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Educational Technology Competency Framework: Defining a Community of Practice Across Canada

Cadre de compétences en technologie éducative : Définir une communauté de pratique à travers le Canada

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Abstract

Post-secondary institutions need clarity regarding what their educational technology teams can offer. Educational technology is not simply a hammer that can be quickly utilized, but rather an instrument that needs to be tuned for each unique learning context. Using a modified Delphi approach, we validated an educational technology framework that highlights the necessary capabilities, competencies, and example activities needed in higher education across Canada, which moves away from traditional roles and responsibilities. This framework captures the need for teams to educate, collaborate, design, develop, administer, and lead within their institutions. It also highlights the revealed desire and need to create broader communities of practice and collaborations between various institutions. Educational technology teams themselves, when functioning optimally, will not only transform the academic experience for learners and teaching faculty, but they will ultimately shape the direction of higher education's teaching and learning.

Keywords: Education technology; framework; competency

Résumé

Les établissements postsecondaires ont besoin de clarifier ce que leurs équipes de technologie éducative peuvent offrir. La technologie éducative n'est pas simplement un marteau qui peut être utilisé rapidement, mais plutôt un instrument qui doit être accordé pour chaque contexte d'apprentissage unique. À l'aide d'une approche Delphi modifiée, nous avons validé un cadre de technologie éducative qui met en évidence les capacités, les compétences et les exemples d'activités nécessaires dans

l'enseignement supérieur au Canada, qui s'éloigne des rôles et des responsabilités traditionnels. Ce cadre rend compte de la nécessité pour les équipes d'éduquer, de collaborer, de concevoir, de développer, d'administrer et de diriger au sein de leurs établissements. Il met également en évidence le désir et le besoin révélés de créer des communautés de pratique et des collaborations plus larges entre divers établissements. Les équipes de technologie éducative, lorsqu'elles fonctionnent de manière optimale, ne transformeront pas seulement l'expérience universitaire des apprenants et du corps enseignant, mais elles façonneront en fin de compte l'orientation de l'enseignement et de l'apprentissage dans l'enseignement supérieur.

Mots-clés : Technologie de l'éducation ; cadre; compétence

Introduction

Even though educational technology (EdTech) has existed for centuries, integrating EdTech into higher education has become a top priority for postsecondary institutions, in part due to student and educator expectations. The COVID-19 pandemic response is a perfect illustration of the current need for connection between technology, pedagogical delivery, and best practices (Veletsianos & Houlden, 2020). This is an opportunity to rethink the function an educational technology team can accomplish in higher education (U.S. Department of Education, 2017). However, EdTech is not simply a hammer that can quickly be pulled out of the toolbox, but rather an instrument that needs to be tuned for use in each unique learning context.

Merriam-Webster (Technology, n.d.) defines technology as “a capability given by the practical application of knowledge”, stemming from the Greek words *techne* (skill, art, craft) and *logos* (word, reasoning) (Tulley, 2008). The Association for Educational Communications and Technology (AECT) defines EdTech as "the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources" (Richey, 2008, p. 24). Technology does not always need to be digital, yet many individuals default to this definition. There also tends to be a close working relationship between information technology (IT), “the technology involving the development, maintenance, and use of computer systems, software, and networks for the processing and distribution of data" (Technology, n.d.,) and EdTech, further confounding the challenge. The purpose of EdTech is ultimately to improve education, defining first the goals and needs of education, and then purposefully creating the learning environment around those goals and needs to aide learners in meeting them.

Technology can be a powerful tool for transforming learning. It has the ability to enhance the interaction between educators and learners, alter our approach to learning through collaboration, and continue to close the equity and accessibility gaps, all while tailoring the learning experience to meet the needs of all learners (U.S. Department of Education, 2017). The process for how this integration of learning and technology will play out is still being defined by most institutions.

Frameworks are real or conceptual structures that provide a foundation upon which something can be built, or a system of rules, ideas, or beliefs used to plan or decide something (Framework, n.d.).

Several frameworks specific to EdTech have been released in recent years. Cherner and Mitchell (2020) summarize, then deconstruct, these frameworks into their essential attributes based on their creators, features, and usefulness. In their review, they identified nine frameworks that range from addressing EdTech at a macro- or systems-level to how it is used by individuals at a micro-level, including SAMR[1] and TPACK[2]. There are other frameworks that address competencies at an individual professional level, including the International Board of Standards for Training, Performance, and Instruction (ibstpi®, https://ibstpi.org/) framework for instructional designer competencies. However, while these frameworks are built upon existing literature or have used extensive stakeholder engagement in their development process, they have not been validated across a diverse, higher education EdTech field that spans multiple institutions, faculties, and professions, nor have they addressed the necessity to view EdTech from an interdisciplinary approach.

Despite the welcomed presence of EdTech teams in higher education, they do not appear to have a well-established identity (Smith, 2016). With the drive to more distance and virtual learning options, and further demand post-COVID, it is even more important that such teams are able to articulate their identity to themselves and to others (Triyason et al., 2020). One of the challenges in identity formation is that the field is inherently multidisciplinary, bringing together a variety of different professions, fields, and disciplines (Schneider, 2009). Contemporary design theory and practice has embraced trans-disciplinarity, with the increasing dissolution of traditional boundaries, yet this remains less prevalent in other settings (Dykes et al., 2009). Different disciplines working together and moving beyond discipline-specific approaches is needed today, more than ever, to address complex problems, and we propose that EdTech teams should move toward this practice of communal competence (Bates, 2000; Ellington & Blanchette, 2019; Wenger, 1999).

The most recent EDUCAUSE Horizon Report (Brown et al., 2020), which aims to profile key trends and upcoming technologies, highlights that "planning for the future is probably as complex and as challenging as it has ever been" (p. 32). The report goes on to identify three trends for higher education, namely, changes in student population, alternative pathways to education, and an increase in online education. The report also proposes four possible archetype trajectories that higher education can follow in the next 10 years: growth, constraint, collapse, or transformation. With growth, higher education largely excels, but leaves some issues inadequately addressed; with constraint, higher education continues but with a diminished role; collapse sees a future with rapid breakdowns and forces of change outside the control of higher education; and transformation allows higher education to establish a new paradigm for itself. An instrumental factor in moving our institutions from collapse to transformation is the successful creation of "flexible, cross-functional, interdisciplinary teams" (Kilgore et al., 2019). The framework that we have validated and outlined in this paper is built upon that very notion of creating

[1] "SAMR" is an acronym that stands for Substitution, Augmentation, Modification, and Redefinition and is a model used for integrating technology into teaching.

[2] "TPACK" stands for Technological Pedagogical Content Knowledge and is another framework used for integrating technology into teaching.

responsive teams and moves away from the traditional roles-based model that tends to remain pervasive in most institutions.

Teaching and learning are becoming increasingly technical, or so it appears. Although the impression is that teaching and learning require greater technology reliance (and that may be the case), it is rather that both the educator and learner are evolving through their engagement with the learning materials (Walls, 2019). As we interact with technology, our abilities to teach and learn adapt alongside the technological changes. To guide and engage educators in this transformational change, EdTech teams need to be properly equipped and prepared. Our previous papers laid out a roles-inspired approach to considering the competencies of the educational technologist (Cenkner et al., 2017; Sonnenberg et al., 2018). We originally envisioned a roles-based competency profile for EdTech teams. In that work, seven roles are proposed, with educational technologist in the center, adapting the CanMEDS physicians' competency profile, with information specific to the domain of EdTech in Canada (Frank et al., 2015). However, as we engaged in dialogue with others in the field of EdTech, it became clear that this model was not going to adapt to the often uncertain and complex arenas we were exploring with our teaching faculty.

Therefore, building upon previous work done by our group, the purpose of this study was to validate an EdTech framework, including descriptions, core competencies, example activities, and core concepts, which will aid in defining a community of practice across Canada.

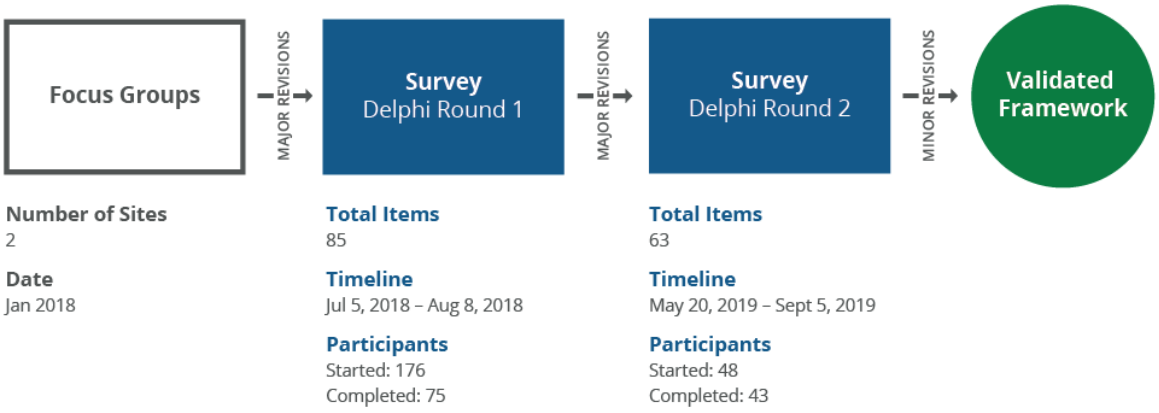
Research Methodology

The methods used to validate our conceptual framework included a two-phase study approach using focus groups to elicit feedback and make preliminary modifications to the proposed framework, prior to the modified Delphi rounds completed by EdTech experts in higher education across Canada to further modify and determine the items to include in the final framework (Figure 1). The Delphi technique is particularly suited to consensus-building and has been widely used to this end (Humphrey-Murto et al., 2020).

The first phase included focus group consultation to elicit feedback on the existing roles, competencies, and activities that had already been published and further updated through an informal, consensus-building process both online and within the research team. The focus groups consisted of faculty/staff members at two Canadian universities, from various departments and faculties across campus, with an interest in EdTech, along with the study team. During this phase, a facilitator provided prompts, asked probing questions and led the discussion, addressing the existing framework, as appropriate. Through these focus group discussions, participants articulated additional roles, competencies, and processes for the framework. Participants could speak to either a current state of practice or how they thought their units should be operating. Focus group discussions were audio recorded with contextual notes taken. Notes and audio recordings were reviewed and analyzed to identify further items that would need to be included in the survey used in the second phase of the study.

Figure 1

Study Design, Timelines, and Participant Numbers



The second phase of the study consisted of two survey iterations. This first derived from the themes identified in the focus group discussions; the second derived from the previous survey iteration. A purposeful sample of experts from relevant EdTech backgrounds in higher education from across Canada were targeted for survey completion. The email survey link was distributed to members of the Canadian National Network for Innovation in Education (CNIE) and the Canadian Association of Medical Educators (CAME) technology working group, as well as through Twitter, with the option of forwarding the survey to others that may have been interested in adding their feedback and consensus to the framework.

Using REDCap©, the Research Electronic Data Capture tool, hosted and supported by the Women and Children's Health Research Institute (WCHRI) at the University of Alberta (https://redcap.ualberta.ca), individuals were asked to rate appropriateness (e.g., acceptability, feasibility, reproducibility) of each aspect of the framework using a five-point Likert scale for the first round. Respondents identified their profession at the outset of the survey and were instructed to rate items as they pertain to their own profession. The survey required respondents to identify if the roles, competencies, and activities were mandatory for an academic technology team to possess. There was space for comments to allow participants to identify gaps, justify ratings, or clarify wording.

The survey remained open for five weeks (July 5, 2018 - August 8, 2018), with reminders at two weeks, one week, and one day remaining. Results from the survey were analyzed and summarized using descriptive statistics. Comments were reviewed using simple content analysis, a qualitative content analysis commonly used for analyzing textual data and interpreting meaning in open-ended surveys (Silverman, 2011). The textual content was analyzed inductively with open coding (LKS and AA). Key themes were shared and reviewed by all members of the research team and incorporated into the framework for inclusion in the next survey round. At the end of the first round, participants were asked if they wished to participate in the second round of the Delphi survey. Response rates and results were also provided to participants going into the second round, which included participant demographics,

scores for each of the items that met consensus in the first round, and which items were new or modified. Anonymity was maintained by collecting the respondents' email addresses in a separate survey file in REDCap©, which was not linked to the answers provided. By maintaining anonymity, we were able to provide aggregate data, but not individualized participant-specific responses.

An expert in competence assessment analyzed the results of the surveys. Any item with a mean ranking of greater or equal to 3.5, with greater or equal to 50% of the respondents confirming that it was mandatory for an academic technology team to possess, was accepted into the framework. If an item ranked 3.5 with <50% of the respondents stating that it was mandatory, it was referred to the investigator working group for further discussion and potential inclusion in the next Delphi round, if needed, until consensus was reached. Even though some statements reached consensus, the research team chose to modify them for even greater clarity using the feedback received in the first round. Modified items were identified by (MOD) in the table, whereas items that were created after the first round were noted as new (NEW), for participant clarity.

The second iteration of the survey focused on what should be included or excluded from the framework and the ranking scale reflected that change. The response options were *include*, *exclude*, and *undecided*. Items that had 70% agreement for inclusion were kept. Those with 70% agreement for exclusion were discarded. All items that fell in between were reviewed by all seven members of the research team and considered for modification based on participant comments until consensus was reached. Additional comments by participants during the second iteration were also used to enhance items that had reached consensus, if the overall content meaning of the item was maintained.

This study was approved by the University of Alberta Research Ethics Board (approval no. Pro00075608) and the Bruyère Continuing Care Research Ethics Board, affiliated with the University of Ottawa (approval no. M16-17-048).

Results

Phase One: Focus Groups

The focus groups consisted of six from a western Canadian university and five from an eastern Canadian university. In the original publication, we described the framework using seven roles: designer, developer, leader, administrator, collaborator, and educator, with the technology expert being in the center and overlapping the other roles (Cenkner et al., 2017; Sonnenberg et al., 2019). During the focus groups, it was noted to be challenging for participants to get past this wording of roles, as it conjured up restricted views, in keeping with the traditional work done by that type of individual in that particular field. This further siloed the work that needed to be approached from a shared, team perspective, which was the general consensus from the focus groups. Based on this feedback, the terminology was shifted to team capabilities needed, away from the perceived individualistic roles. Geographical differences were also noted in the descriptions and sample activities, and the wording was changed to reflect more commonly accepted language. Overall, the framework, with its capabilities,

competencies, and example activities, resonated with the focus group participants with respect to how EdTech teams should ideally be functioning.

Phase Two: Modified Delphi

Survey Round One

In total, 176 participants started the survey, with 75 completing round one. Given that we used open recruitment methods, a response rate was not able to be calculated. Of those 75 who completed the round one, 59 indicated interest in participating in round two of the modified Delphi survey. Geographical representation of respondents is shown in Table 1. The majority of respondents were from university campuses [University (145, 83.3%), College (25, 14.4%), Technical Institute (4, 2.3%)] from a wide-range of faculties (Table 2), and roles within EdTech were also widely distributed (Table 3).

With respect to the overall framework: 95% of participants agreed or strongly agreed that the function of EdTech in academic institutions consists of several distinct capabilities (M=4.5/5); 98% agreed or strongly agreed that a framework should describe the capabilities that the EdTech team needs, as a whole, to meet the needs of the people they serve (M=4.5/5); 76% agreed or strongly agreed that EdTech capabilities are best considered at the team level as opposed to the individual employee level (M=4.0/5); and 87% agreed or strongly agreed that each of these capabilities can be described in terms of associated competencies and activities (M=4.1/5).

Framing questions were asked of participants with respect to how the following statements reflected their opinion/thinking in terms of framework application. Ninety-one percent agreed or strongly agreed that the framework would convey to higher-level administrators the various ways EdTech can support teaching and learning in higher education (M=4.4/5). Eighty percent agreed or strongly agreed that the framework will assist leaders in building and growing effective teams. (M=4.2/5).

Table 1

Respondent Demographics by Geographical Location

Location	Round One (n=175)		Round Two (n=48)	
	n	%	n	%
British Columbia	40	22.9	8	16.7
Alberta	32	18.3	11	22.9
Saskatchewan	13	7.4	5	10.4
Manitoba	10	5.7	4	8.3
Ontario	63	36.0	11	22.9
Quebec	6	3.4	1	2.1
New Brunswick	3	1.7	0	0
Prince Edward Island	0	0	0	0
Nova Scotia	4	2.3	1	2.1
Newfoundland and Labrador	1	0.6	0	0
Territories	2	1.1	0	0
Did not indicate	1	0.6	7	14.6

Table 2

Respondent Demographics by Primary Faculty Designation

Faculty	Round One (n=175)		Round Two (n=48)	
	n	%	n	%
Applied Science	5	2.9	2	4.8
Architecture/Design	2	1.2	1	2.4
Arts and Humanities	9	5.2	3	7.1
Business	6	3.5	2	4.8
Commerce and Economics	3	1.7	1	2.4
Computer Science	7	4.0	2	4.8
Dentistry	1	0.6	1	2.4
Education	26	15.0	9	21.4
Engineering	3	1.7	1	2.4
Health Sciences	16	9.2	4	9.5
Journalism/Communication Studies	1	0.6	0	0
Law	1	0.6	0	0
Library & Information Science	3	1.7	0	0
Medicine	23	13.3	6	14.3
Natural Sciences	6	3.5	2	4.8
Social Sciences	7	4.0	2	4.8
Central Services (No faculty)	65	37.6	18	42.9
Other	31	17.9	8	19.0

Table 3

Respondent Demographics by Role

Role	Round One (n=175)		Round Two (n=48)	
	n	%	n	%
Educator	61	35.3	13	31.0
Manager	43	24.9	8	19.0
Director	32	18.5	11	26.2
Designer	31	17.9	11	26.2
Developer	29	16.8	9	21.4
Information Technologist	22	12.7	5	11.9
Other	33	19.1	5	11.9

All descriptions and statements in the framework were addressed in the first round of the survey and consisted of 85 items that required consensus. Educate, collaborate, technology expert, and lead capability descriptions reached consensus, along with a number of the core competencies and example activities. These results can be found in the Appendices. Feedback on each capability was quite extensive and those comments were interwoven into the modified framework. For example, one participant commented, “I think it's important to remember that technology is meant to empower good pedagogy. Too much emphasis on technologies, and how they work can take away from the human work of teaching and learning interactions”. Based on additional written comments from participants, the framework capabilities were changed to six capabilities—Educate, Design, Implement, Collaborate,

Lead, and Administer—with Technology Expert being distributed between the other capabilities. There was still much dialogue around what should be placed in the center of the framework. One participant proposed that since "[t]his framework will ultimately impact students as much as faculty, learners should [be] in the center of this framework". Ultimately, the research team elected to place Work Unit at the center of the framework prior to it being returned for consensus building during the second round of the survey.

Terminology Clarification Needed

Based on comments received during round one, confusion remained regarding roles vs. capabilities. At the start of round two, it was reiterated that this framework was not meant to outline individual roles, but rather, it was a comprehensive system or team approach to meeting EdTech needs for post-secondary institutions; hence, the use of capabilities and competencies, instead of roles and responsibilities. When evaluating the framework, participants were asked to use the team lens, and not the individual perspective, when considering each statement: *Capabilities* are thematic groups of competencies; *Competencies* are essential abilities and skills possessed by team members; *Activities* illustrate how a competency is accomplished. This was emphasized during the second round.

Survey Round Two

The second iteration of the survey was sent to the 59 participants that indicated they would like to be involved in round two of the modified Delphi survey, which represented 79% of those who completed the first round. Of those participants contacted by email, 48 started the survey and 43 completed the survey in round two, which was open from May 20, 2019, to September 5, 2019; this was equal to a 73% survey completion rate. Geographical representation of respondents is shown in Table 1. The majority of respondents were again from university campuses [University (35, 83.3%), College (5, 11.9%), Technical Institute (2, 4.8%)], from a wide-range of faculties (Table 2), and roles within EdTech remained widely distributed (Table 3).

In the second round of the survey, 63 items were presented for consensus. Sixty out of the 63 reached greater than 70% consensus for inclusion; one reached 69.9% and was modified based on comments and was accepted by the research team to read: *Support faculty as they use technology in ways that are iterative, reflective, and sustainable* (modified from the original item: *Assist faculty in navigating the iterative process of sustainable technology integration).* The next, *Assist with managing tensions between various stakeholders/working groups* (65.1%), was modified to *Effectively navigate tensions between various stakeholders/working groups* and accepted into the framework. And finally, *Build capacity amongst faculty in the use of learning analytics to identify early intervention opportunities to improve learner outcomes* (61.4%), though felt to be important by the research team, did not meet the threshold for inclusion and was excluded from the framework, as comments were not as clear from participants with respect to how to modify the item without needing to recirculate for consensus. The concept of learning analytics is captured in the Educate Capability key concepts section. See Appendix A for the competency framework with embedded participant results.

Modification of Consensus Items

There were several comments made regarding framework items that had reached consensus; if the suggestions were enhancing and not content changing, these were accepted into the framework. A total of 15 change suggestions were brought forward for dialogue with the entire research team. Of those 15 suggestions, 4 modifications (26%) were accepted. For example, *Understand values, culture, and perspectives of stakeholders in order to reach collaborative decisions,* which reached an inclusion consensus of 81.4%, was modified to *Effectively navigate values…,* in keeping with the delivery intent of the item. As well, *Connect faculty with appropriate supports from additional institution-wide resources (e.g., library),* which reached an inclusion consensus of 90.7%, was modified to *Connect faculty with supports from institution-wide and cross institutional resources (e.g., library and open educational resources)*", based on multiple comments highlighting the need for reaching beyond our own institution's walls for openly resourced materials. *Recognize the use of existing tools and media that already exist within the institution and key vendors* reached 93% consensus after the second round; however, one participant added that we should not only recognize, but also *facilitate* the use of the existing tools, for which the research team agreed. In particular, one researcher (PvH) stated,

> It says *generate* [in the core competence] and so generate means to actually create, to give genesis to. And so for me, it's more than simply thinking about. It's not just a cognitive/mental activity. There's actually some action taken in the word. And so, I think that facilitation fits within that for me.

The research team agreed with the addition of *and facilitate* to the example activity. The final modification added *logistical, and infrastructure* to the list of requirements, making the new example activity *Identify technical, logistical, and infrastructure requirements and constraints (budget, system, scheduling)* (79.1%).

While there was much dialogue around expanding other items that reached consensus, the research team noted that these were examples of activities to support the core competence and were by no means meant to be a comprehensive list or capture everything under that capability or competency. One participant suggested adding *(when feasible)* to the item *Analyze and schedule implementation of the solution into achievable steps, including pilot testing with instructors and learners*, recognizing that pilot testing is not always feasible. The decision not to include the *(when feasible)* reiterates that nature of the activities as examples, which are meant to guide framework application, and discretion is still needed to determine appropriateness.

The Need for a Broader Community

Comment themes highlighted the desire and need to create a broader community of practice, external to the academic institution of the EdTech team. Needing to know not only internal resources, but external resources, and then being able to collaborate and share accordingly, came through clearly in the Lead Capability. One participant commented, "Knowing skills and capabilities of those within the institution as well as those outside the organization in the broader educational technology field [is needed]". "Sharing resources, tools, etc. that have been developed with other units and institutions, as

appropriate" was also put forward, and another participant further stated "that level of collegiality is leadership". As well, one participant suggested:

> [H]aving some inclusion in this framework for building networks between organizations and within organizations cannot be understated. One current example ... is the influence of eCampus Ontario in the work they are doing to support provincial innovation and open educational resources.

This led the research team to add the key concept of *cross-institutional collegiality* to the list of core concepts, highlighting the role of building community outside of our own institutions and looking at how we can share resources.

The need for a shift in the culture of collaboration was also highlighted. One participant, who works as a designer, remarked:

Collaboration will only be as effective as institutional culture allows. In order for true collaboration to take place it must be actively promoted and rewarded… Comfort levels with collaborating or repurposing the work of others requires a significant culture shift for teachers and must be encouraged by department heads and academic leaders.

The research team concurred.

Framework Title

Three clear titles were proposed for the framework in the first round, which produced the following results: Academic Technology Framework (17.8%), Academic Educational Technology Framework (26.0%), Educational Technology Framework (50.7%), Other (11.0%). One participant commented, "I think what's missing here is more about what kind of framework it is… Something like Educational Technology Service Framework or Educational Technology Support Framework." With that in mind and incorporating the feedback from others, we proposed four possible titles in the second round, with the following results: Educational Technology Support Framework (33.3%), Educational Technology Service Framework (16.7%), Educational Technology Capability Framework (28.6%), Educational Technology Competency Framework (42.9%). Given these results, the research team elected to choose the title with the greatest amount of agreement: Educational Technology Competency Framework.

Framework Agreement

One hundred percent of participants (n=42) agreed with the statement: "This proposed framework comprehensively describes the capabilities the academic technology team requires, as a whole, to effectively meet the EdTech needs of those they serve". See Appendix B for the final framework.

Discussion

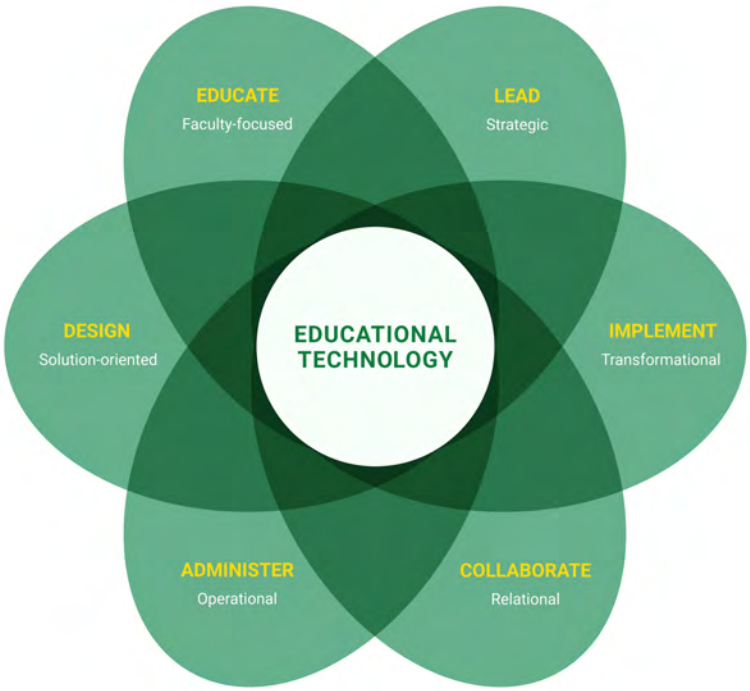
Given the study results, it was not entirely clear to academic institutions what contributions EdTech teams could make to the overall mission of the organization from an operational perspective. Our experience has been that many institutions and faculties feel married to traditional roles defined by instructional designers and developers, rather than embracing the emerging concepts of capabilities and competencies found within the team (Consortium for School Networking, 2018). The capabilities and competencies outlined in our framework are not typically found in one individual, but rather they are found through the culmination of those on the team. This framework now gives EdTech leaders a validated tool that they can leverage in conveying to higher level administrators the various ways EdTech can support teaching and learning in higher education. In keeping with our study results, the graphic works well to help guide conversation.

Working with the feedback provided by participants, we enhanced the Educational Technology Competency Framework graphic so that it can be used with senior administrators and collaborative partners to illustrate the approach teams can take in partnering together. The yellow capability actions are paired with their white, one-word descriptors, capturing the framework in a succinct and visual communication tool. EDUCATE is faculty-focused, knowing that they will in turn, educate their learners. It appears opposite and paired with COLLABORATE, which is relational, as getting to the heart of the matter cannot be forgotten. DESIGN is solution-oriented, partnered with IMPLEMENT being transformational, as there is a distinct need for these two capabilities to work seamlessly together. Finally, LEAD is strategic, and is connected with its partner, ADMINISTER, which makes those strategic goals and processes operational. Taken as a whole, this validated framework is a powerful tool that will take EdTech teams forward during complex and ever-changing times. While this graphical conceptualization could be perceived to work in solo disciplines, such as learning designers or teaching consultants, by substituting out the Educational Technology core, it has not been validated in this manner, nor would we advise taking a step back to working in silos and not toward a shared vision of EdTech through trans-disciplinarity. This framework differs from a catalog of competencies in that it was validated through comprehensive feedback, with each of the parts needed to form the whole, rather than a subset of checkboxes or lists. As mentioned, while the graphic is a helpful conversation tool and visual reminder, the core of the framework lies within the main capabilities and associated competencies.

In addition to creating a validated framework, this study equally sparks further dialogue around a number of contentious issues, including learning analytics, conflict resolution, ethical technology use, and intra- and inter-collegial collaborative practice.

Figure 2

Educational Technology Competency Framework Graphic



Learning Analytics

The literature supports the dichotomous view of learning analytics, with Klein et al. (2018, pp. 588-90) and Pardo and Siemens (2014, p. 444) indicating that it is an unnecessary evil, and the 2020 EDUCAUSE Horizon Report (Brown et al., 2020) heralding it as "analytics for student success" (pp. 20-22). When we proposed the example activity of learning analytics, we were surprised that this item—*Build capacity amongst faculty in the use of learning analytics to identify early intervention opportunities to improve learner outcomes*—did not reach consensus in the second round, with only 61% of participants believing it should be included in the framework, the lowest consensus of any item in that round. The research team debated whether this was because it was not a competency that faculty should have, or that as educators, this was still an emerging field for some, or that educators simply should not be playing "big brother" with the learning data. One participant felt strongly that Learning Analytics should have its own capability and should span above all capabilities:

> I believe a capability in the framework should be Learning Analytics. It can span other capabilities such as Educate - educate faculty to use analytics to inform content development, early intervention and so forth, Develop - to collect data, Collaborate - work with other

> departments to develop solutions, Lead to inform decision making, and Expert to provision technology that integrates with an overall Learning Analytics strategy.

Regardless of how we wish to perceive learning analytics, they are here to stay, even if we did elect to not include it as an example activity in the final framework.

Conflict Resolution

When differing priorities, needs, and values emerge, this creates conflict. This is especially true in EdTech when navigating the needs of learners, educators, and the institutional mandate. Another surprise for us in the data results were the comments surrounding conflict resolution. Selwyn (2010) may say it best when he states that when we confront "what is *actually* taking place when a digital technology meets an educational setting", we see head on the "messy realities" of education technology use (pp.70). The topic of conflict resolution was another example activity that did not reach consensus after the second round. The originally proposed example activity in the first round was *Assist with conflict resolution*, which was refined to *Assist with managing tensions between various stakeholders/working groups* for the second round, and ultimately refined to *Effectively navigate tensions between various stakeholders/working groups* in the final framework. We experience conflict every day in the work that we do with our faculty, and we know that we are not alone. Whitworth (2005) stated that:

> "E-learning technologies exacerbate certain tensions within the innovation process" three different ways: 1) the pace of change is accelerated; 2) financial investment is usually high, as are the failure costs; and 3) increased complexity of technology places greater division of labour onto the production team. (p. 686)

All these naturally drive tension. One participant agreed and desired greater expansion of this skill set:

> I think there needs to be additional skill sets regarding conflict resolution. Collaboration can be primarily resolving conflicts about specific matters in a time sensitive fashion, helping to manage tensions among work units as they work together, helping units deal with time delays as collaboration/negotiations/ conflicts are resolved, negotiating among differing values and cultures of various units. These are only a few of the conflict skills needed. There are others.

Because of the environment we must navigate, this naturally creates the need to manage those tensions, and for that reason we elected to maintain this example activity in the framework to highlight the need for this competency within the team.

Call for Ethical Technology Use

As with conflict resolution, the topic of ethical use in EdTech is another topic that generated heated debate amongst participants. With recent publications in the field of ethics and design, the argument has been made for increased responsibility to fall to the design process to ensure ethical practices are upheld (Gray & Boling, 2016). We see this in practice as the first item listed in Province of Quebec's Digital Competency Framework (Ministère de l'Éducation et de l'Enseignement supérieur,

2019). It states that EdTech teams should be "[r]eflecting on the ethical implications of laws and regulations governing digital technology, including those pertaining to copyright." Within the Administer Capability, the ethical use of technology was expanded upon by one participant: "Not exposing users to negative online environments, [through] legalities and policies; some things go beyond technical rules. Use good judgment to advise others and help them mitigate situations that might not be technically illegal, but that are still problematic". Another participant commented on the example activity *ensure awareness and compliance with privacy and security policies and laws, including software as a service (SaaS) and off-the-shelf products,* which reached 88.4% agreement on inclusion during the second round, asking, "is this really our role?", and suggested that compliance fall to other areas within the institution to provide the "policing". "Our role is only to ensure awareness", according to this participant. The research team, representing two Canadian institutions and one international one, disagreed.

We acknowledged that a narrow view of ethics has been taken here, mainly out of necessity, and that ethical and critical practice should be foundational to all aspects of our work. We do think ethical threads are evident across the framework, with emphasis on collaboration, appropriateness, and collegiality, albeit some may argue these could be further developed. The same way it holds true for professionalism, ensuring compliance with privacy and security policies and laws is everybody's responsibility. This framework does not explore equity, access, or inclusivity for what have traditionally been called underserved or marginalized learners. While universal design for learning is an educational framework, we do not see it in opposition of this framework, but rather can be used together.

Inter-Institutional Collaboration and Communities of Practice

A central reason for exploring the capabilities, competencies, and example activities needed within an EdTech team was to help understand what our purpose was within the academic teaching world. In the early exploratory stages of this research, we came to the realization that we were not alone in our struggle. We found ourselves straddling the many systems in existence within our institutions and yet many did not know what to make of us. When key stakeholders—learners, teachers, designers, and educators—come together in a well-supported structure, the synergy and energy are palpable. Yet, we so frequently fail to develop communities of practice, never mind facilitating them, even when more than 80% of participants in our study deemed it to be important. One participant shared that developing communities of practice was not specific enough, and that we needed to facilitate them by "developing commitments, encouraging contribution, and fostering outreach". Today, more than ever, "higher education now takes place within a sociotechnical context that is changing rapidly" (Cronin et al., 2016). We are moving from a hierarchical structure to one that favors social organization. There is great strength in community and continuing to strengthen our inter-faculty and inter-institutional partnerships needs to be a priority. One does not need to look far to find open educational resources and communities of practice outside of our own institutions, such as those available through Contact North (www.contactnorth.ca and www.teachonline.ca) and BC Campus (https://bccampus.ca/about-us/communities-of-practice/). Seeing communities of practice as learning partnerships, which thrive

when there is mutual engagement around a common goal, will only strengthen the profession (Wenger, 1999, p. 74).

Study Limitations

The methodological approaches of the focus group and modified Delphi survey lend themselves to inherent limitations. Although the opinions of a diverse group of content experts were sought from across the country and from various institution types, we acknowledged that there is great variety in practice among different institutions, and this framework may not resonate with all of them. Some institutions have highly centralized organizational delivery, while others are more distributed; in some, EdTech may be fused with information technology, whereas in others it is separate. Regardless, we do believe that the core capabilities should still relate to the functioning of the team, even if the example activities do not always apply. We also recognize that the field of EdTech is constantly evolving, and that this framework represents a snapshot in time and is descriptive of where we are now. As we move forward, competencies and activities will need to be updated to reflect future practice.

Several of the capabilities reference rich and diverse professional cultures and disciplines. In contrast to these, our descriptions and formulations of the capabilities may appear to be extremely narrow or impoverished. For instance, most designers or educators will (rightly) object to the capabilities being complete descriptions of their professions—they are not meant to be. Much of what is described in the other capabilities is the routine part of these practices, i.e., designers lead, teachers design, administrators collaborate, etc. We know and wrestle with this ourselves, yet it is important that the EdTech team be seen as a team that embraces trans disciplinarity and seeks the dissolution of traditional boundaries to solve the complex problems of higher education today.

As noted in the introduction, several EdTech frameworks already exist. To effectively change practice, it will require tremendous effort on behalf of individuals, EdTech teams, and institutions before we will be able to appreciate the difference this framework can potentially make in higher education. We also recognize that while the framework has been validated, its impact on effectual change has not been explored, with respect to either learning outcomes or team productivity, thus providing the next steps for this work.

Conclusion

EdTech teams now have a validated framework that they can use to help guide them within the broader higher education context. Gone are the days of linear roles and welcomed are the concepts of shared capabilities and competencies. Simply distilled, the framework captures six core capabilities: Leading, Thinking, Teaching, Making, Running, and Sharing. It is what we do. It is who we are. Educational technology teams, when functioning optimally, will not only transform the academic experience for learners and teaching faculty, but they will also shape the direction of higher education's teaching and learning and our need for intra- and inter-institutional communities of practice. We are better together.

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Appendix A

Validation of the academic technology conceptual framework: Defining a community of practice across Canada

Educational Technology Competency Framework

Results Overlay

Educate Capability

Description	Core Competencies	Example activities
The educate capability is faculty-focused. Educational technology teams demonstrate a lifelong commitment to excellence in practice through continuous learning and by teaching others according to evidence-informed educational practice. Support is provided through coaching, pedagogic consulting, and introducing potential solutions to teaching, learning, and assessment challenges. (66.6%, M=4.6)	A. Support teaching and learning (80.0%, M=4.8)	1. Share information and ideas about effective integration of educational technology with faculty and colleagues (63.8%, M=4.6) 2. Partner with instructors to analyze, review and revise content to make it clearer or better suited to take advantage of technological affordances to optimize learning (I=79.1%)
	B. Facilitate the use of technology in teaching and learning (67.1%, M=4.6)	1. Demonstrate technologies and their appropriate application (51.3%, M=4.4) 2. Recognize and evaluate challenges and opportunities associated with any specific teaching technology (I=86.0%)
	C. Provide professional development in teaching and learning (57.4%, M=4.4)	1. Consult with faculty on best practices in teaching and learning, drawing on curated tools, resources, and associated practices (I=93.0%) 2. Plan and conduct learning activities for faculty on the use of specific educational technologies (50.5%, M=4.4) 3. Assist faculty in navigating the iterative process of sustainable technology integration (I=69.8%) RTMOD Support faculty as they use technology in ways that are iterative, reflective, and sustainable.
	D. Support inquiry into teaching and learning including research, evaluation, and assessment (I=81.8%)	1. Build capacity amongst faculty in the use of learning analytics to identify early intervention opportunities to improve learner outcomes (I=61.4%) REMOVED 2. Support faculty in research related to educational technologies and learning (I=72.1%) 3. Contribute to the larger educational technology community through publication, presentation, professional development, networking, and sharing of open educational resources (I=88.4%)
Key concepts: teaching and learning, assessment, instructional goals and strategies, educational theory, pedagogy, learner-centredness, best practices, technology integration, scholarship, learning analytics		

Design Capability

Description	Core Competencies	Example activities
The design capability is solution-oriented. Design is concerned with discovering, understanding, and deciding how to respond to learning needs in effective and appropriate ways. It is a human-centred, goal-oriented, iterative, and collaborative process that is concerned with improving situations through intentional change. Design is about coming up with a range of ideas in response to a situation, and selecting the most appropriate solution, and developing it in detail so that it can be implemented. (I=93.0%)	A. Discover and define the learning need (I=97.7%)	1. Discover underlying goals and needs of clients, users, and key stakeholders, including developers, program leads, and learners (60.5%, M=4.5) 2. Participate in the design or redesign of course content, activities, or assessment to meet appropriate instructional goals with a learner-centred approach (MOD) (49.5%; M=4.4) 3. Identify key resources, knowledge, values, and assumptions that may influence the potential solutions (I=93.0%) 4. Investigate and gain an understanding of the learning environment, the learners, and context of use (I=93.0%) 5. Identify technical requirements and constraints (budget, system, scheduling) (I=79.1%) RTMOD Identify technical, logistical, and infrastructure requirements and constraints (budget, system, scheduling)
	B. Generate potential ideas and solutions (I=95.3%)	1. Recognize existing tools and media that already exist within the institution and key vendors. (I=93%) RTMOD Recognize and facilitate the use of existing tools and media that already exist within the institution and key vendors. 2. Visualize, share, and refine design concepts with faculty, key stakeholders, and team members in responsive iteration (I=90.7%)
	C. Determine best use of technology for educational purposes (59.2%, M=4.6)	1. Select appropriate media, materials, tools, and methods, with consideration of cost, performance, and maintenance (I=88.4%)
	D. Select and develop chosen solution in detail (I=79.1%)	1. Collaborate to identify existing feasible solutions (I=86.0%) 2. Communicate the learning needs and potential solutions clearly and comprehensively (I=90.7%) 3. Evaluate design decisions through proof-of-concept testing with faculty, learners, and other stakeholders (I=86.0%)
Key concepts: Exploration, discovery, goal-oriented, collaborative, testing, creation, synthesis, innovation, functional, aesthetic, ethical		

Implement Capability

Description	Core Competencies	Example activities
The implement capability is transformational. To implement is to translate designs and solutions into practical 'things that work' in the real world, partnering closely with instructors and learners, to bring about the needed change. Implementation may include the production of a range of artifacts, including, but not limited to, text, audio-visual materials, tangible objects, activities, online courses, curricula, software, services, and systems. This capability may be accomplished through the integration of off-the-shelf elements to the production of entirely new resources, tools, activities, services, and systems. (I=90.7%)	A. Evaluate specifications/ plans for implementation and navigate needed adjustments (I=88.4%)	1. Troubleshoot areas of concern and propose viable solutions (I=90.7%) 2. Consult with development teams to resolve barriers to realizing the design intent (I=83.7%) 3. Maintain technical expertise in educational technologies (57.9%, M=4.5)
	B. Implement the learning solution (I=95.3%)	1. Analyze and schedule implementation of the solution into achievable steps, including pilot testing with instructors and learners (I=88.4%) 2. Produce or integrate the final product, service, system, or experience (I=76.7%) 3. Develop a method for ongoing support once the solution is fully implemented (I=81.4%)
	C. Ensure quality and integrity throughout the process (I=93.0%)	1. Provide ongoing support through the iterative process of implementation (I=83.7%) 2. Ensure the results of production conform to the design intent and required level of quality (I=74.4%) 3. Evaluate the performance of the system, service, or product to ensure success of implementation (I=81.4%)
Key concepts: practical, translational, production, analysis, performance, execution, operational sustainability, quality assurance, evaluation, efficacy, efficiency, optimization, technical expertise, transformational		

Collaborate Capability

Description	Core Competencies	Example activities
The collaborate capability is relational. This capability fosters and maintains relationships to work effectively with others to facilitate and support effective, appropriate learning and assessment experiences. Collaboration is essential for success in the complex, multi-dimensional, multiplayer higher education environment. This capability is about knowing your people, your organization, and your partners, and building bridges to bring them together. (MOD) (57.7%, M=4.5)	A. Communicate discovered needs strategically and appropriately to achieve mutually beneficial outcomes (I=90.7%)	1. Utilize resources effectively through collaborative initiatives (I=83.7%) 2. Serve on cross divisional or faculty committees, where appropriate (I=79.1%)
	B. Engage faculty effectively (61.5%, M=4.6)	1. Develop communities of practice (I=81.4%) 2. Connect faculty with appropriate supports from additional institution-wide resources (e.g., library) (I=90.7%) RTMOD Connect faculty with supports from institution-wide and cross institutional resources (e.g., library and open educational resources)
	C. Understand and highlight areas of responsibility that overlap with closely allied stakeholder groups. (e.g., information technology, libraries, central services) (I=83.7%)	1. Dialogue with colleagues from other teams about areas of mutual interest and possible collaboration (I=88.4%) 2. Collaborate on project proposals when opportunities present themselves (I=86.0%) 3. Contribute to policy development, where appropriate (I=83.7%) 4. Assist with managing tensions between various stakeholders/ working groups (I=65.1%) RTMOD Effectively navigate tensions between various stakeholders/ working groups.
Key concepts: networking, adding capacity, synergy, trust, relational practice, resource optimization		

Lead Capability

Description	Core Competencies	Example activities
The lead capability is strategic in nature. Educational technology teams lead through engagement with others to initiate and contribute to a vision of a high-quality higher education system, through their activities as educational technology experts, educators, designers and administrators. Supporting both the operational and strategic goals of the institution, leaders bring attention and strategy to the products, processes, and procedures related to teaching and learning through technology. (53.2%, M=4.4)	A. Advocate for effective educational technology infrastructure and resources (61.0%, M= 4.4)	1. Advocate for the appropriate adoption of educational technology resources to ensure sustainability and maintenance (44, 57.1%) 2. Understand values, culture, and perspectives of stakeholders to reach collaborative decisions (I=81.4%) RTMOD Effectively navigate values, culture, and perspectives of stakeholders to reach collaborative decisions 3. Develop strategic partnerships to create capacity when capabilities are not located within your unit (I=86.0%) 4. Identify emerging educational technology trends and potential applications (50.0%, M=4.4)
	B. Support the alignment of the team with organizational goals and capabilities (I=93.0%)	1. Propose and support strategic initiatives using appropriate change management strategies (I=81.4%) 2. Develop and communicate the team's vision and goals (I=88.4%) 3. Participate on relevant governance and advisory committees to help inform policy (I=79.1%) 4. Recognize and promote opportunities to leverage resources (I=86.0%)
	C. Plan, develop, and oversee human resources in conjunction with senior leadership (I=74.4%)	1. Build and develop the team to ensure the variety of skills and expertise is present to meet current and future needs (I=86.0%) 2. Efficiently manage human resources (I=72.1%) 3. Demonstrate and foster an authentic, innovative, and empowering culture within your team (I=86.0%)
Key concepts: needs discovery, institutional organizational units, cost of ownership, strategic realization, project management, quality improvement, change management, cross-institutional collegiality		

Administer Capability

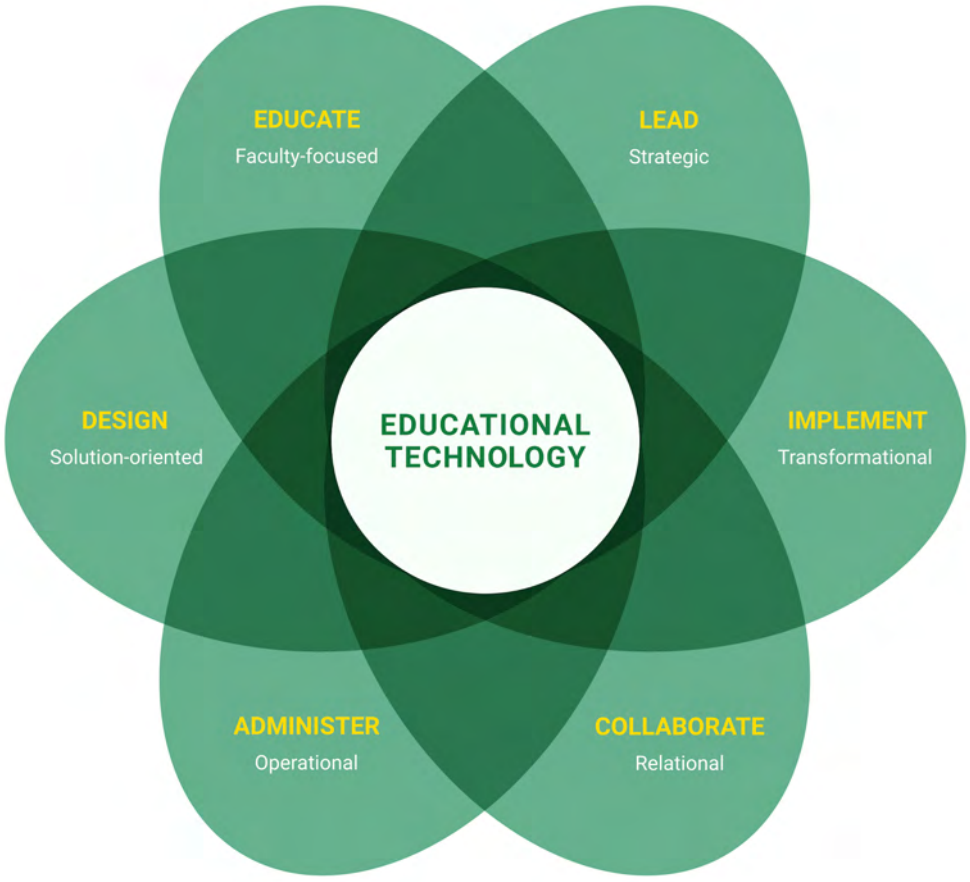
Description	Core Competencies	Example activities
The administer capability is operational. This capability is concerned with supporting technology infrastructure and day-to-day operational activities. Collaboration with information technology and institutional supports are required. This provides necessary cohesion and continuity to support business and educational processes. The administer capability is focused on the effective and efficient provision, use, and maintenance of these systems through ethical practice, high personal standards of behaviour, accountability to stakeholders, and resource stewardship. A deep understanding of pedagogical processes, goals, and administration is needed. (I=87.5%)	A. Support and maintain educational technology infrastructure (50.0%, M=4.4)	1. Provide support for learning technology to faculty (I=95.3%) 2. Ensure awareness and compliance with privacy and security policies and laws, including software as a service (SaaS) and off-the-shelf products (I=88.4%) 3. Differentiate and help navigate which responsibilities are inherent to academic technologies and information technology (IT) (I=81.4%) 4. Guide others as a first point of contact concerning educational technology (I=88.4%)
	B. Provide coordination and oversight for larger-scale projects (I=83.7%)	1. Ensure appropriate process and documentation through the various project stages (I=86.0%) 2. Coordinate with information technology (IT), vendors, and other groups on system integration (I=88.4%)
Key concepts: infrastructure, user security, privacy, academic year, business processes, resource stewardship, project oversight and management		

Appendix B

Final Educational Technology Competency Framework

Validation of the academic technology conceptual framework: Defining a community of practice across Canada

Educational Technology Competency Framework



Educate Capability

Description	Core Competencies	Example activities
The educate capability is faculty-focused. Educational technology teams demonstrate a lifelong commitment to excellence in practice through continuous learning and by teaching others according to evidence-informed educational practice. Support is provided through coaching, pedagogic consulting, and introducing potential solutions to teaching, learning, and assessment challenges.	A. Support teaching and learning	1. Share information and ideas about effective integration of educational technology with faculty and colleagues 2. Partner with instructors to analyze, review and revise content to make it clearer or better suited to take advantage of technological affordances to optimize learning
	B. Facilitate the use of technology in teaching and learning	1. Demonstrate technologies and their appropriate application 2. Recognize and evaluate challenges and opportunities associated with any specific teaching technology
	C. Provide professional development in teaching and learning	1. Consult with faculty on best practices in teaching and learning, drawing on curated tools, resources, and associated practices 2. Plan and conduct learning activities for faculty on the use of specific educational technologies 3. Support faculty as they use technology in ways that are iterative, reflective, and sustainable.
	D. Support inquiry into teaching and learning including research, evaluation, and assessment	1. Support faculty in research related to educational technologies and learning 2. Contribute to the larger educational technology community through publication, presentation, professional development, networking, and sharing of open educational resources
Key concepts: teaching and learning, assessment, instructional goals and strategies, educational theory, pedagogy, learner-centredness, best practices, technology integration, scholarship, learning analytics		

Design Capability

Description	Core Competencies	Example activities
The design capability is solution-oriented. Design is concerned with discovering, understanding, and deciding how to respond to learning needs in effective and appropriate ways. It is a human-centred, goal-oriented, iterative, and collaborative process that is concerned with improving situations through intentional change. Design is about coming up with a range of ideas in response to a situation, and selecting the most appropriate solution, and developing it in detail so that it can be implemented.	A. Discover and define the learning need	1. Discover underlying goals and needs of clients, users, and key stakeholders, including developers, program leads, and learners 2. Participate in the design or redesign of course content, activities, or assessment to meet appropriate instructional goals with a learner-centred approach 3. Identify key resources, knowledge, values, and assumptions that may influence the potential solutions 4. Investigate and gain an understanding of the learning environment, the learners, and context of use 5. Identify technical, logistical, and infrastructure requirements and constraints (budget, system, scheduling)
	B. Generate potential ideas and solutions	1. Recognize and facilitate the use of existing tools and media that already exist within the institution and key vendors. 2. Visualize, share, and refine design concepts with faculty, key stakeholders, and team members in responsive iteration
	C. Determine best use of technology for educational purposes	1. Select appropriate media, materials, tools, and methods, with consideration of cost, performance, and maintenance
	D. Select and develop chosen solution in detail	1. Collaborate to identify existing feasible solutions 2. Communicate the learning needs and potential solutions clearly and comprehensively 3. Evaluate design decisions through proof-of-concept testing with faculty, learners, and other stakeholders
Key concepts: Exploration, discovery, goal-oriented, collaborative, testing, creation, synthesis, innovation, functional, aesthetic, ethical		

Implement Capability

Description	Core Competencies	Example activities
The implement capability is transformational. To implement is to translate designs and solutions into practical 'things that work' in the real world, partnering closely with instructors and learners, to bring about the needed change. Implementation may include the production of a range of artifacts, including, but not limited to, text, audio-visual materials, tangible objects, activities, online courses, curricula, software, services, and systems. This capability may be accomplished through the integration of off-the-shelf elements to the production of entirely new resources, tools, activities, services, and systems.	A. Evaluate specifications/ plans for implementation and navigate needed adjustments	1. Troubleshoot areas of concern and propose viable solutions 2. Consult with development teams to resolve barriers to realizing the design intent 3. Maintain technical expertise in educational technologies
	B. Implement the learning solution	1. Analyze and schedule implementation of the solution into achievable steps, including pilot testing with instructors and learners 2. Produce or integrate the final product, service, system, or experience 3. Develop a method for ongoing support once the solution is fully implemented
	C. Ensure quality and integrity throughout the process	1. Provide ongoing support through the iterative process of implementation 2. Ensure the results of production conform to the design intent and required level of quality 3. Evaluate the performance of the system, service, or product to ensure success of implementation
Key concepts: practical, translational, production, analysis, performance, execution, operational sustainability, quality assurance, evaluation, efficacy, efficiency, optimization, technical expertise, transformational		

Collaborate Capability

Description	Core Competencies	Example activities
The collaborate capability is relational. This capability fosters and maintains relationships to work effectively with others to facilitate and support effective, appropriate learning and assessment experiences. Collaboration is essential for success in the complex, multi-dimensional, multiplayer higher education environment. This capability is about knowing your people, your organization, and your partners, and building bridges to bring them together.	A. Communicate discovered needs strategically and appropriately to achieve mutually beneficial outcomes	1. Utilize resources effectively through collaborative initiatives 2. Serve on cross divisional or faculty committees, where appropriate
	B. Engage faculty effectively	1. Develop communities of practice 2. Connect faculty with supports from institution-wide and cross institutional resources (e.g., library and open educational resources)
	C. Understand and highlight areas of responsibility that overlap with closely allied stakeholder groups. (e.g., information technology, libraries, central services)	1. Dialogue with colleagues from other teams about areas of mutual interest and possible collaboration 2. Collaborate on project proposals when opportunities present themselves 3. Contribute to policy development, where appropriate 4. Effectively navigate tensions between various stakeholders/ working groups.
Key concepts: networking, adding capacity, synergy, trust, relational practice, resource optimization		

Lead Capability

Description	Core Competencies	Example activities
The lead capability is strategic in nature. Educational technology teams lead through engagement with others to initiate and contribute to a vision of a high-quality higher education system, through their activities as educational technology experts, educators, designers, and administrators. Supporting both the operational and strategic goals of the institution, leaders bring attention and strategy to the products, processes, and procedures related to teaching and learning through technology.	A. Advocate for effective educational technology infrastructure and resources	1. Advocate for the appropriate adoption of educational technology resources to ensure sustainability and maintenance 2. Effectively navigate values, culture, and perspectives of stakeholders to reach collaborative decisions 3. Develop strategic partnerships to create capacity when capabilities are not located within your unit 4. Identify emerging educational technology trends and potential applications
	B. Support the alignment of the team with organizational goals and capabilities	1. Propose and support strategic initiatives using appropriate change management strategies 2. Develop and communicate the team's vision and goals 3. Participate on relevant governance and advisory committees to help inform policy 4. Recognize and promote opportunities to leverage resources
	C. Plan, develop, and oversee human resources in conjunction with senior leadership	1. Build and develop the team to ensure the variety of skills and expertise is present to meet current and future needs 2. Efficiently manage human resources 3. Demonstrate and foster an authentic, innovative, and empowering culture within your team
Key concepts: needs discovery, institutional organizational units, cost of ownership, strategic realization, project management, quality improvement, change management, cross-institutional collegiality		

Administer Capability

Description	Core Competencies	Example activities
The administer capability is operational. This capability is concerned with supporting technology infrastructure and day-to-day operational activities. Collaboration with information technology and institutional supports are required. This provides necessary cohesion and continuity to support business and educational processes. The administer capability is focused on the effective and efficient provision, use, and maintenance of these systems through ethical practice, high personal standards of behaviour, accountability to stakeholders, and resource stewardship. A deep understanding of pedagogical processes, goals, and administration is needed.	A. Support and maintain educational technology infrastructure	1. Provide support for learning technology to faculty 2. Ensure awareness and compliance with privacy and security policies and laws, including software as a service (SaaS) and off-the-shelf products 3. Differentiate and help navigate which responsibilities are inherent to academic technologies and information technology (IT) 4. Guide others as a first point of contact concerning educational technology
	B. Provide coordination and oversight for larger-scale projects	1. Ensure appropriate process and documentation through the various project stages 2. Coordinate with information technology (IT), vendors, and other groups on system integration
Key concepts: infrastructure, user security, privacy, academic year, business processes, resource stewardship, project oversight and management		

Authors

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