TLLP and PKE UP Math projects. The beneficial impacts of UP Math on student engagement and learning in Grade 9 Applied Math outcomes is well documented through EQAO scores that show marked improvements in both Math skills and in attitudes toward Math. What is not as easy to measure, but what becomes evident in conversation with UP teachers and students, is the confidence and strengthened student voice that UP Math students carry forward with them into other academic areas. A former UP student who, because of the confidence she built in the course, chose to enroll in Grade 9 Academic Math, rather than Applied, believes that a focus on gratitude should be built into every class. She commented:

There are some subjects that I have trouble with, like English, but thinking about the positive things before actually doing it makes it better. I sort of wish we did the gratitude part in every other class because I find it interesting and fun to learn and do.

When the UP students begin Applied Math the following semester, they become the leaders in the class and often surpass their peers who did not take the elective course. This shift in dynamics further strengthens their sense of self-efficacy motivation to learn. As a teacher discussed:

When the Grade 9 Applied started, my UP Math students were the ones answering questions. They were the leaders of the class. They bring that confidence forward with them. And that's when the growth becomes exponential. When they have that confidence. Then they can learn more than they ever have before. If you don't have that mindset, you are starting behind the 8 ball right away.

The focus on student voice has also expanded beyond the UP classroom at Pereyma and is an area that both students and staff are working to enhance. It is the belief of the community that the student voice should drive pedagogy. The student-led Math council at Pereyma, focused on making Math more relevant by organizing Math-based events for the school, is an example of students articulating and acting on their interest in shaping their own learning.

Teacher mindset is another area that has been positively impacted by the UP TLLP and PKE. The data associated with UP Math proves to teachers that by looking to the research for best practices, collaborating, and taking small risks, gaps in learning can be addressed:

One of the things that gets in the way of teacher learning is the belief that they have to cover curriculum and not fill in gaps. So, a significant learning from this process, for teachers, is that filling in the gaps has to occur before curriculum can be taught well.

The de-privatization of classrooms, at Pereyma and between UP teachers across the board, has created a collaborative learning environment where teachers are comfortable talking about their work. Through the consistent sharing of both successes and failures experienced by those changing their teaching strategies, many teachers have been inspired to challenge their teaching practices and to take on leadership roles:

I didn't just take these strategies into UP and then forget about it, right? I still have those students so I've tried to revamp the whole grade nine applied course. So, after we put UP Math in an iTunes U course, Leanne and I want to create an iTunes U course for Grade 9 Applied Math. (Teacher).

Teachers now look to one another to move forward with their ambitions through a collaborative process. As the principal commented: "More people are willing to take on leadership roles and don't want to do it alone so are looking for others to work with". In addition to the two Math TLLPs and PKE at Pereyma, there are currently two teams conducting TLLPs in the areas of Literacy and Makerspace. One UP teacher at another DCDSB school is beginning a TLLP in the fall of 2017 in an attempt to share her learning as an Apple Teacher and integrate iPads across the Math Department to further engage students in all Math, while spreading the gratitude mindset throughout her school.

Because the TLLP and PKE call for collaboration and require teachers to be accountable for sharing their learning, the programs provide constant opportunities for staff to develop their leadership capacity through co-learning, presenting at conferences and taking on leadership roles in various ways. The UP PKE leader has been designated an Apple Distinguished Educator, which gives her access to a global community of visionary teachers with whom she can collaborate, and provides her with additional opportunities to share her work, in addition to the opportunities afforded by her leadership roles with NORCAN and as the UP PKE leader. One UP teacher, who became involved in the project through the district implementation, will be a Math coach in the 2017-2018 school year and looks forward to co-teaching, conveying the impact of an attitude of gratitude, and sharing the successful UP strategies with her fellow Math teachers.

TLLP and PKE laid the foundational supports that allowed the learning from UP Math to blossom and spread across Ontario and onto national and international platforms with the help of NORCAN and Apple Education. This collaboration has afforded UP team members and students to travel and learn from others and has helped to bolster the reputation of Pereyma as being a desirable place to learn. Thirty % of Pereyma's students come from outside of the catchment area, and, according to Principal Chris Cuddy, this is "…because they know that Pereyma is a school where they can be successful at Math". This shows a marked difference in the school's Math achievements and reputation since the inception of UP Math.

4.4.6 Conclusion

The UP PKE at the DCDSB is an exemplary case of a community that is motivated to collaborate, innovate, share and lead at the student, teacher, principal, and school board levels. Mindset was a key factor in both changing outcomes for UP Math students and in motivating teachers to look to the research, change their teaching practices, measure impact and share their learning through leadership roles. The use of technology by students and teachers was another factor that enhanced student outcomes. Professional development for teachers was key to the successful use of iPads and related Apps. Implementation across the district is supported by the DCDSB capacity-building framework and involves regular collaboration amongst teachers, principals and superintendents. The team continues to seek out new opportunities to share their learning within and beyond the province and to build on the successes they have achieved in the UP Math classroom.

4.5 TeachOntario

In this report, we build on the findings from year one of the TeachOntario case study (Campbell et al., 2016) —the history of TeachOntario and how TLLP educators were involved in its design, and how they used it to support their learning throughout the beta phases—moving into an examination of how the platform has supported TLLP educators since its official launch on March 31, 2016. We take a deeper dive into the CREATE section of TeachOntario platform to examine how TLLP educators are using this space to support and share their learning. We do not examine TeachOntario in its entirety; the vastness and complexity

of the platform was outside of the reach of the tools and resources of this case study as part of the TLLP research. As such, this report may not capture the full depth of activity and influence of the TLLP teachers across the platform. Nevertheless, we offer a detailed analysis of how TLLP educators (past and present) are using the CREATE space to facilitate their learning throughout the project. This case study report is divided into three main sections: 1) opportunities for leadership and learning; 2) how TLLP educators are sharing their learning within TLLP groups in CREATE; and 3) what are the impacts of participating in the TeachOntario community on TLLP teachers' learning?

4.5.1 TeachOntario: Opportunities for Leadership and Learning

TeachOntario "was created by TVO, in partnership with the Ontario Teachers' Foundation (OTF), its affiliates and the Ministry of Education, and in consultation with teachers from a variety of districts across the province." (TeachOntario,

2016). It is a digital meeting place for Ontario educators and those interested in education from around the world—a place where they can find and share information, and interact with others in the interest of teaching and learning. Specifically, TeachOntario offers educators "the unique opportunity to support professional learning, foster teacher leadership, [and] facilitate the sharing of exemplary practices with others." (TeachOntario, 2016). Recently, the platform has won two awards: the 2015 IPCA/Deloitte Public Sector Leadership Award for outstanding leadership in public policy and the 2016 Ontario School Library Association OSLA Award for Special Achievement.

The TeachOntario platform is constantly evolving and developing in response to user needs, yet its skeletal frame remains consistent. The site includes three sections: EXPLORE (Curated Resources), SHARE (Your Knowledge), and CREATE (Projects). Resources contained within the EXPLORE section of the website are freely available to the public — they are open to any internet user regardless of their location — while access to resources and groups located in the SHARE and CREATE sections of TeachOntario require a formal login. To create a user profile within the

system, individuals must be linked to an Ontario school board or authority, any of Ontario's employee group partners, a Faculty of Education, or the Ministry of Education.

The TeachOntario leadership team, under the direction of Karen Grose, Vice President of Digital Learning, and Katina Papulkas, Director of Educational Partnerships and Outreach at TVO, continues to track analytics to measure the traffic that is visiting the TeachOntario platform. These data provide insight into TeachOntario as a whole as it is not possible to extract data for the TLLP-related sections only. Nevertheless, these data give us a sense of the potential audience for materials that are available on this platform. Since its launch on March 31, 2016, there is an average of 13,902 monthly sessions with site visits averaging approximately 5.5 minutes and including about 5-6 different webpages per visit. The site is showing steady signs of growth in terms of frequency of visits. During the beta phases of the platform (i.e., the time period covered in last year's report), there was an average of 6,817 visits/month. Since then, this number has more than doubled in its first official year. Table 24 provides a monthly disaggregation of TeachOntario traffic from July 1, 2015–April 30, 2017.

Table 24: Google Analytics Data for TeachOntario: July 2015 – April 2017

Month	# Monthly Sessions	Average Duration on Site (min:sec)	Average Page views/session	Page Views: Ontario	Page Views: Global
2015					
July	3,055	5:35	6	18,246	3,373
August	4,966	4:30	4.7	23,275	6,057
September	6,281	5:55	6.1	38,575	3,536
October	7,759	7:28	7.2	55,534	3,198
November	7,906	6:51	6.5	51,425	3,307
December	5,026	6:49	6.9	34,579	2,697
2016					
January	6,734	6:58	7.6	50,855	2,829
February	8,735	6:31	6.3	54,894	2,832
March *Launch*	10,887	5:00	5.2	51,593	4,587
April	14,573	5:26	4.5	74,583	5,100
May	13,681	5:54	5.8	74,177	4,929
June	10,018	5:06	5.3	49,576	3,862
July	8,143	5:14	5.7	42,605	4,052
August	11,567	6:23	6.3	66,577	5,884
September	12,090	4:40	5.3	58,938	4,343
October	20,241	5:00	5.3	101,905	4,762
November	21,262	4:44	5	99,767	7,385
December	13,755	3:30	4	46,919	7,415
2017					
January	15,373	4:57	5.4	77,615	5,247
February	15,134	4:26	4.8	68,218	4,969
March	12,998	4:19	4.8	58,225	3,862
April	11,893	3:49	4.7	51,346	3,990

*Note: The analytics do not distinguish visits from the same source; these numbers should not be interpreted as discrete visitors, but rather the number of times the site has been visited (which could include multiple visits from the same user).

TeachOntario's visitors are not exclusive to Ontario, or to Canada for that matter. While Canada was the source of most TeachOntario traffic (85.7%), Russia (5.7%) and the United States (4%) accounted for nearly 10% of the site's visitors while the remaining 5% come from nearly every continent across the globe. Figure 1 provides a global view of the site's visitors from April 1, 2016 – March 31, 2017: the darker the blue colour of a country, the more people who are visiting the site from that region.

TeachOntario's global profile and membership has been increasing consistently as the TVO team and TeachOntario members continue developing the platform to showcase and support innovative teaching and learning in Ontario and beyond. As of June 27, 2017, there were 9,178 registered users. The site is "a treasure trove" of resources (as one educator called it) that covers a wide variety of topics. Within this broad infrastructure, TLLP educators are creating and sharing materials with each other and colleagues around the world. In the next section, we look specifically at how TLLP educators are engaging with the CREATE (Project) section as part of their TLLP project work.

4.5.2 How are TLLP educators engaging with TeachOntario to share their TLLP learning?

In the 2015–16 annual TLLP report (Campbell et al., 2016), we considered the activity within the TLLP groups that existed in the CREATE (Projects) space on TeachOntario. These groups are tagged with tllpcreate, which was used as the selection criterion to be included in this analysis. We considered the types of activity that were happening within each group and examined the patterns of interaction within and between the groups, focusing on the most active group in the network—Effective Teaching and Learning in the Digital Age–@HCTLLP—to provide an example. We continued the work this year, updating the dataset for last year's projects and adding in the 48 groups with 2016–17 TLLP projects that were created in the CREATE space. The findings from these data analyses are the focus of this section.

4.5.2.1 General Overview of TLLP tllpcreate Groups

We used social network analysis methods to map the patterns of interaction within and between the tllpcreate groups. While updating the dataset for this year, three groups (and even some individual posts in other groups) have since been removed. As such there are 21 groups from our original dataset (which comprised 24 groups) included in these analyses. These shifts highlight the fact that these groups are in many ways 'living' given that they continue to evolve (or dissolve) and relationships change within them. This mirrors activity on TeachOntario more broadly: it is constantly shifting. In the absence of software that was able to mine the Microsoft Jive software that supports TeachOntario, we manually collected data for each group focusing on who was posting, commenting on, liking, and/or bookmarking material across the groups. Ultimately, our dataset contained 163 people, 69 groups, and 303 ties between them. [1] A tie is a connection between a person and a tllpcreate group. A tie is counted when at least one form of interaction (e.g., posting the post, and/or liking, commenting, or bookmarking the post) is observable between a person and a group. We unpack that dataset by looking at the groups and the composition of the people within them before we consider the network map illustrating this activity.

Figure 1. Disaggregation of Pageviews: Global measure by country from April 1, 2016–March 31, 2017. The darker the shade of blue, the more visitors from that country to the TeachOntario website.
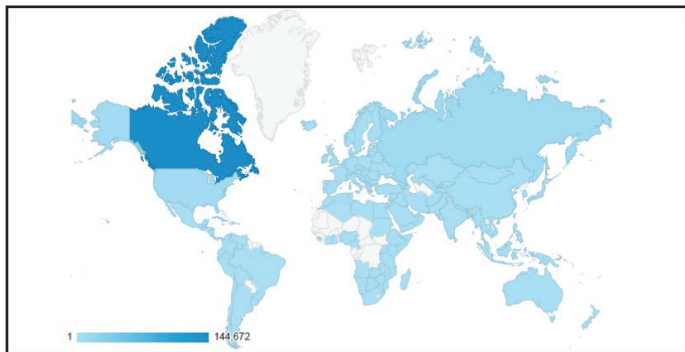
Overall, there was a 12.4% increase in the number of people participating in the tllpcreate groups. The 145 people included in last year's report remain in this year's analysis and an additional 18 people were added. Table 25 provides details on participant characteristics. This low level of new participants may be surprising given that the number of groups has almost tripled. However, as you will see in the network map, there are 28 groups (27 cohort 10 groups and 1 group from last year) with no activity recorded. There are 12 closed groups (i.e., we were unable to access the content of the group) as well as 16 groups that show no interaction. Thus, there are only 18 cohort 10 TLLP groups that are active in the tllpcreate space. It is important to understand, however, that there was no formal expectation that cohort 10 TLLP groups would use TeachOntario to share their learning. Rather, the tool was introduced at the initial TLLP professional learning session in May 2016 as a platform they could use "as a potentially powerful tool to 'learn out loud.'"

Figure 2 illustrates the pattern of ties within and across these people and groups. Each network tie is comprised of a least one interaction, but some ties are characterized by more than one interaction. For example, someone may have liked a post and also commented on it. In this instance, there are two interactions but it is still counted as only one tie in the network map (and for the record, such instances were quite rare). As one might expect, the number of ties decreases as you increase the interaction threshold for inclusion. When you increase the number of interactions to 2, the number of ties decreases by about 42% to 175 ties; this inverse relationship continues as you increase the threshold. Figure 3 illustrates this shift when we increase the interaction threshold to 2, 5, and 10 interactions respectively. What these network maps show is the

fragility of this social network. Prior research (Daly, 2010) has shown that knowledge and information flow much more easily through networks that are highly connected.

The bulk of the activity within these groups is comprised of single interactions. We disaggregated these data to see which form of interaction (i.e., post, like, comment, or bookmark) was the most common. Across the 286 posts in the 69 groups, liking a post is the most common form of interaction (N=592) followed by comments (N=268), and bookmarks (N=130). In line with our analyses of resources available in EXPLORE, most activity within these groups are passive in nature with most people liking something that they see/read within a group as opposed to commenting on the post (a more active form of participation).

We also examined the extent to which projects included in our 2015-16 study continued using their tllpcreate group in the current academic year. Based on our analysis, all content had been removed from one the 2015-16 groups—this is the isolate (the light blue square) located in the bottom right-hand corner of figure 3—and 15 groups discontinued their use as of June 2016. Of the 5 groups that continued posting in their tllpcreate groups into the current academic year, 3 groups ceased activity by December 2016. There are only two groups from our 2015-16 research that continue to be active within this space. As TLLP projects are only funded for a specific time, this may be a factor in the changing existence of tllpcreate groups.

Table 25: Participant Characteristics

Attribute		N=163	%
Gender			
	Female	119	73
	Male	41	25
	Unknown	3	2
Region			
	Barrie	18	11
	Ottawa	24	15
	London	12	7
	Sudbury/North Bay	14	9
	TARO	62	38
	Thunder Bay	10	6
	Unknown	23	14
Level			
	Elementary	75	46
	Secondary	35	22
	Board Office	13	8
	School Level Unknown	11	7
	Other	25	15
	Organization Unknown	4	2
Type			
	Public	72	44
	Catholic	67	41
	Other	19	12
	Unknown	5	3
Language			
	English	155	95
	French	6	4

a Percentages may not add up to 100 due to rounding.

b 'Other' refers to organizations such as TVO, Ministry of Education, or a Faculty of Education.

Figure 2. Patterns of interaction across all TLLP groups. Dark blue squares = current TLLP projects; light blue squares = past TLLP projects. Grey circles = educators from publicly-funded school districts; green circles = people from education-related organizations (e.g., TVO, faculties of education); and, orange circles = people from unknown organizations. The bigger the size of the square, the more content posted in each group (squares). The bigger the size of the circle, the more active the person is within the group. The column of squares (open groups) on the right-hand side show the inactive groups. The triangles in this column represent the closed groups where activity-levels are unknown due to privacy restrictions.
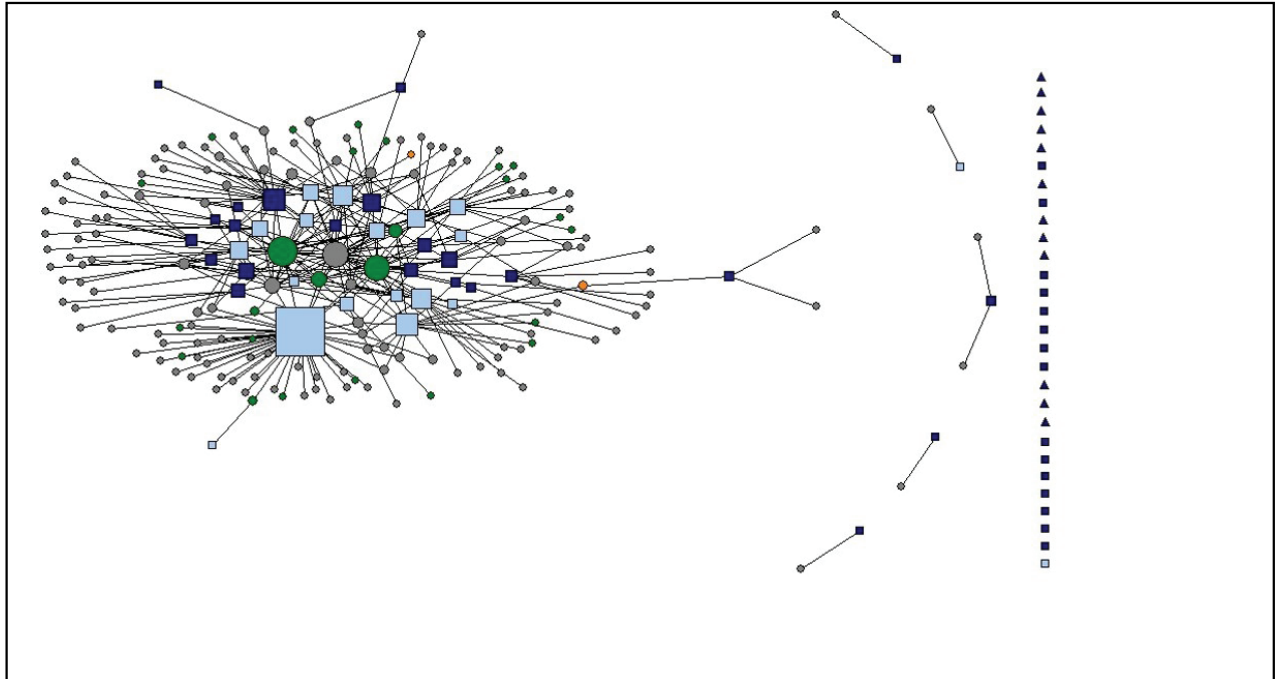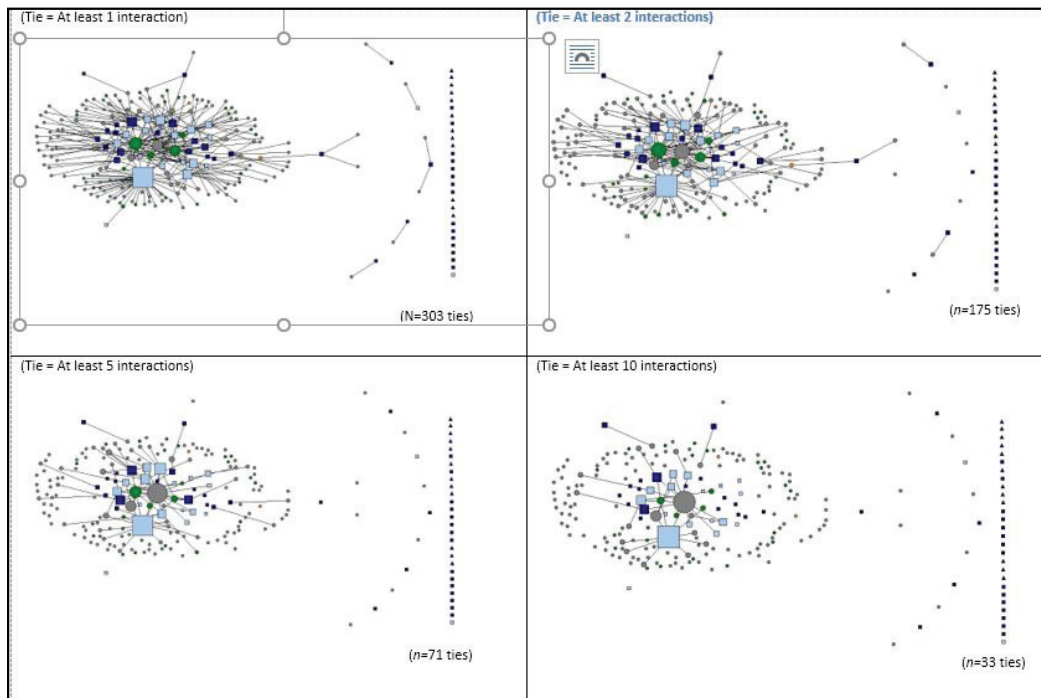

Figure 3. Tie patterns within all tllpcreate groups in 2016-17. Each network graph illustrates tie patterns for different levels of interaction (all ties, at least 2 ties, at least 5 ties, or at least 10 ties).

4.5.2.2 Re-visiting @ HCTLLP

In the first year of our TeachOntario case study, we chose the Effective Teaching and Learning in the Digital Age – @HCTLLP (from here on in referred to as @HCTLLP) as a focus group to examine closely because it was the most active cohort 9 TLLP project (i.e., 2015–16). Box 1 provides an overview of the project as it was described in last year's report. As of

June 2017, it remains the most active tllpcreate group on TeachOntario with double the amount of activity than the next most active group (STEMovate, which we will examine in a subsequent section of this report). This year, we added to our @HCTLLP study by updating the patterns of interaction within the group and interviewing two of the project's lead teachers, Emile Ferlisi and Joe Florio, who are both Special Education teachers at Holy Cross Catholic School.

There is no change in the number of participants in the @HCTLLP group. Contributors remain the same 49 educators as our previous report; all new content was posted by someone who was already active within the group. Overall, the group is made up of predominantly female (67.3%) educators from Catholic (49%) elementary schools (53.1%) in the Toronto region (71.4%). Table 26 provides detailed characteristics of @HCTLLP participants.

Box 1. Description of Effective Teaching and Learning in the Digital Age – @HCTLLP

Effective Teaching and Learning in the Digital Age (Extract from TLLP application)
The project team would focus on incorporating various digital learning tools, including websites and other online resources as well as different devices and software options, as part of our daily practice. Periodically (every six weeks), the team would meet to share our resources and success stories, along with any missteps along the way that have also led to learning—documenting our learning and our students' learning would be paramount to this process. Our inquiry starts with assessment for learning, includes assessment as learning, and ends with assessment of learning for both students taking part in the project and the teachers participating on the team.
The inquiry is led by the questions:

1. If we incorporate a variety of effective digital learning tools and strategies into our classrooms, then student engagement, achievement and well-being will improve as evidenced by improvement in student achievement.

2. If we share the effective digital learning tools and strategies that we use in our classrooms with each other, then our confidence and efficacy in using these tools will improve, which will enhance our teaching practice and improve student achievement.

(Source: E. Ferlisi, personal communication, June 26, 2016)

Table 26: Characteristics of Participants in the @HCTLLP tllpcreate Group

Attribute		N=49	%[a]
Gender			
	Female	33	67.3
	Male	15	30.6
	Unknown	1	2.1
Region			
	Barrie	3	6.1
	Ottawa	5	10.2
	London	0	0
	Sudbury/North Bay	3	6.1
	TARO	35	17.4
	Thunder Bay	2	3.4
	Unknown	1	2.1
Level			
	Elementary	26	53.1
	Secondary	4	8.2
	Board Office	4	8.2
	School Level Unknown	5	10.2
	Other[b]	9	18.4
	Organization Unknown	1	2.1
Type			
	Public	17	34.7
	Catholic	24	49
	Other	7	14.3
	Unknown	1	2.1

a Percentages may not add up to 100 due to rounding.
b 'Other' refers to organizations such as TVO, Ministry of Education, or a Faculty of Education.

Since our 2015-16 report (Campbell et al., 2016), nine posts have been added to the @HCTLLP group with the most recent post added on December 1, 2016. This represents a 17.8% increase in activity, bringing the total number of posts to 60. The new posts included four blogs, three videos, one document, and one PDF file. Table 27 provides an inventory of posts by type, comparing the two years providing a snapshot of growth over time. Since last year, 10 new comments have been added to the group (an 11.9% increase in about one year). Collectively, these posts have received 8,109 views, 204 likes, 94 comments, and 48 bookmarks from May 7, 2015 (the day the group was created) through May 4, 2017. The average number of views per post overall was 135 with a median of three likes (range: 0–9), one comment (range: 0–10), and zero bookmarks (range: 0–5).

There is a total of 94 comments across the posts within the @HCTLLP group. About half of these comments (n=48, 51.1%) were contributed by the group's leader, Emile Ferlisi, with the remaining comments being distributed quite evenly across the group. From a high level content analysis, we generated seven general categories of comment types: 1) Appreciation and Gratitude—showing appreciation for the content of the post or thanking colleagues for sharing; 2) Communication— sharing information that is not closely related to the post material; 3) Opinion—offering an opinion or experience that relates directly to the post material; 4) Query—Asking a question about the post material; 5) Recommendation—recommending resources related to the post content; 6) Response—responding to a question relating to the post; and, 7) Feedback—updating colleagues on one's experience after using the ideas from the post material. Comments that expressed appreciation and gratitude were the most common (n=57, 60.6%) followed by opinion statements (n=46, 48.9%). Other types of comments evident within the @HCTLLP group were communication (n=9, 9.6%), recommendations (n=7, 7.5%), and queries, responses, and feedback (n=2 for each, 2.2%). There was a variety in the depth and detail across these comments. We provide examples for some of the comment types observed in box 2.

Table 27: Inventory of Post Content by Type for @HCTLLP: Comparison Year 1 and Year 2

Post Type	2015–16		
Blogs	33	37	12.1%
Videos	13	16	23.1%
Polls	2	2	0%
Discussions	2	2	0%
Questions	1	1	0%
Documents	0	1	100%
PDFs	0	1	100%

Box 2. Example Comments from Educators within @HCTLLP Organized by Comment Type

Appreciation and Gratitude - "Great poster! A few colleagues have done quite a bit of work with growth mindset, but I have not seen this image before. It has some great suggestions for teachers to use to build an anchor chart with their students."

"Thanks for your continued leadership and expertise around our immersion into tech. I will definitely give this tool a try with my students as am always looking for ways to have them demonstrate their learning in ways that allow them to feel comfortable and confident. Thanks again."

Opinion - "It's funny -- just the other day my niece was at my house watching a YouTube video from a popular vlogger (video blogger). I quickly glanced at it and asked, 'Is that Matt Santoro?' She looked at me like I had two heads and was impressed that I knew who this person, who is so relevant in her life (phone, whatever), was. I think students expect us to not know what's what when it comes to technology and will show respect to those who are trying to figure out what's relevant in their lives and how we can incorporate those things in their daily teachings."

Communication - "Hi, [name] - thanks for sharing the #STAOchat twitter challenge with the group. I think "knowing what to tweet about" is a challenge for some of us - especially educators who might be not be using twitter in their daily lives and for other purposes. I look forward to seeing your tweets - don't forget to tweet them @hctllp then, if you think they fit for us to retweet!"

Recommendation - "Desmos is great. Have you tried GeoGebra as well? It has apps for pretty much every platform, but it's also available as a Chrome app, so it's very quick to get up and running. It's kind of like a free, open-source replacement for Geometer's Sketchpad. Probably the best part is GeoGebra Tube: People can share activities they've created in GeoGebra (and you don't even need GeoGebra installed to use them). So you could create a worksheet, or use one someone else has created, to have the students investigate something specific. Or, they can just play around with the tools in GeoGebra to see what they can discover."

[2] Please note that the proportions provided here will not add to 100% as some comments were coded into multiple categories.

We updated our social network dataset for this year to include all interactions (i.e., likes, comments, and bookmarks) instead of focusing on comments only as we did in our 2015–16 report. The dataset included the 49 people and 60 posts who were connected to one another by a total of 291 ties. The social network map for @HCTLLP is illustrated in figure 4. The thicker the line, the more interactions that tie contains. For example, a thin black line might indicate that a person liked a post whereas a thick black line may indicate that a person liked and commented on a particular post. The total number of ties when you include all levels of interaction is 291. However, when you increase the threshold to two—that is, a tie is counted when at least two types of interactions are present—the number of ties decreases by nearly 58%. The decline continues as the minimum interaction threshold increases. Only 10% of the ties in this social network (n=29) contain more than 5 interactions. These findings mimic what we found across the entire network of tllpcreate groups: most interactions are singular in that

the connections between a person and a post represent only one type of interaction (e.g., a person liked a post, or a person made a comment on a post). There is very little sustained interaction over time and two-way communication between two people in relation to a post is not common within this tllpcreate group. Nevertheless, it is likely that this network builds awareness of what the @HCTLLP is doing in their TLLP project and the tools that they were using to support that work—and as we can see in table 27, about a quarter of participants (almost 29%) come from outside the @HCTLLP's home region in Ontario. The project leaders themselves thought of TeachOntario as "a share point or an access point where people could go and see [what was happening]".

The @HCTLLP group has double the amount of activity of the next most active group and substantially more activity than that when compared with most other tllpcreate groups. This high level of activity may be partially explained by some key characteristics of the project. First,

there was a clear expectation set out from the very beginning within this TLLP group—a very large TLLP group with 12 educators formally participating—that individuals would be documenting and sharing their learning using the tllpcreate group on TeachOntario. This was an explicit part of the project's design from the onset as the TLLP leader, Emile Ferlisi, explained:

So I used some release time [funded by the TLLP] to explain our vision, and within that, a lot of the learning was to be done on your own based on what your class needed. Go and find technologies, go and work [with] tools that are going to benefit your learners. And the understanding was that we were going to teach each other through some release days that were scheduled and through blogging and commenting, and discussions on the TeachOntario site.

Second, the TLLP leader had an established working knowledge

Figure 4. Map of all interactions within the Effective Teaching and Learning in the Digital Age - @HCTLLP TLLP project. Circles represent educators working in school districts and triangles represent people who work outside school districts (e.g., faculties of education, TVO, etc.). The colour of each circle corresponds to the region of Ontario where that person is employed (using categories from the master TLLP listing from the Ministry of Ontario): red = Barrie region; pink = Ottawa region; orange = Sudbury/North Bay region; grey = Toronto region; purple = Thunder Bay region; and light blue = region unknown. The blue squares represent posts within the project group. The thicker the black line, the more interactions that comprise the tie between the individual and the post (i.e., thin lines = at least 1 interaction, thick lines = a maximum of 9 interactions).
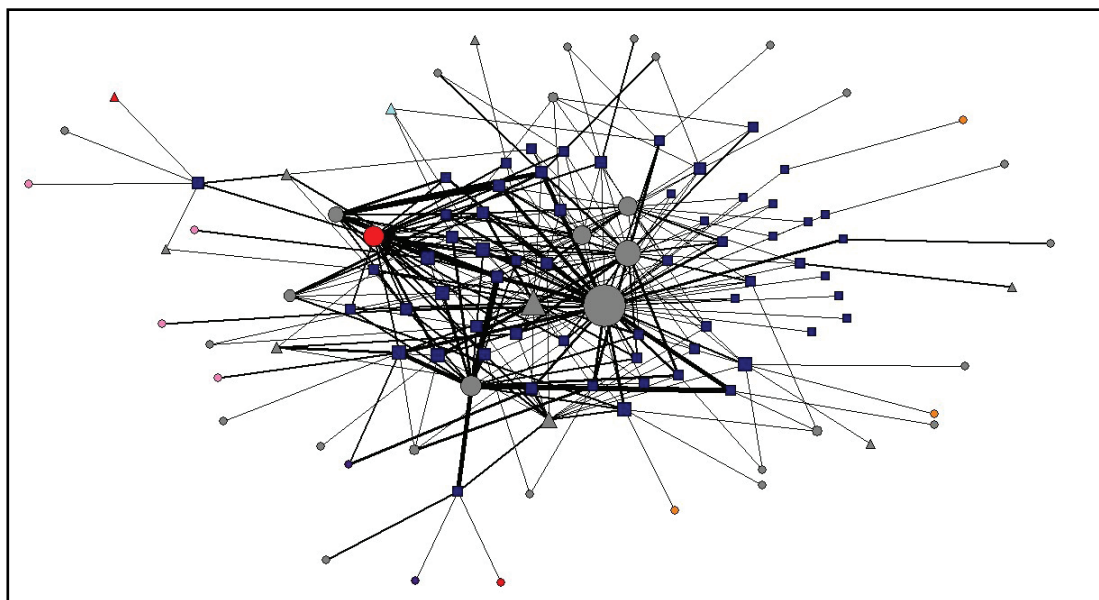
of TeachOntario given his prior relationship with TVO working with the Homework Help Online program. Because of this relationship, Emile Ferlisi had been invited to set up a TeachOntario profile during the beta phases of the project. So by the start of his TLLP project, he was already comfortable with the different sections of the platform and had an awareness of the tools and resources available to his group within that space. At the beginning of the project, when he and his co-leaders invited others within the group (and within their school more broadly) to create their own TeachOntario profiles, Emile was able to provide assistance with navigating the digital space and learning how to use it given that he "had already experimented with it and kind of knew what it was about to a certain extent". This is not an experience common to most groups where difficultly navigating the site was often identified as a barrier to its use.

Third, the effective use of technology to support teaching and learning was a priority area in the school board, Dufferin-Peel Catholic District School Board, where this TLLP was located. According to the TLLP leader: "It was…such a perfect fit…team members got kind of tapped on two fronts, so that they were supporting the school improvement [plan] and they were also part of this project." Although balancing the workload was a challenge for teachers and the TLLP leadership team, the fact that it aligned with a lot of the school's other improvement work made for a supportive environment that encouraged experimentation with technology in their classrooms.

A fourth and important contextual element is that the TLLP teacher leader was a Special Education Resource Teacher (SERT) and the two main colleagues helping him lead this project, Joe Florio and Frank Russo, were also Special Education teachers. Because these

team members work regularly with teachers in classrooms, they not only had an awareness of what was going on across the school, but they also had built a strong rapport with their colleagues over the more than ten years that the men had each been in the school:

You're working with everyone, whether it's through some sort of scheduling that you have to do or whatever the case might be. Just that kind of social capital, the rapport piece is huge. It has to be or you can't do your Spec Ed job in the first place, and so you start from that point. So when you approach people to try a new thing or be part of this initiative or whatever, you may have a better chance [because of those established relationships].

These four contextual conditions—an explicit focus on using TeachOntario to share their learning, a teacher leader with established knowledge about how to use the platform, a project that aligns well with the other improvement work happening within the school, and teacher leaders who have strong interpersonal relationships with their peers— provide a strong foundation for ensuring the successful and ongoing use of TeachOntario by this TLLP project.

The intention of the @HCTLLP project was to build a team of mentors based on the TLLP experiences and learning of the people involved at the school. The TLLP leader explained:

So the use of the digital platform was to supplement the fact that we couldn't really meet on a bi-weekly or monthly basis, and even to try to honour, try to respect the work that the classroom teachers were already doing and how busy they really were. So it was to make sure that there wasn't an extra layer of

work, but that there was enough commitment, some integrity to the work that we were doing for the project.

The idea was that teachers would document what was happening inside their classrooms and share those reflections and key learnings with the group, ideally opening it up for discussion online. While this did happen; the TLLP leader acknowledged "for some of the team, it [TeachOntario] was more significant than for others". Hence, even though there were some participants who appreciated the digital platform and used it to support their work, "the face-to-face interactions are still being valued really highly by most of the team" (TLLP leader). Ultimately, the TLLP leader noted that TeachOntario "was kind of a useful place for people to go and pick up information" but there was "not as much [online connecting] as I would have maybe hoped," Ferlisi acknowledged. However, TeachOntario did enable their TLLP and team to engage with a wider group: "There were some people that weren't even at our school that tried to make connections with us through TeachOntario," which the TLLP leader considered to be a worthwhile benefit. In addition, the TLLP leaders' creation of a Twitter account for their project enabled team members and wider community to engage with their work. The goal was to share their learning and connect with other educators regardless of which digital tool people chose to use. At the end of the day, TeachOntario and Twitter were used as separate tools, but also in tandem, supporting knowledge exchange among and between people within and beyond their school across digital platforms.

Engaging through TeachOntario also provided leadership support for the TLLP team. The TLLP leader, Emile, described connecting with an experienced TLLP educator as he was grappling with the decision whether or not to apply for a PKE grant to formally continue the work in 2016–17: "Basically I was using her as a temporary mentor with regards to making that decision for the PKE". He went on to explain, "And this person that I've never physically met was really supportive. So there's a connection like that… It's [TeachOntario] opened the door to opportunities to learn from these people, even though I'm never [going to meet them in person]." This is an example of the ways TeachOntario can broaden the community of support available to members, by allowing them to connect with educators across the province for social support as well as knowledge exchange and expertise.

The @HCTLLP leaders commented that TeachOntario brought unique and important opportunities to their TLLP work. For Emile:

I know for me, personally, it [TeachOntario] encouraged me to go in and actually document what we were trying to do and what I was trying to do in the classroom, which was big for me. It's not something that I had ever done before, so I had never written a blog prior to this. That kind of thing, so I think that was useful. So it was useful for me because then I could go in and actually document what we were actually trying to do and what I was doing in the classroom.

For Joe Florio, the @HCTLLP group on TeachOntario also provided the opportunity to explore writing as a means to reflect on his professional practice. Emile also shared a similar experience with TeachOntario, extending the writing process from reflection to building metacognitive awareness:

I really do like to sit down and write; it's just part of me. But the thing is specifically, using it [TeachOntario] as a platform for blogging, even for kind of multimedia, put in a video, etc. Number 1, it was a reflection piece, as Joe was mentioning. It helped me to document but it also helped me to think about where my thinking was going and that kind of metacognitive piece…So it's been a springboard to other things, and now I have little sticky notes with blog ideas…and it has kind of opened a whole different way for me to express myself.

TeachOntario was used in different ways by 49 people across the province within the context of the Effective Teaching and Learning in the Digital Age–@HCTLLP TLLP project. For every one member of the formal TLLP team (n=12), there were 3 additional educators participating in the group— evidence of knowledge sharing beyond the boundary of the @HCTLLP group. While the @HCTLLP project leadership initially imagined the TeachOntario space providing a digital space for discussion about group members' posts that document their learning, they found that this type of active participation was infrequent. Instead, the group enjoyed unexpected benefits of using TeachOntario to support their project: namely, connecting with and benefitting from the knowledge and experiences of other Ontario educators with whom they might

never have connected. Combining TeachOntario activity with other digital platforms like Twitter as well as face-to-face interactions enriched these interactions and provided opportunities for further research.

4.5.2.3 Cohort 10 tllpcreate Groups

To get a sense of how the cohort 10 TLLP educators were using the CREATE space to support their learning, we inventoried the level of activity across these groups. There are 48 cohort 10 tllpcreate groups, of which 25% are private groups (n=12), which meant that we were unable to examine what was happening within them. Another third of these groups (n=16) did not have any activity posted in them, which left 20 active cohort 10 tllpcreate groups. Of the 20 groups that demonstrate activity, 45% (n=9) were active between April–August 2016 (i.e., in the months leading up to the cohort 10 academic year, but not during the 2016–17 academic year itself) with another 15% (n=3) active through until December 2016. Only 40% of the cohort 10 tllpcreate groups (n=8) remained active into 2017. The median number of posts in each group is approximately 4 (range: 1–29), with an average of about 273 views per group. The median number of participants is about 3 people (range: 1–13). The median number of likes is 2 (range: 0–46), of comments is 0 (range: 0–7), and of bookmarks is also 0 (range: 0–11). Table 5 provides the specific details for each of the active groups.

Table 28: Active Cohort 10 TLLP tllpcreate Groups

Project Name	Project Year	# of Posts	# of Active Participants	# of Views	# of Likes	# of Comments	# of Bookmarks	Date of Last Post
Math Strands: Why Can't We Be Friends?	2016-17	1	1	54	0	0	0	29-Apr-16
Actifs dans nos apprentissages (#LR_ADNA)	2016-17	2	1	18	0	0	0	02-May-16
Kindergarten Transition to Grade 1 through Outdoor Inquiry	2016-17	1	2	25	2	0	0	05-May-16
OakridgeMath TLLP	2016-17	3	2	156	1	0	0	05-May-16
Comment intégrer la technologies aux apprentissages artistiques	2016-17	1	2	240	1	0	0	06-May-16
Faciliter un changement, transformer l'enseignement	2016-17	4	1	15	0	0	0	19-May-16
Improving Writing Instruction through Technology	2016-17	3	3	85	2	1	0	06-Jun-16
#ICANyet Promoting Growthmindset, Self-Regulation and Metacognition through Student Driven Digital Portfolios	2016-17	5	8	279	14	7	6	30-Jun-16
SoundSense	2016-17	8	2	344	1	0	0	16-Aug-16
TLLP@POCOCK	2016-17	3	7	121	8	1	0	16-Nov-16
Bridging the Gap Between Math and Science	2016-17	15	1	746	0	0	0	02-Dec-16
TLLP 2016 Accountable Number Talks	2016-17	1	1	37	0	0	0	13-Dec-16
Lets Paint - LDCSB	2016-17	14	6	423	2	0	0	15-Jan-17
TBCDSB Catholic Virtues in ELKP	2016-17	1	1	12	0	0	0	02-Feb-17
Full Steam Ahead TLLP	2016-17	3	4	28	4	0	0	17-Feb-17
Robotics In the Classroom	2016-17	4	7	331	7	6	0	11-Apr-17
Mindfulness and Resiliency	2016-17	21	12	1167	21	1	11	18-Apr-17
Engaging Students in Accountable Talk Using the Elements of Social Justice	2016-17	6	4	67	2	1	0	19-Apr-17
STEMovate	2016-17	29	13	920	46	6	3	27-Apr-17
RATS - 21st Century Learning	2016-17	15	6	383	3	0	0	01-May-17
Totals		140	84	5,451	592	23	20	

4.5.2.4 Cohort 10 Example – STEMovate

From the inventory of current projects, we selected the most active tllpcreate group to examine more closely. That group was called STEMovate, a project led by Melanie Klimkowski and colleagues in the Greater Essex County District School Board in the Windsor, Ontario area. It is the second most active project across all of the projects in the tllpcreate section for both years, following only Effective Teaching and Learning in the Digital age – @ HCTLLP. The goal of the STEMovate project is:

To connect Science and Technology big ideas to Math processes in order to create STEM resources that can be used cross-curricular by the team and other teachers in our district. The resources will combine rich content and challenging activities with instruction that is student-centered, conceptually oriented, and focused on problem solving.

Figure 5 illustrates the activity within the STEMovate tllpcreate group in the form of a social network map. This network map contains 71 ties connecting 29 posts and 13 people. Within this group, there were 46 likes, 6 comments, and 3 bookmarks that, in various combinations, comprise the ties within the STEMovate group. There are 29 posts in this group dating from May 6, 2016 through April 27, 2017; each post is represented by a dark blue square in the network map. The majority of the posts in STEMovate (N=20/29, 70%) were posted in May–June 2016, the weeks following the initial provincial TLLP training session.

These initial posts contain ideas and links to teaching resources that can be found on the World Wide Web. In contrast, more recent posts in March 2017 share teacher reflections on what is happening in their classrooms in the form of pictures, short videos, and other print materials. Based on our content analysis of each post, it appears that this space is used predominantly as an archive to collate externally developed resources (particularly during the time prior to the start of a project) or as a space to document learning as the TLLP project nears its close. The posts represent a variety of formats: blogs (n=19, 65.5%), documents (n=4, 13.8%), videos (n=3, 10.3%), discussions (n=1, 3.4%), status updates (n=1, 3.4%), and PDFs (n=1, 3.4%). The last post in this group shows the potential power of having a central TVO figure—in this case TeachOntario's community manager, Albert Wisco (a.k.a. Community Manager Albert)—who can broker resources across TLLP groups. In this instance, Albert shared

a resource that he found elsewhere on the TeachOntario website and tagged specific groups (e.g., STEMovate) who may be interested in the material. The work of the community manager is an important element of TeachOntario's ability to connect educators based on their shared interests.

There are 13 TeachOntario members active within the group (see table 29 for details on participants' attributes); 70% of the people active in this group are not formally part of the STEMovate project and they work outside of the TLLP group's home region (n=9). As is evident in the network map, the most active person in the network is a teacher who is not part of the formal TLLP project team. This demonstrates the potential spread of ideas and knowledge sharing by this group and highlights the possibilities that exist within the TeachOntario platform. Knowledge exchange is occurring indirectly between the reader and the content of the post. There is very little sustained interaction; of the 71 ties illustrated in the network map, 83% (n=59) represent single interactions. There are only 2 instances of people interacting three times (the maximum number of interactions) within this group (3% of the total number of ties).

Table 29: Characteristics of Participants in the STEMovate tllpcreate Group

Attribute		N=14	%[a]
Gender			
	Female	10	76.9
	Male	3	23.1
Region			
	Barrie	3	23.1
	Ottawa	3	23.1
	London	1	7.7
	Sudbury/North Bay	0	0
	TARO (Toronto)	6	46.2
	Thunder Bay	0	0
	Unknown	0	0
Level			
	Elementary	6	46.2
	Secondary	3	23.1
	Board Office	0	0
	School Level Unknown	2	15.4
	Other[b]	2	15.4
	Organization Unknown	1	2.1
Type			
	Public	7	53.8
	Catholic	4	30.8
	Other	2	15.4

a Percentages may not add up to 100 due to rounding.

b 'Other' refers to organizations such as TVO, Ministry of Education, or a Faculty of Education.

In addition to analyzing the content of each post, we also examined the content of the comments that were generated within this group. Six comments were made across five different posts within this group. A third of those comments (n=2) came from Community Manager Albert who, in one post, was notifying the group of the appropriate way to post links so that they are live links for readers, and in the other was making a connection between an external post and the interests of the STEMovate group (i.e., the knowledge brokering example we spoke of earlier). The other comments (see Box 3) were community-building expressions of gratitude or personal connection where one educator was making a link to her work in her own classroom—both of which are important types of interaction that are known to facilitate knowledge exchange.

In addition to our up close examinations of two specific tllpcreate groups, we also sought out the experiences of other cohort 9 and 10 TLLP teachers on TeachOntario. In the next section of this report, we share the findings from our interviews with other TLLP teacher leaders.

4.5.2.5 Qualitative Understanding of tllpcreate Patterns of Interaction

In the spring of 2017, eight TLLP teacher leaders were invited to participate in interviews to discuss their perceptions of TeachOntario and how they used the platform to support their group's TLLP project. Two teachers declined

the interview, while another two teachers accepted the invitation, but we were unable to finalize an interview time within the data collection timeframe. Our achieved interview sample included four teachers (one elementary and three secondary), each from different school districts across the province. Three of the interviewees (75%) are cohort 10 TLLP teachers who are currently leading TLLP projects. The fourth teacher leader was from cohort 9 who reflected on her TLLP journey last year as well as her use of TeachOntario within the context of her project. Here, we focus on five predominant themes: 1) challenges navigating the TeachOntario platform; 2) a desire to interact and connect with educators outside of their own TLLP groups; 3) the helpfulness and importance of a community manager; 4) competition with other digital platforms; and, 5) the potential and value of using TeachOntario to support and

Box 3. Sample of Comments the STEMovate tllpcreate Group

"My Grade 5 summer school students loved using Makey-Makey. I joined the Kickstarter and have the MakeyMakeyGo too. I'm on mat leave so I haven't tried it with kids (well laid plans, I haven't tried it myself yet). But I will share what I discovered in the future." (Teacher)

"Good idea!" (Teacher)

"Thank you for sharing [name]. So very helpful especially in June! [name] :)" - (In response) "Enjoy!! I'm doing it next week too!! Let me know how it goes." (Teacher)

Figure 5. Network map of all activity within the STEMovate TLLP project group. Circles represent educators working in school districts and triangles represent people who work outside school districts (e.g., faculties of education, TVO, etc.). The colour of each circle corresponds to the region of Ontario where that person is employed (using categories from the master TLLP listing obtained from the Ministry of Ontario): red = Barrie; green = London; and, grey = Toronto. The blue squares represent posts within the project group. The thicker the black line, the more interactions that comprise the tie between the individual and the post (e.g., the thin black lines = 1 interaction, thicker blacker lines = 2-3 interactions).
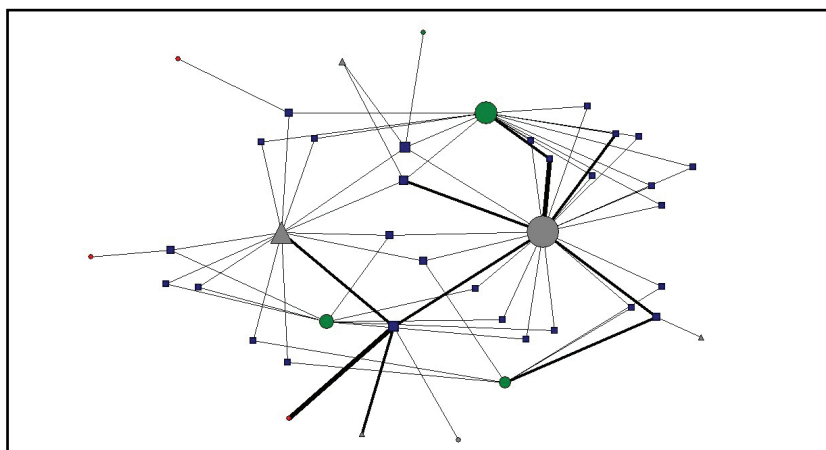
share their TLLP learning in addition to supporting their individual professional learning.

Some interviewees felt overwhelmed with the amount of content on TeachOntario and experienced great difficulty navigating the site in search of what they were look for. "It is not very user-friendly; it's not very intuitive," one teacher said—a sentiment shared by two other interview participants. The complexity of the platform was often cited as a challenge and barrier to use. "I've not been able to catch on to TeachOntario," remarked another teacher. "It's not the people," she continued, "it's the platform… There's too much going on [with] a ton of options on every page." In response, this teacher was using Twitter and Facebook to share her learning more than TeachOntario. For another teacher, the concern was not with TeachOntario per se, but rather her colleagues' attitudes towards using online media.

All four teacher leaders were drawn to TeachOntario because of the potential to connect with other educators from around the province within the spaces it offered. However, in practice, the teachers were concerned that there was less online interaction than they had hoped for: "I just thought that was where I was going to go and hopefully build a bit of a following… [but]I've never had anyone make a comment on anything except Albert". Still, the possibility of having an open group where other people could learn about their work on TeachOntario was exciting for some people. One teacher said:

I thought, okay, we don't have any followers… I thought, 'I'd like to know more people are interested in what we are doing, which would then maybe spark myself to be posting

more often if I'm getting more [interaction]… Maybe there would be more of that if we had more people following.

She went on to explain that the fact that not all educators involved in the TLLP were using TeachOntario greatly limited her ability (and others' ability) to find groups working on similar topics from which she could learn. Some teachers thought that a lack of awareness of TeachOntario among the general teaching population was a problem that inhibited greater use of the site.

A few teachers spoke explicitly of the value of having Community Manager Albert provide online help to those needing it. One teacher leader commented:

So Albert is incredible. Really. He's incredible. So any time I've had a question, that's amazing. That's some of the best tech support I've seen in any kind of platform that I've ever used. So that's nice to know that that's there.

She described how when her group first started their TLLP project, Albert was able to help her connect with people quickly. And her experience was not unique. Another teacher explained: "I'm trying to be an active participant. I did find it's really cumbersome…But I have had conversations with Albert. He's very lovely and helpful." Albert plays a significant role in facilitating connections within TeachOntario.

Another concern for the interviewees was also that the multitude of available online platforms and social media could be considered challenging. As one teacher pointed out, "TeachOntario… has to compete with Twitter and it has to compete with Facebook where people are constantly sharing really fast". Another teacher commented that she felt like she was being "pulled in a bunch of directions"

because, although she was using TeachOntario and wanted to build capacity within the team to use it as the "one spot" where they could curate all of their related materials, her colleagues were not using TeachOntario so she felt that she needed to be consistent with the actions of her team members as well. Nevertheless, despite the identified challenges and use of other digital platforms, all educators saw value and potential in TeachOntario. For example, one teacher commented: "I totally do [see the value]… I've enjoyed using it for just documenting my own learning and growth as I've gone through the project". Even though one of the teacher leaders may not have used TeachOntario as much as some of her contemporaries, she acknowledged that "what they're doing is excellent." Other comments from interviewees included: "I do see how it has the potential to be really awesome"; "I think it's good. I think it's on the right track as more people are joining." All interviewees indicated that they will continue to visit and use the tools and resources available to them through TeachOntario.

4.5.3 Survey: TLLP Educators' Perceptions and Use of TeachOntario

In May 2017, we invited 104 teacher leaders from the cohort 10 English language TLLP projects to complete a short survey to gain an understanding of their perceptions of TeachOntario as a tool to support their professional learning throughout their TLLP experience. A draft of the survey was sent to our partners at TVO, OTF, and the Ministry of Education for vetting, and it was piloted with three non-TLLP educators to identify any issues with language or content. The overall

response rate was 51.9% (N=54/104), which is a very high response rate for an online survey.

4.5.3.1 Using Social Media Tools to Support Professional Learning

Half of the respondents (n=27, 50%) self-identified as regular contributors to social media (see Figure 6). Almost a third (n=17, 31.5%) identified as 'lurkers', meaning that they follow social media regularly, but they do not necessarily contribute or share materials. The remaining respondents identified as beginners who were

willing to learn (n=8, 14.5%), with only two respondents (3.7%) saying that they do not use social media at all. Nearly half of the respondents (n=24, 44.4%) used social media daily, with over another third, (n=19, 35.2%) reporting weekly use (see Figure 7). Nine percent of people said they used social media monthly (n=5) and another 9% (n=5) said that they rarely use social media. To round out our understanding of these educators' use of social media within the context of their professional lives, we asked people to identify which digital tools they were using (see Figure 8). From the list provided, respondents identified Twitter as the most frequently used tool (n=43/52,

82.7%), followed by YouTube (n=33, 63.5%), Facebook (n=24, 48.1%), Instagram (n=13, 25%), and LinkedIn (n=5, 9.6%). The TLLP leaders were also provided the opportunity to identify other social media tools that they use. Their responses included platforms and tools such as Google Plus, Google Hangouts, Pinterest, Group Me, Slack, Voxer, Periscope, Skype, Yammer, and Edsby.

Figure 6. Respondents' general use of social media to support their professional learning.
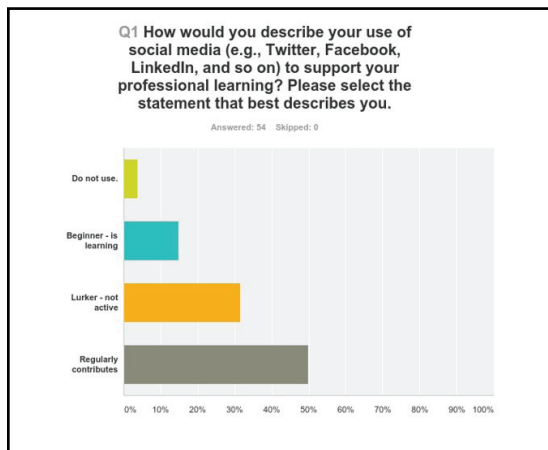

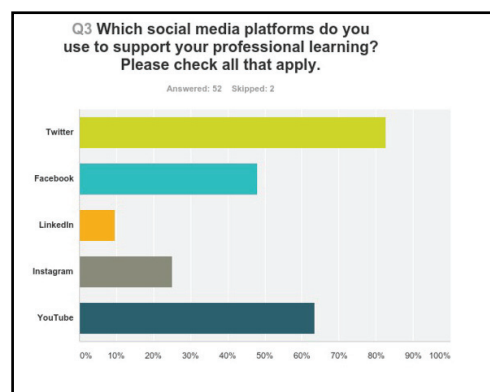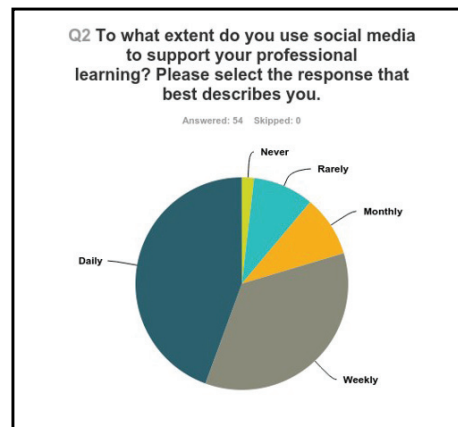**Figure 8. Respondents' use of specific social media platforms.**

Figure 7. Respondents' frequency of social media use in support of professional learning.

4.5.3.2 Using TeachOntario to Support and Share TLLP Learning

The survey findings indicate that TeachOntario is not currently a commonly used tool within the context of the educators' TLLP projects (see Figure 9). The majority of respondents reported rarely (n=16/30, 53.3) or never (n=7, 23.3) engaging with the TeachOntario platform. A very small number of people used

TeachOntario weekly (n=2, 6.7%) with another small group indicating monthly use (n=5, 16.7%). To further examine cross-group knowledge sharing, we asked a similar question about the extent to which project leaders browsed TLLP groups other than their own on TeachOntario (see Figure 10). The majority of respondents reported never (n=8/30, 26.7%) or rarely (n=19, 63.3%) browsing other TLLP groups. Only three people said that they visited other tllpcreate groups, one (3.3%) on a weekly basis with another two people (6.7%) reporting monthly activity. Our last question in this section asked respondents to identify

how frequently they participated in tllpcreate groups other than their own (see Figure 11). Participating in a group was defined in the survey as including "activities such as posting materials in a group other than your own; tagging a group in a post that you made on the site; liking, bookmarking, or commenting on a post from a TLLP colleague outside your own TLLP group." Nearly three quarters of people reported never participating in another group (n=21/30, 70%) with another quarter indicating that they rarely did so (n=8, 26.7%). Only one person (3.3%) reported participating in another tllpcreate group on a monthly basis.

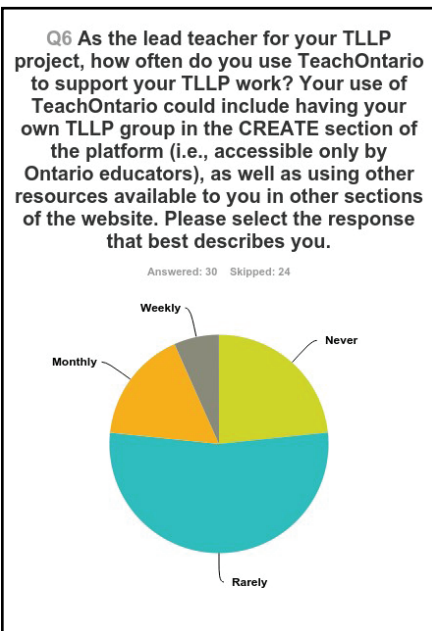*Figure 9. Respondents' use of TeachOntario to support their TLLP work.*

Q6 As the lead teacher for your TLLP project, how often do you use TeachOntario to support your TLLP work? Your use of TeachOntario could include having your own TLLP group in the CREATE section of the platform (i.e., accessible only by Ontario educators), as well as using other resources available to you in other sections of the website. Please select the response that best describes you.

Answered: 30   Skipped: 24

Figure 10. Respondents' frequency of browsing TLLP groups other than their own.

Q7 How often do you BROWSE TLLP groups other than your own on TeachOntario? These groups are located in the CREATE section of TeachOntario, which is accessible only to Ontario educators with individual site log-ins. Please choose the response that best describes you.

Answered: 30   Skipped: 24
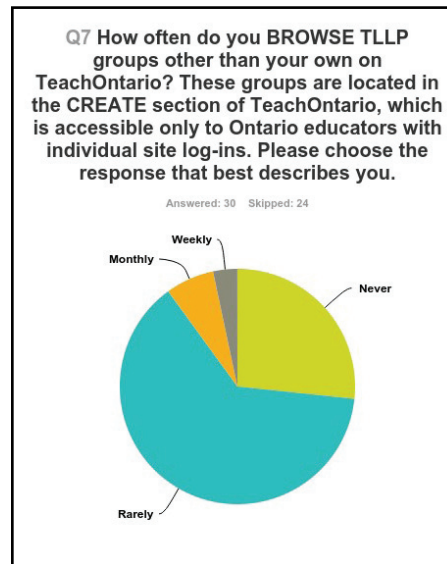
Figure 11. Respondents' frequency of participating TLLP groups other than their own.

Q8 How frequently do you PARTICIPATE in a TLLP group other than your own on TeachOntario? Participation could include activities such as posting materials in a group other than your own; tagging a group in a post that you made on the site; liking, bookmarking, or commenting on a post from a TLLP colleague outside your own TLLP group.

Answered: 30   Skipped: 24
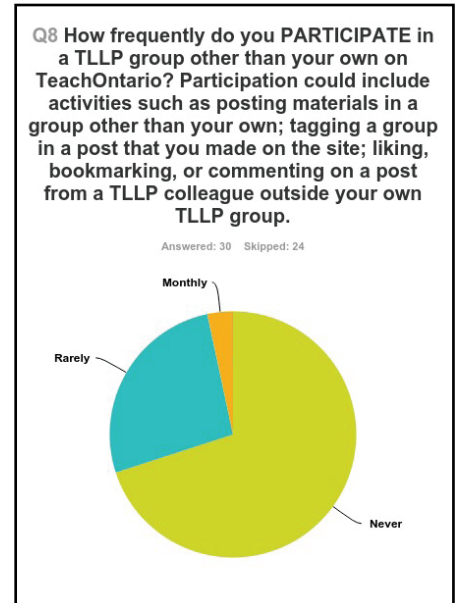
The majority of the respondents found TeachOntario resources to be 'somewhat helpful' (n=13/24, 54.2%), with 16.7% describing resources as 'helpful' (n=3, 12.5%) or 'very helpful' (n=1, 4.2%). Of concern, however, nearly 30% of the respondents reported TeachOntario resources to be 'not helpful' at all (n=7, 29.2%) (see figure 12).

We asked survey respondents to rate their "experience within [their] group in terms of the ease of use of the TeachOntario platform to share resources and interact with others about their learning." The scale ranged from '1–Not at all user-friendly' though '5–

Extremely user-friendly.' Over half of respondents rated TeachOntario's ease of use as a 2 or less (n=16, 61.5%). That said, there were some people who felt that TeachOntario was 'somewhat user-friendly' (n=7, 26.9%) or 'user-friendly' (n=3, 11.5%). We offered respondents the opportunity (i.e., in an open text box) to describe their group's activity on TeachOntario. We received 21 responses (response rate = 38.9%). Content analysis revealed a near equal split in the data with ten project leaders (47.6%) describing how their group used TeachOntario to support and share their learning

and the remaining eleven project leaders (52.3%) indicating that their group did not use the platform. Groups reporting activity typically stated that their group was using TeachOntario to post blogs as a way to document their learning. Among those project leaders who provided detail about why their group did not use TeachOntario, the reasons tended to focus on using other platforms such as Twitter using #TLLP hashtag (most commonly cited), Google Apps for Education, or tools internal to their board to facilitate knowledge sharing. Box 4 provides examples of comments received in answer to this survey question.

Figure 12. TLLP Cohort 10 project leaders' perceptions of the helpfulness of TeachOntario resources.
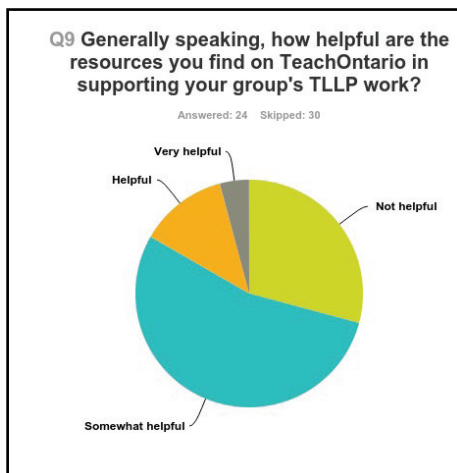
Box 4. Description of TLLP Groups' Use of Teach Ontario – Sample of Comments

Survey Question #11: Describe your group's activity on TeachOntario. For what purpose(s) do you and your colleagues use this digital space?
"I posted some of the things we learned, videos and routines we used that made our classrooms more successful."

"We mainly used the TeachOntario platform to keep track of our professional learning in the form of a blog."

"We posted our Padlet and also contacted Albert for questions in regards to our project. Great help!"

"We set up a group, invited others, but due to lack of interest in our group after the TLLP sessions in May we haven't really kept up with it. We started a blog and chose to do that instead as we felt it was more globally reaching."

"I have to say we didn't think we were to add anything until our time was complete. There are only some projects on-line and the ones interesting to us are closed. Also when I see the number of members I'm not sure why those numbers are so low if everyone is to go and share information. I'm not sure I/we fully understand how to use this resource."

"We haven't used this platform. We work in the same building, use Twitter to share progress, meet frequently and casually to discuss and share in person and online using GAFE [Google Apps for Education]."

We closed the survey with another open-ended question that provided respondents the opportunity to share any other insights about their experience with TeachOntario. Fifteen project leaders offered us their insights (response rate = 28%). A few respondents stated that TeachOntario was "a great tool" (teacher leader) and expressed their appreciation of TeachOntario providing "a place for us [teachers] to keep track of our [their] learning" (teacher leader). However, the main themes concerned difficulties experienced using TeachOntario. A sample of these comments is provided in Box 5. Generally speaking, the teachers' concerns focused on three areas. About a quarter of the respondents (n=4, 26.6%) indicated that they were unsure about the TLLP's expectations for use of TeachOntario by the individual groups. The majority of comments (n=7, 46.6%) addressed the user-friendliness of TeachOntario. Many teacher leaders spoke of their own difficulty in addition to their colleagues' challenges navigating the TeachOntario platform. Respondents identified finding information to be sometimes difficult, especially because of the amount of information contained on the website which, according to one respondent, "was a little overwhelming". This difficulty, in some cases, led to TLLP groups using other digital tools such as Twitter, Google Apps for Education apps and board-specific tools (e.g., Edsby) to share their learning (n=3, 20%).

4.5.4 What are the impacts of participating in the TeachOntario community for TLLP teachers' learning?

TeachOntario offers enormous promise for teachers' self-directed professional learning in Ontario. Its partnership with TLLP is helping build a vast and important knowledge infrastructure that enables Ontario educators to learn with and from each other. Indeed, some teachers are already doing just that. Nevertheless, challenges of awareness and access to fully utilizing TeachOntario are contributing to it currently being underused. However, it is important to note that TeachOntario is a new resource and was only officially launched last year. The TLLP teacher leaders see the potential in TeachOntario. In further developing TeachOntario as an integral partner for TLLP teachers, reported challenges of awareness of the platform, clarity of expectations about TLLP projects' participating actively in TeachOntario, issues of user friendliness and support for use, and consideration of the combination of opportunities for TLLP projects to share their learning through multiple digital platforms and in person require attention.

Box 5. TLLP Project Leaders Feedback on Teach Ontario – Sample of Comments

Survey Question #12: Is there anything you would like us to know about your TeachOntario experience? Likes? Dislikes? Suggestions for improvement?

"I would say that the resource is underused and to make it more effective participants need a clearer understanding of what is expected of them."

"It should be mandatory to attend the TeachOntario session at the TLLP training session. It is not the most user friendly platform. Our team found it difficult to navigate, especially those members who are not technologically inclined. We did like that the platform provided a place for us to keep track of our learning. It was not really clear whether we should be participating on the Ning or TeachOntario. We would suggest clear expectations around the use of a social media platform with regards to the TLLP process".

"I opted to use Twitter instead. I found it difficult to post things and upload pictures on TeachOntario. In addition, only people who have a TeachOntario account and enrol in our course, would see our work. I find that Twitter is used more among educators and more people can see our work. During the conferences we attended, most of the presenters and researchers shared their Twitter handles. There are so many different ways to share on social media and instead of posting and sharing in all these different spaces, I chose Twitter. Whenever my team does post, we use #TLLP and have connected and seen the work of other TLLP projects that way as well."

4.6 Focus groups with provincial TLLP teams

Two focus group interviews were held with the provincial partners leading the TLLP: one focus group with two people from the Ministry; and one focus group with two people from OTF. A key theme across all participants was that 2016-17 had been a highly successful year for the TLLP. The launch of the 10th cohort of the TLLP was an important milestone and, over 2016-17, the TLLP continues to grow in scope and impact. As an OTF interviewee commented:

We began the year of your research as we had celebrated the 10th cohort being trained and we had a very strong feeling of gratification and success as we began the year which, I think, has really reverberated through the whole year…. So I think… that was the beginning of the celebration... We've seen lots of evidence of the TLLP coming of age in this year.

Both Ministry and OTF interviewees felt that the original goals of the TLLP had been fully realized:

The extent to which the overall goals have been realized, we have been 1000% on that. We've never strayed from those goals… I think in a lot of ways the outcomes exceeded our expectations. We were very committed and we believed what we were doing and we stayed very faithful to our goals, but I really do think that it's gone beyond even … the successes are more than what we anticipated they would be… (OTF interviewee).

…to the question "to what extent have the goals been realized?"

I guess what I'm trying to show is that I think they have been surpassed. (Ministry interviewee).

A range of impacts from TLLP projects was identified. Vitally, continued impact on teachers' professional learning and leadership is considered the main impact from TLLP. As a Ministry interviewee commented:

I think the biggest benefit is authentic professional learning. They've chosen the learning. So I am a big fan of it's relational, responsive, recursive real world. It's their learning. I think that that's a huge empowerment piece for our educators. We talk a lot about what I would call small "l" teacher leadership. We're leading without title and I think that, again, through the empowerment, that's what TLLP has fostered.

In addition to TLLP's direct impact on the individual participants, there is a broader impact of the TLLP "way of doing business". As an OTF interviewee explained:

We continue to see the spread of the project as a way of doing business, because there are other organizations that have modelled on the TLLP. Those include multiple school boards, OTF, our affiliates, subject associations. So the notion of creating space for teachers to work together in this way and supporting that work and allowing their leadership to grow and flourish and then leveraging that to spread innovative practice, I think, is quite phenomenal.

As well as TLLPs impact within the education system, Ministry interviewees also pointed to learning from the TLLP as influencing other ways of working and areas of work within the Ministry itself. A significant impact of the TLLP influencing wider ways of working has been its use, along with other experiences, to inform the development of Policy and Program Memorandum (PPM) 159 Collaborative Professionalism. Ministry and OTF interviewees commented favorably about the influence of TLLP on Collaborative Professionalism. For example:

The fact that the TLLP was used as the model, as the "poster child" for what has really inspired the Ontario government to create their PPM on collaborative professionalism… I know that the TLLP and the successes of the TLLP that we've had and everything that we've done frankly to build the TLLP together including the research piece, really had high impact on what the government decided to do and their thinking right now around collaborative professionalism. So I think that we really have an opportunity to celebrate high impacts by the TLLP in this 2016/2017 year. (OTF interviewee).

The impact of TLLP extends beyond Ontario also; 2016-17 was a year when international awareness of the TLLP further developed. One specific example was the publication of a new book, Teacher Learning and Leadership: Of, By and For Teachers (Lieberman, Campbell & Yashkina, 2017) based on the TLLP research. An OTF interviewee noted: "The fact that we had a book, a whole book about the TLLP published, I think, has been phenomenal." Another example of the wider international awareness of TLLP is the Scottish College for Educational Leadership (SCEL) has drawn on learning from the TLLP to inform its own Teacher Leadership Program.

The above examples of impact speak also to the continuing focus on the TLLP goal for knowledge exchange through shared learning. Interviewees commented on the

continuing importance of the existing infrastructure of support for TLLP participants, beginning with the initial Leadership Skills for Classroom Teachers through to the culminating Sharing the Learning Summit and beyond. This year, TeachOntario has also come to play a larger role in being a platform for TLLP participants to use also. In addition to formal mechanisms, the "in between" supports provided by both the Ministry and OTF continue to be vital. As a Ministry interviewee explained:

So I come back to all the in between work that happens between the training and the Summit, the fact that the TLLP teachers know that there's somebody at the Ministry that they can e-mail or call and that literally they will get an answer. Even if it's not the perfect answer, the fact that there is that support there that's part of their web, if you will, I think is really powerful. And "so I'm not in it alone. I have my team, I have my school, but I also have some other people, and OTF, as well, who 'have my back.'"

Opportunities such as the NORCAN (Norway-Canada) partnership and the PKE funding also provide opportunities to further spread knowledge exchange and sharing of practices.

At its core, the key element of knowledge exchange developed with and through TLLP is sharing of professional learning and deprivatization of practices. All of the provincial interviewees spoke highly positively about the value and importance of teachers' sharing their practices:

TLLP is to me is the deprivatization of practice. It's beyond acts in geography friendship. People are intentionally sharing what they're doing. (Ministry interviewee).

Some of the unbelievable pieces that I've been so moved by in terms of the spread of innovative practice… in the end, that's the real impact. Of course, there's the growth of leadership, but what I have been hit by is that connection of "I'm a leader because people see me as an expert in my area of focus, and I'm seen as that expert, because of the fact that I have pushed my knowledge out into the public domain." So I think that has been such an incredible piece of what it is we've accomplished. (OTF interviewee).

This idea that teaching is an act of learning. I think our TLLP teachers model that. And so that teaching, moving away from being isolated "is something that I do in my room." All those clichés to an authentic act of collaboration and that collaboration can be with many. We certainly see in NORCAN with students, as well as the community, but that collaboration is built on trust, and I think that that again is the power of the teacher to teacher. The ability to build that relational trust that then allows me to get past "oh, everything is fine. I don't really need this in my room. You go ahead and do whatever you're doing." And I think that I overuse de-privatization, but that idea that learning can be a public act and that that act can be shared and when we have the privilege of talking to the TLLP teachers at the Summit when we visit their booths. They've gone into their TLLP to have an impact on students and colleagues, but what we always hear is what an impact the students and colleagues had on them. So that whole reciprocal nature of it, and

so when we think about others, they're a source of learning, as well as a source for teaching or for instruction. (Ministry interviewee).

The spread of the excitement which therefore impacts the spread of innovative practice and also therefore impacts the policy impact of this project, I have not seen in anything else. (OTF interviewee).

Through reciprocal learning and deprivatization of practices, TLLP is enabling knowledge exchange for improved professional practices and student outcomes.

Considering the longer-term sustainability and continuing impact of the TLLP, there are considerable grounds for optimism. A key factor is that there now exists, what a Ministry interviewee described as, "an incredible group of what I would call TLLP alumni". These TLLP alumni are now playing an increasing role in supporting the continuing development of the future TLLPS; for example, former TLLP participants are contributing to the Leadership Skills for Classroom Teachers training for new TLLP cohorts:

2016/2017 in my view was a moment, it's a moment of celebrating unbelievable leadership by past TLLP participants. So we have seen an absolute upsurge of the voice of the TLLP previous cohort participants being represented in our own delivery of the program. So in both the Summit and in the training program, we have a lot of leadership from those individuals – which in practice looked like Michelle Cordy doing the keynotes address… I think that that's very symbolic of the integration of the leadership and the celebration of the leadership that we have created through

the project and that really came to bear. This year we've had more past participants delivering the training session than we have ever had in the past, as well. And that included taking the lead on some of our, what we call the Carousels, as well as on the Plenary Sessions. (OTF interviewee).

As well as TLLP alumni contributing back to the TLLP, they are also contributing to a host of professional learning and leadership development opportunities:

What's interesting as an evolution is that many of our TLLP grads have had leadership in other things that the Federations have done. So, they've been profiled as leaders in their own affiliates, but we've use them in conferences, summer institutes, webinars that we offer, all the PD that we offer. When we want to do something on Math, we go to our TLLP cohorts to look for those specialists on Math. So we've been doing that for some years outside of the TLLP… But this year really did feel like the reaching a height on that and celebrating that. So I think it is quite fitting that that was … if we consider this as our 10th cohort, it was in the year of the 10th cohort that we got to really see that coming into its full possible blooming, if you'd like. (OTF interviewee).

The longer term impact of the TLLP includes also contributing learning and practices from the projects into school, district and provincial policies, initiatives and practices:

…for a small amount of funding, if you compare it to other Ministry … and I'm going to use the word here … initiatives, think about the influence and the way I was thinking about it is it's non specific initiative or non specific subject funding, right.

So it's non RMS (Renewed Math Strategy) but look at the impact that it's had on RMS. (Ministry interviewee).

Returning to the expressed view that TLLP has "exceeded" or "surpassed" its goals, the overall impact of TLLP was considered to be pervasive and profound. In the words of an OTF interviewee:

Well I think it turned teacher professional learning in Ontario on its head so that it really did become a groundswell of bottom up learning and now you look at any of the subject conferences and they are dominated by TLLP leaders doing presentations. You go into the schools and what they do in terms of changing the culture in the schools and how the teachers have learned from each other and it's dominated by TLLP leaders. So we have created what we set out to create, which was a separate class of leaders, essentially… You could actually remain in your classroom and become a leader and we have absolutely succeeded at that.

Of course with success come new and different challenges of success itself. There are concerns that if the TLLP is rightly recognized as highly successful, there may be a temptation to consider making all professional learning TLLP-like:

So challenge no. 1 is that I hear more and more of an interest by policy makers to make everything like the TLLP… the whole point about teacher professional learning is choice and range, right. Because the TLLP is a model that works well, and because we're all excited about it, does not remove the need to offer lots of different venues and lots of different kinds of professional learning experiences to teachers. If

everything was in the shape of the TLLP, it would not work. It would just not work. The TLLP is not for everybody, and the impact, you will exhaust the impact of the project if you try and make everything in the same model as the TLLP. You have to allow teachers first of all to choose and you have to give them a wide array… (OTF interviewee).

Teachers' professional learning and leadership of, by and for teachers requires teacher choice and voice in and through a wider range of professional learning opportunities. There is no one size fits all, even if modeled on the highly successful TLLP, approach to professional learning (Campbell et al., 2017). The TLLP provides one important approach to teacher-led learning alongside other teacher, school and system professional learning opportunities.

5. Conclusions

Our 2015-16 report concluded that:

2015-16 was a "milestone year" for the TLLP; in many respects, the TLLP became larger during 2015-16 in terms of scale, awareness, influence, and impact. (Campbell et al., 2016, p. 135).

While it seemed likely that the success of TLLP would sustain into 2016-17, we had not anticipated that TLLP would actually become even larger and more successful this year. From the launch of the 10th cohort, through continuing important evidence of achieving the goals for teachers' professional learning, leadership and knowledge exchange, the launch of a TLLP book (Lieberman, Campbell & Yashkina, 2017), and the influence

on policies and practices within Ontario and beyond in Canada and internationally; 2016-17 has been the "coming of age year" (OTF interviewee) for TLLP.

5.1 What are the impacts of TLLP projects for teachers' professional learning, knowledge, skills and practices?

Based on our analyses of a sample of Cohort 9 projects, the majority of TLLP teacher leaders report improvement in their knowledge and understanding (95%), teaching practices (90%) and technological skills (50%). In regard to how teachers approached their professional learning, in 95% of TLLP projects, participants engaged in some kind of collaborative learning to acquire new knowledge or skills or to develop new strategies or resources. Collaborative inquiry, observation with colleagues, community of practice, and Professional Learning Community were the most common collaborative learning activities. In 70% of the projects, TLLP leaders chose to learn directly from or with an expert/specialist in the area such as a professor, a psychotherapist, a technology expert, or a local artist. Sixty-five % of the projects in the sample referred to literature and research to improve their knowledge and understanding of the topic.

5.2 What are the impacts of TLLP projects for teachers' leadership skills and experiences?

The majority of TLLP teacher leaders also report growth in their leadership confidence and skills. Based on surveys comparing TLLP teacher leaders' reported confidence levels at the start and end of their TLLP projects; statistically significant improvements in their leadership confidence for implementing practices, sharing practices, leading professional learning, being a teacher leader, and leading a team were identified. In our analyses of Cohort 9 Final Reports, all (100%) TLLP teacher leaders reported growth in their skills for collaborative problem solving. The majority of TLLP teacher leaders also indicated improved skills for communication (90%), facilitating sharing of learning (85%), collaborative decision making (80%), giving presentations (70%), team building (70%), empowering others (65%), facilitating adult learning (65%), organizational ability (65%), project management (65%), administrative capacities (65%), mentorship (60%), building trust (55%), research (55%), and change management (50%).

5.3 What are the impacts of TLLP projects for other adults affected by the TLLP projects?

Knowledge exchange involves consideration of audience. In all projects in the sample, the main audience for sharing was teachers, which is expected and is consistent with the goals of the program. TLLP teacher leaders also reported sharing with school and district administration. Some projects shared their learning with parents, students, and community partners. In our analyses of Cohort 9 Final Reports, the main benefit reported for other adults from the TLLP was improved knowledge and understanding (75%), followed by inspiration to make a change (55%). In terms of impact within schools specifically, the main identified benefit was contributing to a furthering of a culture of collaboration (65% of sample projects).

5.4 What are the impacts of TLLP projects for students' engagement and learning?

Comparing our analysis of recent (Cohorts 7-9) TLLP projects with our analysis of Cohorts 1-6, we notice a shift in the central focus of projects from teaching to student learning and from student achievement to student learning and wellbeing. An increasing focus on pedagogical change, student wellbeing, and 21st century skills was identified. In our sample of Cohort 9 projects, the majority reported improvements in students' learning experiences and skills (90%) and improved engagement and attitude (55%).

The combination of student learning, wellbeing, and pedagogical change is exemplified by our PKE case study of UP (Ultimate Potential) Math at Monsignor John Pereyma Catholic Secondary School in Durham Catholic District School Board (DCDSB). Using a focus on gratitude to change mindsets, raise self-esteem and uphold high expectations by and for students; the evidence from UP Math indicates benefits for empowering students' voices and leadership and for developing their self-efficacy and engagement with noteworthy gains in student achievement. Such gains are not only about test scores, they are about the moral and ethical commitment to improve students' lives. As Leanne Oliver, the PKE leader, explained:

It's emotional, these are our kids. We saw that when these kids are falling behind in Grade 9, the limitations that are placed on their life and on their further academic achievement are profound. And so, we need to remove those barriers. It

had to change. It's our moral imperative. It must change. And we were sick and tired of waiting for this to happen.

From a starting point of 17% of participating students achieving the provincial standard or above in Grade 9 Applied Math when UP Math was first introduced as a TLLP project, last year, 73% of students achieved or exceeded the provincial standard.

5.5 How is learning being shared beyond the TLLP project team?

Comparing our analysis of recent (Cohort 7-9) TLLP projects with previous (Cohort 1-6) projects, we have identified further growth in collaboration and sharing. With an increase in the number of the approved team projects (vs. single-person projects) and greater availability and use of technology for collaborating and sharing, collaboration has become even more prominent in TLLP projects. Ninety-five percent (95%) of sample projects reported sharing within their own school; 95% also reported sharing within their own board. Although less frequent, sharing with other boards, with the local community and provincially, nationally and internationally is occurring also. There are two equally dominant methods of sharing: 85% of sample projects are using online methods (especially blogs and social media); 85% of sample projects are also working with other teachers in their classrooms to share learning and improve practices. In addition, 65% of sample projects provided workshops to share professional learning. This combination of online and in-person sharing, within schools across classrooms and also outside of school is noteworthy.

A further development to support wider sharing is TeachOntario. Officially launched on March 31, 2016, our analyses indicated that there was an average of 13,902 monthly site visits over the last year. This compared with an average of 6,817 site visits per month prior to the official launch. Hence, the number of site visits to TeachOntario has more than doubled in its first official year. In 2016-17, new TLLP projects had the choice of whether to use the TeachOntario platform. Our TeachOntario case study indicates that TLLP teachers are supportive of the concept of TeachOntario, welcome support to participate, and are interested in accessing and sharing resources. However, perhaps as this is the first official year of TeachOntario, there is a need for further support to develop TLLP teachers' active participation. Teacher interviewees expressed a lack of wider awareness of TeachOntario, uncertainty about how they were expected to use TeachOntario and/or the pre-existing Mentoring Moments NING, need for support on how to actually use the platform, and encouragement to engage in sustained and interactive online networking.

5.6 What longer-term mpacts of participating in TLLP projects can be identified?

As TLLP projects have time-limited funding, questions of sustainability are critical. Consistent with our previous research, we have highly encouraging results concerning the longer lasting impact of TLLP projects beyond their specific funding period. In our analyses of a sample of Cohort 9 projects, all (100%) reported continuing implementation of the innovative practice from their TLLP. The majority also reported sustained professional learning related to

their TLLP (75%), continuing to respond to interest in their work from others (50%), and continuing the collaboration/networking that they had developed. A minority (45%) reported sustaining online sharing; this is an area worthy of further consideration in combination with supporting the development and use of TeachOntario as a long-term platform for continued TLLP sharing. There is interest also in creating and maintaining a searchable database of all TLLP projects.

Now in its 11th Cohort, the TLLP's longer-term impact is notable in the cadre of "TLLP alumni" who are now contributing to the further development of future TLLP participants, as well as leading professional learning in a range of forums, events and activities. The scale of the "TLLP alumni" has the potential to significantly affect the culture, practices and outcomes of the Ontario education system. Importantly also, beyond the impact of specific TLLP projects and TLLP teacher leaders, the TLLP "way of doing business" has become highly influential. This is best exemplified in PPM 159 Collaborative Professionalism, which builds on the TLLP commitment to mutual respect and partnership as the way the Ontario education profession, government and stakeholders are to work together.

6.   Final remarks

Starting with the launch of the 10th TLLP cohort, through continuing excellent evidence of achieving the goals for teachers' professional learning, leadership and knowledge exchange, the launch of a TLLP book, and the influence on policies and practices within Ontario and beyond in Canada and internationally; 2016-17 has certainly been the year of the "full possible blooming" of TLLP. Reporting on our results in 2015-16, we did not anticipate that our 2016-17 TLLP results would indicate even further and deeper impact. Congratulations to everyone involved in the TLLP family. We cannot wait to see what 2017-18 will bring!

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