Partnering with Industry: Technology Coaches Leveraging Resources and Learning for Teachers

Tiffany Gallagher, PhD
Arlene Grierson, PhD
Catherine Susin, MEd, OCT
Faculty of Education, Brock University

Presented at the Annual Meeting of the Canadian Society for the Study of Education, Virtual Conference
May 17th, 2022

This project was funded by the Social Sciences and Humanities Research Council of Canada SSHRC IG Grant #435-2016-0401

Brock University

Conseil de recherches en sciences humaines du Canada

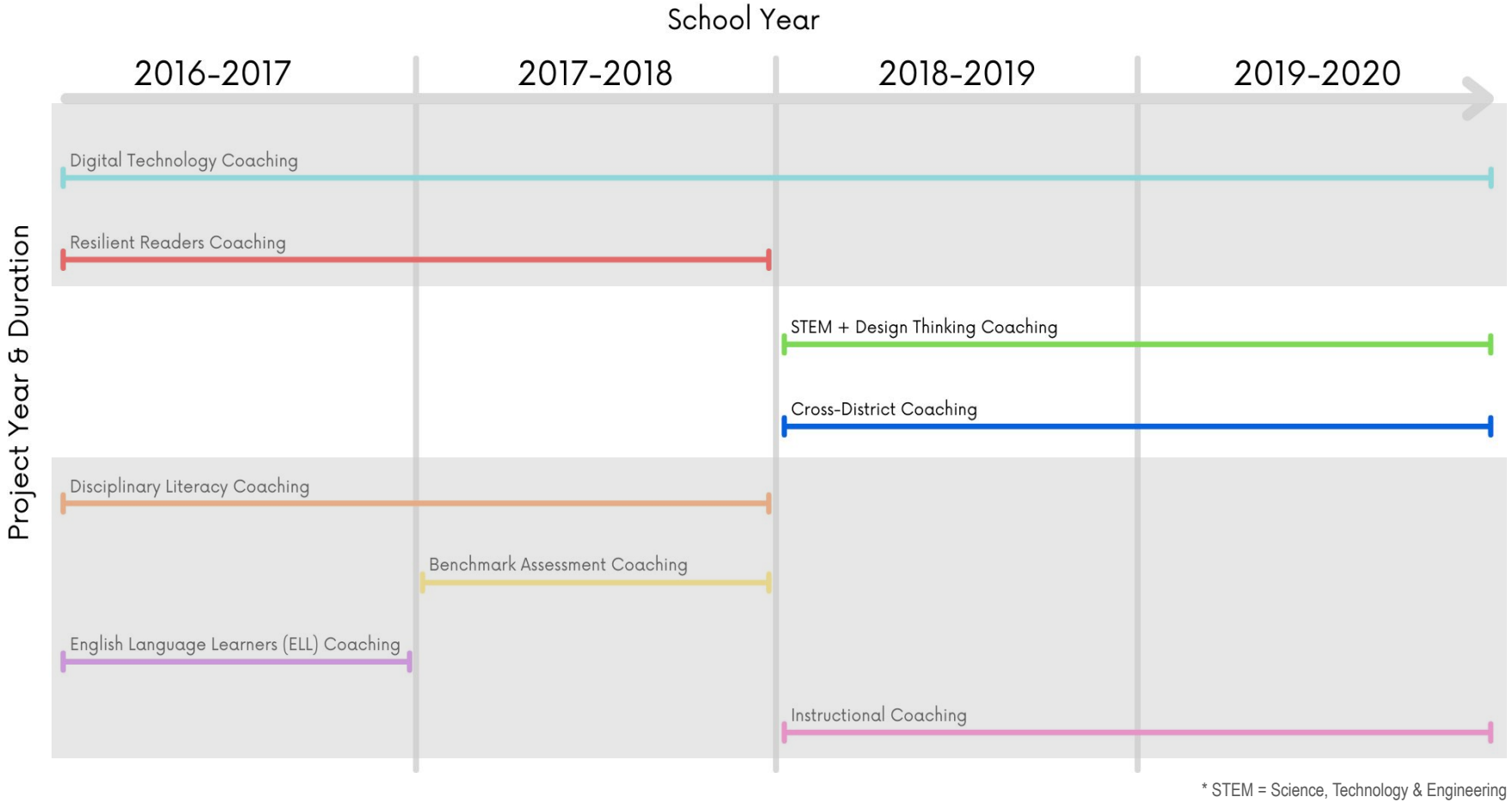
Social Sciences and Humanities Research Council of Canada

Canada

Agenda

1. INTRODUCTION
2. BACKGROUND LITERATURE
3. METHODOLOGY
4. FINDINGS
5. DISCUSSION
6. IMPLICATIONS FOR PRACTICE

INTRODUCTION



* STEM = Science, Technology & Engineering

RESEARCH QUESTION

What are the affordances and constraints encountered by technological coaches as they leverage educational resources through industry partnerships and support teachers' practice?

BACKGROUND LITERATURE

Background Literature

Coaching models of PL **(Kise, 2006; Knight, 2009; Knight, 2017)** are premised on building on teachers' existing professional knowledge and skills while working collaboratively to support their self-directed professional growth **(Popp & Goldman, 2016; Stover et al., 2011).**

Collegial collaboration **(Stephens & Mills, 2014)** can support teachers' abilities to enhance their knowledge through engaging in critical reflection and goal-directed, self-regulated learning **(Gutierez, 2016; Kuh, 2015; Schnellert et al., 2008; Toll, 2007; Walpole & McKenna, 2012).**

Several researchers **(e.g., Kopcha, 2010; 2012; Lowenhaupt et al., 2014)** recommend the establishment of collaborative communities of practice buttressed by a mentor to scaffold multiple barriers (time, beliefs, access, curriculum) for teachers who are learning to integrate technology.

Technology coaches can provide teachers with support in: technology and curriculum integration, teacher collaboration, technical and maintenance assistance **(Sugar & Slagter van Tryon, 2014).**

Background Literature

To meet teachers' needs, STEM (as well as instructional and digital technology) coaches need to adopt multiple roles serving as connector, planner, and teacher **(Giamellaro & Siegel, 2018).**

Teachers need to see the saliency in addressing grade-level standards through technology coaching across the curriculum **(Sugar, 2005).**

Technology coaches need to set up the conditions for providing teachers with the resources and guidance to integrate technology into their practice **(Liao et al., 2021).**

Specifically, they need the 'buy in' of administrators to encourage positive technology integration in the classroom and provide site-based resources **(Machado & Chung, 2015).**

METHODOLOGY

→ Generic **qualitative** methods employed (Creswell, 2012)

→ Broader than a single methodology to afford researchers the space to explore the perspectives of the participants within their context (Caelli et al, 2003; Kahlke, 2014)

METHODOLOGY

Participants & Data Sources

- **Two coaches, a K-12 DL coach** (Helen, pseudonym) **and a STEM coach** (Jenna, pseudonym) **from different, adjacent Ontario school districts.**

- Over the course of two years (2018-2020), the coaches and their teacher participants were observed in classroom coaching sessions (n=9) and professional learning workshops (n=5) hosted by a technology industry partner. **Field notes were taken during observations** and debriefing sessions about the applications into each of their respective districts.

- In the first year, the coaches each worked separately on three occasions with a researcher on a guided study of their own practice.

- In the second year, the coaches met three times to cross-pollinate their professional learning with the facilitation support of the researcher.

- **Interviews** (n=9) and **focus groups** (n=2) with the coaches (audio recorded, transcribed, member checked).

METHODOLOGY

Data Analysis

→ Initial data analysis was conducted using NVivo **(QSR International, 2018)** and consisted of conducting a keyword/phrase search within all the aforementioned data for instances of these two coaches acquiring and using digital resources (e.g., devices, programs, etc.).

→ These excerpts were read, coded for recurring concepts and summarized into broad findings by two of the researchers **(Auerbach & Silverstein, 2003)**.

→ Next, these findings were discussed by all researchers and then clustered and categorized into four themes **(Saldana, 2009)**.

FINDINGS

1. Coaches’ Appeal to and Collaborate with Industry Partners
2. Coaches' Market Initiatives to and Collaborate with School District Administrators
3. Coaches Make Cross-Curricular Connections with Teachers
4. Coaches Liaise and Support Teachers through Coaching

FINDINGS

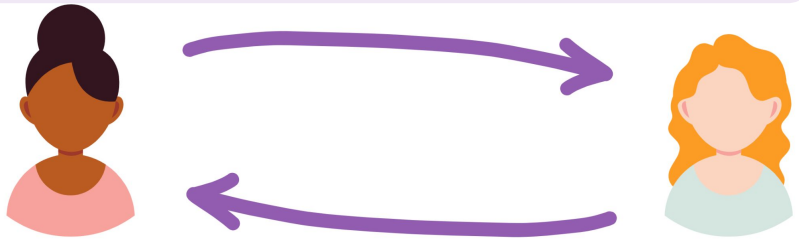
Coaches' Appeal to and Collaborate with Industry Partners

When collaborating with industry partners, the coaches were able to develop robust, professional learning (PL) opportunities for teachers utilizing each others' knowledge and experience.

For instance, while observing Jenna (STEM coach pseudonym) and an industry partner during a STEM PL session, researchers noticed the synergistic collaboration between the two, and...

> "wonder[ed] if they both [saw] the other as interdependent - [the industry partner] needs Jenna's board's buy-in and Jenna needs their tech support."
>
> – (Researcher's Interpretations, Field Notes, April 17, 2019)

Coaches and classroom teachers appreciated that the industry partners were able to translate and transfer their knowledge of instructional technology into a 'teacher-friendly' format.



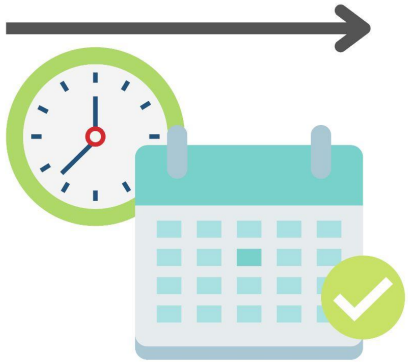
FINDINGS

Coaches' Market Initiatives to and Collaborate with School District Administrators

Beyond developing PL opportunities for teachers in cooperation with technology industry experts present,

> "...teachers need to know that the board [district] is interested [in these partnerships] in the long term..."
>
> - (Field Notes, November 8, 2019)

It was found that the more receptive principals and superintendents were to engaging in these partnerships, the more open-minded the teachers were to adopting technology into their practice.



These partnerships fostered multilevel teamwork and collaboration, which contributed to technology equality across schools within the district.

FINDINGS

Making Cross-Curricular Connections with Teachers

It was evident that there was a desire among teachers for cross-curricular connections, so that they could better visualize how to best implement these new resources in their classrooms. For example, during a robotics training session,

> “[Helen, Coach pseudonym] explain[ed] gear ratios and how they can be used to teach about fractions…”
>
> - (Field Notes, January 17, 2017).

There was also an emphasis on creative freedom for students, and the development of their conceptual understanding, Design Thinking process (Goldman & Kabayadondo, 2016), and 21st-century competencies (CMEC, n.d.).

Here, the role of the coach was to support teachers to identify these curriculum connections, ensure they had a strong understanding as to why this technology integration was important, and provide them with the resources and support for implementation in their classrooms.

FINDINGS

Liaise and Support Teachers through Coaching

Coaches recognized that by incorporating these new technologies that educators became comfortable with being uncomfortable as their PL investment was contributing to changes in practice.

Coaches acknowledged the need for maintaining accountability and momentum in

> “keep[ing] people going and refreshed and on track”
>
> - (Helen, Interview, September 20, 2019).

As teachers continued to engage with the materials and industry partners, they developed the confidence needed to offer new technology-enhanced learning opportunities to their students.

However, there was a sentiment that the support provided by the coaches should not end with the PL sessions, but instead, continue with ongoing collaboration among teachers, ensuring that they are able to identify curriculum connections, differentiate roles for students, and approach technology-based problem-solving tasks in a fun and engaging way.

DISCUSSION

Discussion

Technology coaches need to nurture meaningful relationships with the teachers **(Skues & Cunningham, 2013)** and significantly, this study found that they need to also have such relationships with school administrators and industry partners.

In addition to the methods that technology coaches use to support teachers **(Liao et al., 2021)**, their role increasingly requires them to procure technological resources **(Sugar & Slagter van Tryon, 2014)**.

This is 'worth it' as partnerships with technology industry companies also benefit the school districts by providing them with the most current resources.

IMPLICATIONS FOR PRACTICE

Technology coaches need to support teachers in, and provide materials for, learning and implementing technology across content areas.

They now need to be resourceful to initiate and foster industry partnerships.

School administrators need to be receptive to these partnerships in order to influence teacher buy-in, collaborative teamwork, and district-wide technology equality.

Coaches should plan opportunities for teacher collaboration and support, beyond PL sessions with teachers and industry partners.

Finally, they also need dedicated time to collaborate with other coaches and enhance their own professional knowledge and skills.

Tiffany L. Gallagher, Ph.D.
(tgallagher@brocku.ca)

Arlene L. Grierson, Ph.D.
(arlenegrierson@gmail.com)

Catherine Susin, M.Ed., OCT
(csusin@brocku.ca)

References

Auerbach, C. F., & Silverstein, L. B. (2003). Qualitative data: An introduction to coding and analysis. New York: New York University Press.

Caelli, K., Ray, L., & Mill, J. (2003). "Clear as mud": Toward greater clarity in generic qualitative research. International Journal of Qualitative Methods, 2(2), 1–24. https://doi.org/10.1177/160940690300200201

Council of Ministers of Education, Canada [CMEC]. (n.d.). *Global Competencies*. https://www.cmec.ca/682/Global_Competencies.html

Creswell, J. W. (2012). Educational research: Planning, conducting, and evaluating quantitative and qualitative research (4th ed.). Boston, MA: Pearson Education.

Giamellaro, M. & Siegel, D.R. (2018). Coaching teachers to implement innovations in STEM. *Teaching and Teacher Education, 76*, 25-38. https://doi.org/10.1016/j.tate.2018.08.002

Goldman, S., & Kabayadondo, Z. (2016). Taking design thinking to school: How the technology of design can transform teachers, learners, and classrooms. In S. Goldman & Z. Kabayadondo (Eds.), *Taking design thinking to school.* (pp. 3-19). Routledge. https://doi.org/10.4324/9781317327585

Gutierez, S.B. (2016). Teachers' reflective practice in lesson study: A tool for improving instructional practice. Alberta Journal of Educational Research, 61(3), 314-328. https://doi.org/10.11575/ajer.v61i3.56087

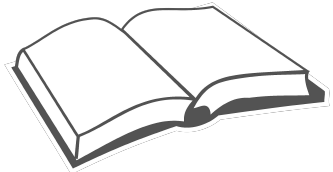
Kahlke, R. M. (2014). Generic qualitative approaches: Pitfalls and benefits of methodological mixology. International Journal of Qualitative Methods, 13. p. 37-52. https://doi.org/10.1177/160940691401300119

Kuh, L. (2015) Teachers talking about teaching and school: Collaboration and reflective practice via critical friends groups. Teachers and Teaching: Theory and Practice, 22(3), 293-314. https://doi.org/10.1080/13540602.2015.1058589

Kise, J.A. (2006). *Differentiating coaching: A framework for helping teachers change*. Corwin Press.

Knight, J. (2009). Coaches as leaders of change. In M. Fullan (Eds.), *The challenge of change* (2nd ed.) (pp. 105-133). Corwin Press.

Knight, J. (2017). The impact cycle: What instructional coaches should do to foster powerful improvements in teaching. Thousand Oaks, CA: Corwin Press.



References

Kopcha, T. J. (2012). Teachers' perceptions of the barriers to technology integration and practices with technology under situated professional development. *Computers & Education, 59*(4), 1109-1121. https://doi.org/10.1016/j.compedu.2012.05.014

Kopcha, T. (2010) A systems-based approach to technology integration using mentoring and communities of practice. *Educational Technology Research and Development, 58*(2),175-190. https://doi.org/10.1007/s11423-008-9095-4

Liao, Y-C., Ottenbreit-Leftwich, A., Glazewski, K., & Karlin, M. (2021). Coaching to support teacher technology integration in elementary classrooms: A multiple case study. *Teaching and Teacher Education, 104,*1-13. https://doi.org/10.1016/j.tate.2021.103384

Lowenhaupt, R., McKinney, S., & Reeves, T. (2014). Coaching in context: The role of relationships in the work of three literacy coaches. *Professional Development in Education*, *40*(5), 740–757. https://doi.org/10.1080/19415257.2013.847475

Machado, L.J., & Chung, C-J. (2015). Integrating technology: The principals' role and effect. *International Education Studies, 8*(5), 43-53. http://dx.doi.org/10.5539/ies.v8n5p43

Popp, J.S. & Goldman, S. R. (2016). Knowledge building in teacher professional learning communities: Focus of meeting matters. Teaching and Teacher Education, 59, 347-359. https://doi.org/10.1016/j.tate.2016.06.007

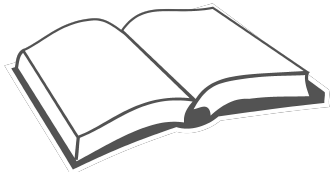
QSR International. (2018). NVivo (Version 12). https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home

Saldana, J. (2009). The coding manual for qualitative researchers. Sage Publications.

Schellert, L.M., Butler, D.L., & Higginson, S.K. (2008). Co-constructors of data, co-constructors of meaning: Teacher professional development in an age of accountability. Teaching and Teacher Education, 24, 725-750. https://doi.org/10.1016/j.tate.2007.04.001

Skues, J., & Cunningham, E. (2013). The role of e-learning coaches in Australian secondary schools. *Journal Of Computer Assisted Learning, 29*(2), 179. https://doi.org/10.1111/j.1365-2729.2012.00488.x

Stephens, D., & Mills, H. (2014). Coaching as inquiry: The South Carolina Reading Initiative. Reading & Writing Quarterly, 30, 190–206. https://doi.org/10.1080/10573569.2014.907714



References

Stover Kelly, K., Kissel, B., Dawson Haag, K. & Shoniker, R. (2011). Differentiated coaching: Fostering reflection with teachers. *Reading Teacher, 64*(7), 498-509. https://doi.org/10.1598/RT.64.7.3

Sugar, W. (2005). Instructional technologist as a coach: Impact of a situated professional development program on teachers' technology use. Journal of Technology & Teacher Education, 13(4), 547-571.

Sugar, W., & Slagter van Tryon, P.J. (2014). Development of a virtual technology coach to support technology integration for K-12 educators. *TechTrends, 58*, 54-62. https://doi.org/10.1007/s11528-014-0752-7

Toll, C.A. (2007). Lenses on literacy coaching: Conceptualizations, functions and outcomes. Norwood, MA: Christopher- Gordon Publishers.

Walpole, S., & McKenna, M.C. (2012). The literacy coach's handbook: A guide to research-based practice. New York: Guilford Press.