

**A Collaborative Effort to Frame and Assess a Social Learning Space for
Wheelchair Curling Coaches**

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Just like this dissertation made use of a landscape metaphor, my acknowledgements will include how I rode my bicycle through the landscape. However, I would never be able to start such a gruelling personal journey without my first pedal strokes. Luiz Antonio and Inelives, my parents, were the best coaches a person could ask for. A dissertation would not be enough to describe all they have done. Most importantly, my parents gave me a compass, in which God is the true north, always orienting my path decisions. While my parents started to hold my seat post to teach me to balance, my siblings Rossana, Luiz Eugênio, Rodrigo, and Fernando also took their turn to make me feel safe, challenged, and proud to be part of the team Duarte. Their examples inspired me to achieve bigger goals and search for new roads, and so I did.

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Abstract

Social learning interventions have been implemented to develop coaches in many contexts, however are yet to be applied to coaches of athletes with disabilities. The lack of knowledgeable coaches prevents people with disabilities from participating in sports. The overall purpose of this doctoral research programme was to enhance the learning capability of the Canadian wheelchair curling coaches' landscape. To achieve this overall purpose, the study was divided in three phases (i.e., pre-intervention, framing, and assessment). The pre-intervention phase aimed at understanding the disability sport coaches' landscape; the framing phase aimed at building on the pre-intervention findings to frame a social learning space intervention for disability sport coaches; finally, the assessment phase, as the name suggests, assessed the value created through the intervention. More specifically, the four articles presented in this dissertation illustrate the work done to achieve the overall purpose of enhancing the learning capability of Canadian wheelchair curling coaches. The pre-intervention phase includes Article 1 and Article 2. Article 1 is a literature review of the two major areas addressed in this dissertation, which are disability sport in Canada and coach development. Article 2 introduces the metaphor of a landscape to create a visual representation via a map that includes the major elements of the Canadian wheelchair curling coaches' landscape. Semi-structured interviews with 16 participants were thematically analyzed and helped create the above-mentioned elements, such as the coaches' pathways, the types of learning structures, and the barriers. Moreover, Article 2 provides three considerations for systems conveners who seek to lead social learning space interventions in landscapes. Next, the framing phase took place concurrently with the assessment phase. Common to both phases, the intervention included a series of face-to-face and online interactions through the use of four online tools. Multiple data generation techniques (e.g., in-depth interviews, focus groups, observations) were employed during a 13-month period and resulted in 615 single-spaced pages of data. Thematic and interpretative analyses were used to make sense of the data. The framing phase, as presented in Article 3, includes the process through which the researchers ($N = 3$) made use of collaborative inquiry to co-construct the intervention with the participant coaches ($N = 16$) and Curling Canada technical leaders ($N = 6$). Additionally, Article 3 built upon the considerations from the pre-intervention phase to report how the intervention managed the limitations of the landscape, prioritized meaningful learning, incorporated influential people, as well as produced reflections on the consequences of the lack of enabling conditions. Article 4 expands the landscape metaphor and presents four composite vignettes of the participants according to their wheelchair curling coaching experiences. The vignettes vividly illustrate major contextual factors of the landscape common to all participants and the range of values created in the intervention. Overall, the findings of this dissertation contribute theoretically, methodologically, and practically in several ways. From a theoretical perspective, it is the first study to date to make use of landscapes of practice and the value creation framework to increase the learning capability of disability sport coaches. From a methodological perspective, the articles included in this dissertation made use of multiple and longitudinal data generation techniques to provide a broader perspective of the values created. Finally, the use of visual representations like the map and the vignettes, while unconventional, might facilitate the knowledge transfer for coaches and coach developers willing to frame social learning space interventions.

Keywords: Coach development, landscape of practice, value creation

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Chapter 1: Introduction

Introduction

Despite the pioneering role Canada took in the 1980's of being the first country worldwide to award equal opportunities for persons with a disability in its Charter of Rights and Freedoms (Valentine & Vickers, 1996), only 1% of Canadians with a disability compared to 30% of able-bodied Canadians are enrolled in sport organizations (Canadian Heritage, 2006). The Canadian Sport Policy (Canadian Heritage, 2012) has recognized the necessity to design barrier-free and relevant sport programming that is customized for “traditionally underrepresented and/or marginalized populations to actively engage in all aspects of sport participation” (p. 10). The lack of knowledgeable coaches is one barrier that ‘disables’ these Canadians from participating in sports (Canadian Sports Centres, 2012; DePauw & Gavron, 2005). Several studies on coach development in disability sport illuminated the importance of social interactions among disability sport coaches and others stakeholders (e.g., athletes, peers; Cregan, Bloom, & Reid, 2007; McMaster, Culver, & Werthner, 2012). While these social interactions were dependent on the agency of the coach, the role played by sport organizations in promoting optimal learning environments was unclear. In an effort to maximise coach learning through interactions, my doctoral dissertation used Étienne Wenger’s social theory of learning to map, promote, and assess social learning in communities and networks.

Research Purpose

The overall purpose of this doctoral research programme was to enhance the learning capability of the Canadian wheelchair curling coaches’ landscape. To achieve this overall purpose, the study was divided into three phases (i.e., pre-intervention, framing, and assessment). The pre-intervention phase aimed at understanding the disability sport coaches’ landscape; the framing phase aimed at collaboratively co-creating a social learning space intervention for

disability sport coaches; finally, the assessment phase, as the name suggests, assessed the value created through the intervention. More specifically, the four articles presented in this dissertation illustrate the work done to achieve the overall purpose of enhancing the learning capability of Canadian wheelchair curling coaches. The pre-intervention phase, includes the Article 1 (Chapter 3) and Article 2 (Chapter 5). Article 1 is a literature review of two major areas of this dissertation, which are the disability sport in Canada and coach development. Article 2 (Chapter 5) uses a metaphor of a landscape to map the Canadian wheelchair curling coaches' landscape, describes the coaches' pathways and the types of learning structures that facilitate their journey, and the barriers to learning faced by these coaches. The framing phase, as presented in Article 3 (Chapter 5), details the process through which the researchers co-constructed the intervention with the participant coaches (based on their needs and interests) and Curling Canada technical leaders (based on their availability and resources). The assessment phase took place concurrently with the framing phase with the goal of assessing the range of learning values created through the intervention. Due to the catalytic effect of two learning values (enabling and strategic) on the implementation of the intervention, they are presented in Article 3 and five learning values (immediate, potential, applied, realized, and transformative) are the focus of Article 4 (Chapter 5).

Epistemology

The epistemological and ontological assumptions framing this dissertation are rooted in the fifth inquiry paradigm (Lincoln, Lynham, & Guba, 2011). The fifth paradigm subscribes to an ontology in which the worldview is based on participation and participative realities, where the world is transformed based on democratic participation between researcher and subject (Heron, 1996). The ontology guiding this study views reality as subjective-objective or, in other

words, as a participative reality which is co-created by the mind of the subject and the surrounding cosmos (Heron, 1996; Lincoln et al., 2011). A critical subjectivity epistemology guided this inquiry and a collaborative inquiry methodology was employed. More specifically, collaborative inquiry is rooted in the work of Heron (1996) that suggested a paradigm shift from the subject-object separation in which researchers do research on subjects. Heron was adamant about doing research *with* people instead of *on* or *about* people. To deliver a research design coherent with my epistemological and ontological assumptions, collaborative inquiry was chosen as the methodology; this is further explained in Chapter 5.

Chapter 2: Theoretical Framework

Social Learning Theory

For more than two decades Étienne Wenger (who recently changed his name to Wenger-Trayner) has been developing and using social learning theory with different colleagues and within different contexts. Because Wenger-Trayner's work has evolved since his first book with Lave (Lave & Wenger, 1991), this section addresses the evolution of the theory, its applications, and includes knowledge that comes from the literature, non-published material, in press resources, and the Wenger-Trayner website (Wenger-trayner.com). Wenger-Trayner (University of Brighton, 2013) reflected on the complex relationship between theory and practice:

The two can inform each other, change each other, but do not determine each other.

Moreover, because perspectives can coexist, social theory does not progress in a linear fashion, with one theory replacing another, but by assembling a puzzle of interacting pieces.

This explains why while certain concepts were introduced in early works by Wenger-Trayner and colleagues, and these concepts were and continue to be expanded upon, as the theory interacts with practice. The desire to develop a social learning theory that is useful to promote change as it guides efforts to understand and support learning drove the development of this theory (Wenger-Trayner, Wenger-Trayner, Cameron, Eryigit-Madzwamuse, & Hart, 2017). At the core of this theory is the understanding that social learning involves many types of interactions, including: sharing a best practice, chatting about an issue, seeking for guidance, looking for advice, doing a field trip, or formally researching a topic (Wenger-Trayner & Wenger-Trayner, in press). The following pages will present a number of important pieces of social learning theory: situated learning, communities of practice (CoP), social learning space, landscape of practice (LoP), and the value creation framework. The first piece of the social

learning theory puzzle was the concept of situated learning (Lave and Wenger, 1991). The next piece of the theory, is the influential concept of community of practice (CoP) that emerged from the intertwining of theory and practice (Wenger, 1998). Since the development of the CoP, the value creation framework was added to the puzzle (Wenger et al., 2011). In 2015, Wenger and colleagues added landscapes of practice piece that addressed some of the critiques aimed primarily at certain concepts of the earlier pieces. Within the last iterations with the theory, a piece that has gained much attention is the concept social learning spaces. Within the next session, we provide further clarifications on the pieces that creates the ongoing evolving image of the social learning theory.

Situated Learning

Lave and Wenger's (1991) book on situated learning exposes their anthropological work with different types of 'apprenticeships' (e.g., Yucatec midwives, meat-cutters, and non-drinking alcoholics in Alcoholics Anonymous). The authors proposed a new approach focussed on informal and situated social interactions to understand the learning that takes place in the workplace (Cox, 2005). For Lave and Wenger (1991), learning is broader than knowledge acquisition; it is about changing one's identity. Therefore, learning takes place as people participate within a community. Just as a newcomer will not be able to perform a master piece without any type of guidance, the community does not expect such a quality of work from a novice. Peripheral participation, a key concept of this book, is the process by which apprentices (i.e., newcomers) become full participants (and are recognized as such) in a community of knowledge and practice as they take on more responsibility and move from the periphery to the core of these practices. Newcomers are guided by those with more experience than they, and start by performing simple activities and progress to more complex ones. The authors proposed

that these tasks are important not only to shape learning but also the identities of these apprentices, as they are becoming acquainted with old-timers, artifacts, more complex tasks, and practices within a certain domain. For Lave and Wenger (1991) apprentices often engaged with more advanced peers for advice instead of directly asking the master, making the role of the community crucial to the learning process. With this book, according to Cox (2005), Lave and Wenger's notion of situated learning sparked a paradigm shift and decentralized the role of schools in the learning process. For Cox (2005), learning in the cognitive model (the old paradigm) occurs in the classroom and is mediated by a teacher who delivers a curriculum pre-planned using a mechanistic transmission of ideas, whereas in the constructivism model (the new paradigm) embraced by Lave and Wenger, learning occurs in situ through peripheral participation driven by the task.

Communities of Practice

Wenger's influential 1998 book *Communities of practice: Learning, meaning and identity*, represents a major piece of the theory. The CoP concept was further developed with the book *Cultivating communities of practice: A guide to managing knowledge* (Wenger, McDermott, & Snyder, 2002) in which the authors related the theory to various enterprises. Wenger's ideas of social learning (Wenger, 1998) have influenced a number of research papers and book chapters (Hughes, Jewson, & Unwin, 2007) in several fields including business (e.g., Gray, Parker, Rutter, & Williams, 2010; Wenger et al., 2002), higher education (e.g., Bertram, Paquette, Duarte, & Culver, 2014), health (e.g., Li, Grimshaw, Nielsen, Judd, Coyte, & Graham, 2009), and sport (e.g., Culver & Trudel, 2006; Stoszkowski & Collins, 2012). CoPs are based on on-going interactions about common issues, the resolution of which deepens the knowledge of members and changes their practice. While providing:

A social account of learning, the theory explores in a systematic way the intersection of issues of community, social practice, meaning, and identity. The result is a broad conceptual framework for thinking about learning as a process of social participation.

(Wenger, 1998, preface)

At first, Wenger (1998) did not present a clear definition of CoP, but instead he delineated a number of indicators that verify if a CoP exists, such as sustained relationships, a shared way of doing things, and mutually defining identities (see complete list in Wenger, 1998, pp. 125-126).

A definition that became popular is the one presented by Wenger et al. (2002) in which CoPs are said to be “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” (p. 4).

A CoP is influenced by three dimensions: (a) mutual engagement, (b) joint enterprise, and (c) shared repertoire (Wenger, 1998). Mutual engagement exists because the members of a CoP are engaged in actions that require the negotiation of meaning with each other (Wenger, 1998). The author also pointed out that merely having a membership with a club, being geographically close, or knowing who is who in a certain community are not sufficient to make a person a member of a CoP. Thus, membership requires involvement in what matters to the CoP. Joint enterprise implies the collective process of selecting a common goal that creates a sense of accountability among the CoP members (Wenger, 1998). This is not a static process, but rather a dynamic one that does not require agreement for all ideas. Finally, shared repertoire suggests that the community has created, through mutual engagement, ways of doing things that are specific and meaningful for that group of people (Wenger, 1998). The shared repertoire can assume a number of forms such as the adoption of tools, routines, and the creation of stories about how

they are mutually engaged. Because the concept of CoP has had the biggest influence on the coach development literature, it is explored more deeply in the next chapter of this dissertation.

Wenger (1998) suggested that CoPs are everywhere, from work to hobbies, and that individuals participate to different degrees (peripherally in some and at the heart of others) in many CoPs. For instance, a person can be viewed as a core member of a team, and a newcomer of the club league he started to attend a few months ago, a peripheral member of the church he attends, and a core member at his job, and so on. The constellation of these many CoPs influenced the concept of landscapes of practice. Recently, Wenger-Trayner and Wenger-Trayner (in press) acknowledged that the term CoP started to be vulgarized and misused which led the authors to look critically at other concepts and definitions that could contribute to the ongoing development of the social learning theory. The theorists clarified some key aspects of the CoPs to avoid such misconceptions and proposed the simpler notion of social learning space, keeping mutual engagement as its core aspect (Wenger-Trayner & Wenger-Trayner, in press).

Social Learning Spaces

Wenger-Trayner and Wenger-Trayner (in press) defined social learning spaces as “a particular experience of engagement that takes place among people in pursuit to learning to make a difference” (p. na). The authors specified that the concept is based on social relationships and interactions among people in which the interactions are structured by the desire to learn together. In this sense, this is similar to the idea of mutual engagement in a CoP. Moreover, Wenger-Trayner and Wenger-Trayner (in press) noted that space relates to a shared location in the broader social landscape in which social relationships can promote mutual learning. Characteristics of a social learning space include a wide range of learning settings, from

classrooms to online rooms, in which are nurtured a gamut of relationships. Social learning spaces can either be designed or spontaneous, and homogeneous or diverse.

The authors recognize the overlap between CoPs and social learning spaces. In their most recent publication (Wenger-Trayner & Wenger-Trayner, in press) they clarify how both concepts will be used moving forward. For the authors, a social learning space is simpler; while mutual engagement occurs, there is neither the necessity to form a community nor a need to follow a shared regime of competence. As structures, they are more scalable. While not every social learning space is or will become a CoP, every CoP can be viewed as a social learning space and might even include a series of other social learning spaces. The same is true for the LoP concept.

As defined above, a social learning space involves participants engaging with uncertainties, both their own uncertainties and from the other members, in order to learn how to make a difference. The theorists proposed that participatory researchers create social learning spaces as they engage their uncertainties with co-researchers (Wenger-Trayner & Wenger-Trayner, in press). Take the example of a webinar. A webinar is not considered a social learning space if the invited expert only provides answers or pre-packed knowledge. For a webinar to truly be a social learning space, it must allow both participants and experts to engage with issues that make a difference and which involve uncertainties. This is specifically relevant to this doctoral dissertation.

Landscapes of Practice

The next piece of the social learning theory makes use the metaphor of a landscape of practice. The world is becoming more complex and no one single place (e.g., books, community) is able to contain all of the information about a practice (Wenger, 1998, 2010). The body of knowledge is more than a single CoP, instead it is composed of complex social learning spaces

(i.e., informal networks, dynamic networks, and networks of practice) that interlock with each other (E. Wenger-Trayner & Wenger-Trayner, 2015). Wenger (1998) named such systems landscapes of practice (LoPs). While only briefly discussed in his previous work, recently Wenger and colleagues (Wenger, 2010; E. Wenger-Trayner & Wenger-Trayner, 2015) further explored the dynamic relations of learning and identity within landscapes. Wenger (2010) made use of the metaphor of a journey through a landscape composed of various interrelated practices, their boundaries, and peripheries. The boundaries relate to the dynamic relationships between practices. According to the author, as people select which communities they will engage in and not engage in, they build their trajectories, and in turn, forge their identities.

As a trajectory through a social landscape, learning is not merely the acquisition of knowledge. It is the *becoming of a person* who inhabits the landscape with an identity whose dynamic construction reflects our *trajectory through that landscape*. This journey within and across practices shapes who we are.... It also provides material for directions, aspirations, and projected images of ourselves that guide the shaping of our trajectory going forward. (E. Wenger-Trayner & Wenger-Trayner, 2015, p. 19) [emphasis added]

E. Wenger-Trayner and Wenger-Trayner (2015) explored the metaphor of a landscape in response to some critiques that found that the concept of CoPs overlooked broader social contexts (e.g., Barton & Tusting, 2005; Fuller, 2007). While some authors mentioned the focus on the community at the expense of the individual perspective (e.g., Billett, 2007; Hughes et al., 2007), the landscape fleshed out the concept of the individual's trajectory. This concept aligns with Jarvis's (2009) description of learning as being a lifelong journey (trajectory) that occurs in different life-worlds (landscapes), and that as a person is learning, that person is always

becoming. This lifelong journey within and across practices (i.e., life-wide) shapes who we are (i.e., becoming).

The concept of boundaries answered a common critique that suggested CoPs might be more fertile for the reproduction of ideas rather than the transformation of practices (e.g., Hughes et al., 2007; Roberts, 2006). B. Wenger-Trayner and Wenger-Trayner (2015) defined boundaries as spaces of negotiation where there is a lack of shared repertoire due to the different practices of the participants. In fact, the authors warned that a boundary could be both conducive to innovation but potentially a source of wasted time, depending on the approach to the boundary. The authors stressed that a CoP is only deeply reflective if its members interact outside the CoP. E. Wenger-Trayner and Wenger-Trayner (2015) also theorized about the concept of knowledgeability in response to some criticisms related to levels of trust (Ardichvili, Page, & Wentling, 2003; Roberts, 2006). Wenger (2010) defined knowledgeability as the ability to understand not only something about other practices, but where to find the relevant information within the boundaries of the landscape. Additionally, issues of power and conflict (e.g., Fox, 2000; Roberts, 2006) were mitigated by the concept of system conveners. One of the challenges conveners need to overcome is the negotiation of power relations within a landscape composed of different practices, groups, institutions, and individuals who are ruled by different regimes of competence (E. Wenger-Trayner & Wenger-Trayner, 2015). Despite the fact that Wenger (1998) had previously theorized about some of these concepts, they are articulated with much more depth as time goes by.

Value Creation Framework

Wenger-Trayner (Omidvar & Kislov, 2013) mentioned his work in consultancy as influential in the development of the theory and models. The entrepreneurial clientele called for

evaluation tools that simplify and justify the appeal of CoPs. Such a pragmatic need required the authors to develop a framework that made sense to participants, evaluators, and stakeholders (Wenger-Trayner et al., 2017). Therefore, a recent advancement of the theory, or at least its application, was the design of such a tool (Wenger, Trayner, & De Laat, 2011; Wenger-Trayner et al., 2017).

In 2011, the VCF was composed of five value creation cycles (i.e., immediate, potential, applied, realized, and reframing). According to the authors (Wenger et al., 2011), the values are defined as cycles because the learning value they create can evolve within and across cycles (see Figure 1). Within, as learning can cycle up and down between enabling and strategic for any of the other values (e.g., applied), and across as value moves from potential to applied, for example. This cyclical process should be viewed iterative and not in a sequential way that one cycle necessarily leads to the next (Wenger-Trayner & Wenger-Trayner, in press). As the authors advanced the theory and evolved the understanding of the effect of the landscape in many facets of the social learning theory, the assessment tool also evolved to include three additional cycles. Moreover, the authors describe the values as belonging in pairs due to the close connections between each other. Thus, the four pairs are: (a) immediate and potential values; (b) applied and realized values; (c) strategic and enabling values; and (d) orienting and transformative (previously reframing) values. In the VCF, social learning is theorized as loops that carry value creation across cycles and are reported back to the community. To illustrate how these learning loops occur and carry across the value cycles, we present a fictional story.

Figure 1: Value-Creation Cycles Framework

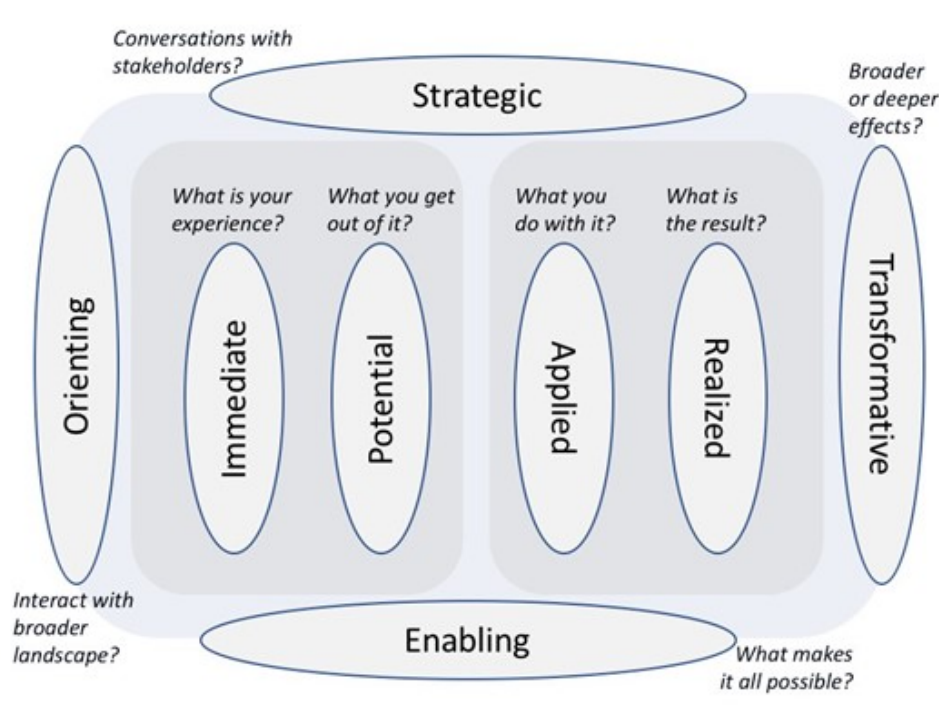


Figure 1: Value-creation cycles framework. Retrieved from: Part II – Value-creation cycles. *Learning to make a difference: Value creation in social learning spaces*. New York, NY: Cambridge University Press.

Jenny attends a happy hour designed to develop networking (social learning activity), promoted by the human resources (enabling value), and was introduced to a colleague (immediate value) who provided her an insight on a challenge Jenny was facing (potential value). Later that week, that Jenny reflected on the insight and acted towards solving the issue (applied value). The solution was satisfactory (realized value). During a conversation with the human resources expert, Jenny mentioned that she would never miss another happy hour because she was able to improve her performance due to the insight she gained (transformative value). The human resources person replied to Jenny stating that the company received funding to develop a social learning programme (orienting) that included social gatherings specifically designed to provide opportunities for connections (enabling value) and that the organization was increasing their

investments in sharing best practices (strategic value). Finally, the human resources person thanked Jenny for her feedback about how Jenny created value. The human resources person mentioned that this was one of the ways that the company was assessing the benefits of such investments (learning loops).

Table 1 presents the latest version of the value creation cycles. The pairs are presented with the same shading and will be further discussed below. While Wenger-Trayner and Wenger-Trayner (in press) do not define ‘dimensions’, we understand them to be the different manners in which the value manifests itself.

Immediate and potential value. Immediate value can be produced simply by a person joining activities and interactions (Wenger et al., 2011). Recently, the theorists provided examples of dimensions for each cycle to highlight characteristics that were overlooked in the first version of the VCF: feeling validated, being part of a group, and the pleasure of being surrounded by interesting people with similar goals and visions (See Table1). Immediate value is crucial to develop relationships of trust, critical to the success of any initiative targeted at building learning capability. The potential value is related to what a person has gained that could be potentially utilized in the future (Wenger et al., 2011). The potential value has changed the least from the first version in 2010, as it was inspired by the comprehensive concept of social capital. In the most recent version, the theorists added dimension examples to further illustrate the importance of different levels of scale that can be achieved by being part of a social learning space (Wenger-Trayner & Wenger-Trayner, in press).

Applied and realized value. Applied value entails the experimentation of the knowledge created within the social learning space (Wenger et al., 2011). For Wenger-Trayner and

Table 1: Value Creation Cycles Majors Components

Cycle	Year included	Key question	Orientation	Dimension examples
Immediate value Activities and interactions	2011	What is the experience like?	Individual	Identification, sense of inclusion, mutual recognition as learning partners, conviviality and enjoyment, productive discomfort, contestability, engaging with other perspectives, exciting company, generational encounters
Potential Knowledge capital	2011	What comes out of it?	Individual	Concrete help with specific challenges, innovation, stories of others' experiences, insight, critique, skills, information, resources, intangibles, self-worth, collective voice, social capital, potential collaborators
Applied Changes in practice	2011	What are you learning in the doing?	Individual	Inventiveness (as a source of innovation in practice), adoption/adaptation, reuse, being more assertive, increasing your influence, resisting more effectively, harnessing synergy, leveraging connections better
Realized Performance improvement	2011	What difference does it make?	Context-dependent	Personal, stakeholders, collective, organizational, societal
Strategic Conversations with stakeholders	2017	What is the quality of engagement with strategic stakeholders?	Internal External	Constituencies, intentionality, learning agenda, strategic context Stakeholders, strategic context, aspirations and expectations, assessment, ongoing engagement, power, resistance, learning theory, alliances
Enabling Raising the effectiveness	2017	What makes it possible?	Internal External	Commitment, internal leadership, robust back-channel, transparency, efficiency, process, language, documenting Using new learning approaches in a different context, social learning support, logistics and technology, strategic facilitation, resources, organizational initiative
Transformative Redefining success	2011	Does the difference you make have broader effects?	Internal External	Redefinition of success, identities, power shifts New identities, reconfigured boundaries, institutional changes, empowerment, history and culture
Orienting It's a big world out there	In press	What else is potentially relevant?	Internal External	Participant contexts, biographies and identities, inherited boundaries, personal networks Other spaces and boundaries, levels of scale, history and culture, power structures, external audiences

Note: Internal orientation happens within the social learning space itself and the external orientation happens outside the social learning space. The key questions, orientation, and dimension examples are from Wenger-Trayner and Wenger-Trayner (in press). Part II – Value-creation cycles. *Learning to make a difference: Value creation in social learning spaces*. New York, NY: Cambridge University Press.

Wenger-Trayner (in press), applied value is a major shift from many learning theories. Some believe that once a person understands what is taught, then the knowledge is acquired. This assumption that the application of that knowledge should be straight forward is rarely how knowledge is adapted to a context. For the authors, applied value encompasses two aspects: the application of potential value and the application of oneself in an attempt to solve a situation requiring new skills or knowledge (see Table 1). The theorists acknowledged the complexity of applying abstract concepts to the real world. However, once applied, realized value is a possibility; it refers to the outcomes and contribution that might be generated by the applied value. Wenger-Trayner and Wenger-Trayner (in press) suggested realized value as context-dependent and thus categorized the dimensions based on the types of recipients of value and levels. Thus, personal and stakeholders refers to types of people, while collective, organizational, and societal are levels influenced by the value created. At the personal level, value is observed as participants achieve their goals in terms of performance or process. Stakeholders include people who are affected by the participants of the social learning space, but are not part of it (e.g., shareholders). The collective level refers to outcomes for the group of participants. The organizational level experiences realized value as the knowledge created translates to the mission being achieved. Finally, the societal level is impacted as the effects of social learning are reflected on the broader public.

Enabling and strategic value. This pair of values was introduced to add the outside perspective that could increase the reach of social learning through the provision of instrumental support to the initiative (Wenger-Trayner et al., 2017). Moreover, the theorists proposed internal and external dimensions to each of these two complementary values. Enabling value relates to the resources needed to allow the social learning space to achieve its goals. Many of the possible

resources are outlined in Table 1. Strategic value is closely connected to the application of resources from enabling value to the achievement of strategic goals. To understand what types of goals are a priority for different groups of people, Wenger-Trayner and Wenger-Trayner (in press) suggested the importance of constant strategic conversations with key stakeholders (both internal and external to the social learning space). Sometimes the goals at the individual level are misaligned with the group or organizational goals, and therefore, the strategic conversations should account for such divergent agendas.

Orienting and transformative value. The orienting value is the newest addition to the VCF (Wenger-Trayner & Wenger-Trayner, in press). The theorists defined orienting value as the effort to take into consideration broader perspectives and suggested two different orientations for orienting and transformative value to have—one within the social learning space itself and the other external to the space. Broader perspectives coming from within are called internal dimensions, while broader perspectives from outside are called external dimensions. The transformative value might occur based on the engagement of participants with the application of the orienting value, making the dimensions of these two values closely connected. As such, internal dimensions, such as the power shifts, might be influenced by the external dimension of empowerment.

An important consideration was made about the different range of values. The VCF was developed to understand what learning values were created, which may or may not involve crossing into a new learning value. While there is no hierarchy to classify which value is the most important, some values are likely to be more significant to different participants of a given landscape (Wenger-Trayner and Wenger-Trayner, in press, na):

- Facilitators may be more interested in providing immediate value through engaging learning interactions or potential value through the production of outputs.
- Participants may care more about applied value to address challenges in their practice or in transformations of their environment that make their life easier or more meaningful.
- Managers might be most interested in realized value in the form of performance improvement or in the strategic value of conversations to explore how practice and strategic vision can become aligned.
- Consultants may be more interested in learning how to provide enabling value when they act as facilitators.
- Political activists may be more interested in transformative value when they strive for broad on long-term changes in society.

Learning Capability

Considering the different possible values that various actors in a landscape may experience, it is important to get back to the purpose of the dissertation. The goal of this dissertation was to increase the learning capability of the wheelchair curling landscape. Learning capability of social systems refers to that of individuals and also of the learning capability of the system (Wenger-Trayner & Wenger-Trayner, 2012). According to the theory, participants engage in many social learning spaces and therefore affect and are affected by other participants and by the spaces. This way, promoting activities such as networking, creating new social learning spaces, crossing boundaries, and actively seeking out other perspectives are the types of interventions with the potential to increase social learning capability at a systemic level

(Wenger-Trayner & Wenger-Trayner, 2012). Since not much is known about the learning capability of wheelchair curling in Canada, Chapter 5 introduces the sport context drawing parallels between the sport of curling and wheelchair curling worldwide, and then narrowing it to the Canadian system.

Chapter 3: Review of Literature

Review of Literature

This literature review presents a summary of the major areas of knowledge that structured this dissertation including: coaching science, coach development, disability sport, and coaching disability sport. While chapter 2 presented the evolution of Wenger's social learning theory, this chapter focusses on the influence his theory on the areas mentioned above. At the end of the chapter, the first paper of this dissertation entitled Parasport coach development: Evidence from the Canadian context (Duarte, Culver, Trudel, & Milistetd, 2018), published by Lase Journals, summarizes the disability sport literature as it relates to the formality of learning. Since the paper was published a couple years ago, a few articles not mentioned in the paper are presented in this review.

Coaching Science

Since the 1980s, coaching science has flourished (e.g., Gilbert & Trudel, 2004; Rangeon, Gilbert, & Bruner, 2012). The field increased in breath and scope as demonstrated by the number of academic journals, and conferences, to university programs dedicated to the development of sport coaches (e.g., Gilbert & Rangeon, 2011; Trudel, Milistetd, & Culver, 2020; Trudel, Gilbert, & Werthner, 2010). An example of the representation of the field is the creation of the International Council for Coaching Excellence (ICCE), responsible for convening the goals of both practitioners and scholars, and promoting the field globally. As the field progressed, a few trends were identified relating to epistemological assumptions, research methodologies, and research focus (Gilbert & Rangeon, 2011; Gilbert & Trudel, 2004; Lyle & Cushion, 2017). First, whereas coaching science had relied heavily on positivist perspectives, including the tenets of behavioural psychology, more recently researchers have shifted to a constructivist epistemology (e.g., Nelson, Cushion, Potrac, & Groom, 2014; Paquette & Trudel, 2016; Trudel, Culver, &

Werthner, 2013). Accordingly, the research designs used by scholars have migrated from quantitative methods to measure coaches' behaviours (Horn, 2008; Smith & Smoll, 2007) to qualitative methods that allow scholars to understand the complexity of coaching in a specific context (Gilbert & Trudel, 2004; McCullick et al., 2009; Rangeon et al., 2012).

Coach Development

The recognition of the complexity of coaching and the failure of the one-size-fits-all approach has stimulated efforts to understand how coaches are learning to solve issues that arise in their daily practices (Gallimore, Gilbert, & Nater, 2013; Gilbert & Rangeon, 2011). In order to solve this dilemma, a number of coach development researchers have borrowed theories from other disciplines (i.e., human learning, education psychology). Within human learning some ideas have been influential and shaped the area of coach development. For instance, scholars shifted their attention to understanding how coaches learn (Rangeon et al., 2012), including their developmental pathways (e.g., Erickson, Côté, & Fraser-Thomas, 2007; Gilbert, Côté, & Mallett, 2006; He, Trudel, & Culver, 2018), and the sources of knowledge and learning (e.g., Erickson, Bruner, MacDonald, & Côté, 2008; Lemyre, Trudel, & Durand-Bush, 2007). When looked at more closely, it became clear that coaches' pathways are idiosyncratic as they learn in serendipitous ways (Cushion et al., 2010; Werthner & Trudel, 2009). The major themes contributing to coaches' pathways included learning from their athletic experiences (either coaching or playing), coach and other social learning interactions (Erickson et al., 2008; Gilbert et al., 2006; Lara-Bercial & Mallett, 2016), and reflection (Gilbert & Trudel, 2002; Nelson & Cushion, 2006), while less emphasis is placed on coach education and training courses (Irwin, Hanton, & Kerwin, 2004). Two papers became influential within the coach development field as they provided possible categorizations for learning. First, Nelson, Cushion, and Potrac (2006)

built on Coombs and Ahmed's (1974) framework of formal, non-formal, and informal learning contexts. Article 1 analyzes the disability sport literature based on Nelson and colleagues' (2006) categories. The second influential paper was by Werthner and Trudel (2006) who made use of Jennifer Moon's (1999, 2004) constructivist views of learning. Moon's learning situations: mediated (e.g., learning material is controlled by others, such as in formal coach education programs and conferences), unmediated (e.g., interactions with others and materials selected by the learner, such as discussing with other coaches, selecting a book), and internal (situations where the learner steps back to reflect, such as writing in a reflective journal, dedicated time without distractions, and reflective cards) were further elaborated on to provide coach developers with strategies to design optimal learning environments, and thus afford different learning situations (e.g., Trudel, Rodrigue, & Gilbert, 2016; Trudel et al., 2013). Regardless of the approach used, whether it is the formality of the learning context (Nelson et al., 2006) or the types of learning situations (Werthner & Trudel, 2006), the importance of social interactions for facilitating learning was evident.

Several studies supported the core importance of coaches learning from various others as part of their development. These others included coaches within their staff (Gilbert, Lichtenwalddt, Gilbert, Zelezny, & Côté, 2009; Wright, Trudel, & Culver, 2007), coaches of different age groups within the same club (e.g., Abraham, Collins, & Martindale, 2006; Gilbert & Trudel, 2001, 2005), coaches from different leagues (Nash & Sproule, 2009, 2012; Rathwell, Bloom, & Loughhead, 2014; Wright et al., 2007), athletes (e.g., Abraham et al., 2006; Reade, Rodgers, & Hall, 2008; Schempp, McCullick, & Mason, 2006), athletes' parents (Cregan et al., 2007; Duarte & Culver, 2014), coaches' parents (Callary, Werthner, & Trudel, 2012; Duarte & Culver, 2014), mentors (Bloom, Durand-Bush, Schinke, & Salmela, 1998; Irwin et al., 2004;

Jones, Armour, & Potrac, 2003), sport scientists (Abraham et al., 2006; Dehghansai, Headrick, Renshaw, Pinder, & Barris, 2019; Reade et al., 2008), and managers and league supervisors (Lemyre et al., 2007).

The many studies above further reinforced the need to understand the influence of others on coaches' learning; a fact that granted social learning theories their place within the coach development literature. Coaching researchers have identified social networks as enhancers of coach development (Cassidy, Potrac, & McKenzie, 2006; Collins, Abraham, & Collins, 2012; Culver & Trudel, 2006, 2008; Mallet, 2010; Rathwell et al., 2014). Coaching researchers classified social interactions in at least three types of social networks other than CoPs: (a) informal knowledge networks (individuals who exchange basic information), (b) networks of practice (mainly through the use of the Internet), and (c) dynamic social networks (change over a coach's career, and do not share an enterprise). The diverse composition of social networks through which people can learn is one element that led to a further advancement in Wenger's social learning theory. For instance, Wenger and colleagues (2011) pointed out that social networks and CoPs should not be viewed as separate structures but rather as two aspects of complex LoPs.

CoPs and Coach Development

Since 2009, there is only a small collection of researchers who have examined interventions for improving coach development using social learning theory. Using this research, we will outline key evolutionary landmarks that present how coaching research has utilized social learning theory. To facilitate this literature review, Table 2 presents some of the major aspects of these interventions. The construction of the table was not meant to be a systematic review and therefore did not follow a specific method. A description of the steps taken to build

Table 2 are: (a) define the criteria of inclusion, (b) select key words, (c) search Google Scholar and retrieve articles, (d) read the abstract, (e) read methods, participants, and findings, (f) sent the list to an expert in the field to identify any key articles that were not included, and (g) add the papers included by the expert. The selection criteria were broad and included: (a) articles and book chapters published in the last 10 years (2009 to 2019) and (b) the

Table 2: Coaches Communities of Practice Empirical Studies Published from 2009 to 2019

Authors, year	Overview of intervention					Duration
	CoP formation	Pre-intervention	Responsible for designing the intervention	Time of Assessment	Use of VCF	
1 – Culver, Trudel, & Werthner, (2009)	Organic	N/A	CoP Initiator	Retroactive	-	N/A
2 - Jones, Morgan, & Harris, (2012)	Cultivated	-	CoP Initiator	Ongoing	-	University semester
3 - Callary, (2013)	Organic	N/A	CoP Initiator	Retroactive	-	N/A
4 - Stoszkowski & Collins, (2014)	Cultivated	-	CoP Initiator	Ongoing	-	2 University semesters
5 - Driska & Gould, (2014)	Cultivated	-	CoP Initiator	Retroactive	-	University semester
6 - Araya, Bennie, & O'Connor, (2015)	Organic	N/A	CoP Initiator	Retroactive	-	N/A
7 – Bertram, Culver, & Gilbert, (2016)	Cultivated	Yes	Collaborative	Ongoing	VCF	4-months
8 – Bertram, Culver, & Gilbert, (2017)	Organic	N/A	Collaborative	Retroactive	VCF	N/A
9 - Garner & Hill, (2017)	Cultivated	-	Collaborative	Ongoing	-	6-weeks
10 - Stoszkowski & Collins, (2017)	Cultivated	-	CoP Initiator	Ongoing	-	University semester
11 - Stoszkowski, Collins, & Olsson, (2017)	Cultivated	-	CoP Initiator	Ongoing	-	University semester
12 – Culver, Kraft, Din, & Cayer, (2019)	Cultivated	Yes	Collaborative	Ongoing	VCF	18-months
13 – Vinson, Cale, Lasota, Huckle, Faulkner, & Jones, (2019)	Cultivated	-	CoP Initiator	Retroactive	VCF	18-months

Note: N/A = not applicable; dash (-) indicates no evidence found for the criteria; 1 = Culver et al., 2009, 2 = Jones, Morgan, & Harris, 2012, 3 = Callary, 2013, 4 = Stoszkowski & Collins, 2014, 5 = Driska & Gould, 2014, 6 = Araya, Bennie, & O'Connor, 2015, 7 = Bertram et al., 2016, 8 = Bertram et al., 2017, 9 = Garner & Hill, 2017, 10 = Stoszkowski & Collins, 2017, 11 = Stoszkowski, Collins, & Olsson, 2017, 12 = Culver et al., 2019, 13 = Vinson et al., 2019 13

use of a CoP theoretical framework for sport coaching development. The construction of Table 2 allowed us to better understand how the use of social learning theory has evolved as well as how this evolution was mirrored by some of the studies identified. Since this dissertation aimed at mapping the WC landscape, framing, and assessing a social learning space intervention, these key aspects are highlighted and will be discussed further. For a more complete table of the review, see Appendix A.

Authors and year. The first column of Table 2 presents the list of authors in chronological order to highlight how the studies have evolved since 2009. From the list of authors, it is interesting to note that seven studies were authored or co-authored by three scholars (i.e., Culver, Stoszkowski, and Collins) which indicates their engagement with advancing Wenger's social learning theory.

CoP formation. The second column categorizes the studies between organic and cultivated CoPs, as they are mutually exclusive. The majority of interventions examined cultivated CoPs. Some of the earlier studies cultivated CoPs while others considered those that were organic (e.g., Cushion, 2008). Whether or not this might justify the subsequent evolution of CoP studies is unclear. However, what is evident is that following the criticism of the cultivated CoP presented by Culver and Trudel (2006), researchers went from exploring or examining the occurrence of organic CoPs (e.g., Culver, Trudel, & Werthner, 2009; Callary, 2013) to the assessment of the value gained from cultivated CoPs, and more recently cultivated CoPs within LoPs (i.e., Culver, Kraft, Din, & Cayer, 2019; Vinson et al., 2019).

Pre-intervention. The third column presents the existence (or not) of a pre-intervention phase; this category does not apply to studies that examined organic CoPs as these did not entail an intervention. With regard to pre-intervention, we looked for references of any sort of requests

from the CoP initiators, such as data collected and conversations before the start of the intervention. Only two studies (i.e., Bertram, Culver, & Gilbert, 2016; Culver et al., 2019) utilized a pre-intervention phase to gather participants' needs and interests, and to understand their biographies. While the Stoszowski and Collins (2014) intervention provided relevant reflections about student coaches' use of individual blogging and suggested different approaches, the next intervention looked at different student coaches (Stoszowski & Collins, 2017). Thus, the pre-intervention phase is related to how the design of the intervention is constructed (fourth column).

Design of the intervention. The fourth column categorizes the studies according to the design of the intervention, more specifically who was in charge of selecting the many logistical elements of a CoP (e.g., number of meetings, types of learning activities, content of learning, duration). The CoP initiators were found to be predominately responsible for the CoP's design in nine studies. Moreover, out of these nine, six studies (i.e., 2, 4, 5, 10, 11, and 13) were cultivated CoPs in which professors at formal coach education programmes (3 of undergrad and 4 of graduate) designed the intervention. A caveat is that among the group of student coaches in these formal coach education programmes, the participation in these cultivated CoPs was mandatory because these courses were an official part of the programme requirements. The other three studies refer to organic CoPs in which two initiators were sport leaders and one initiator was a professor. Four studies in the fourth column had participants actively collaborating over the decision-making process. For instance, in the Garner and Hill (2017) cultivated CoP, participants were asked to bring a list of topics to be discussed, while in the Bertram and colleagues (2017) organic CoP, the participants shared many responsibilities from selecting topics for the learning agenda to leading the meetings.

Time of assessment. The fifth column presents the time of the assessment or the moment in which the scholars assessed the benefits generated by the CoP interventions. The studies were categorized as retroactive or ongoing assessments. Although the number of studies in each of these categories is similar, all of the organic CoP studies assessed the participants retroactively. Only two studies of the cultivated CoPs were retroactive (i.e., 5 and 13), while all the other cultivated CoPs were assessed throughout the interventions.

Use of VCF. The sixth column documents the use of Wenger's VCF (Wenger et al., 2011). As mentioned in Chapter 2, the VCF initially came to fruition due to the need of a tool to evaluate the value created in CoPs. While the VCF was introduced in 2011, the first coach development study that made use of the five cycles of value creation was Bertram et al. (2016). Since 2016, four of the seven studies reviewed made references of the VCF as an assessment tool.

Duration. The last column refers to the duration of the interventions. Once again, not applicable (N/A) appears for the organic CoPs, as the authors of these articles provided only vague if any information concerning the frequency and timing of the group interactions. The cultivated CoPs varied from six-weeks up to 18-months and five interventions lasted four months (university semester). However, when the amount of interactions the interventions promoted was looked at more closely, they ranged from six-weekly meetings (Garner & Hill, 2017), to by-weekly meetings (Bertram et al., 2016), monthly meetings (e.g., Culver et al., 2019; Stoszkowski & Collins, 2017), and quarterly meetings (Vinson et al., 2019). The fewest amount of activities found were three learning activities (Driska & Gould, 2014) while the most was 22 (Culver et al., 2019).

Table 2 highlighted many gaps in the literature surrounding CoPs and coach development. First, there is a lack of studies that conducted pre-intervention phases to understand the coaches' context and learning needs. Second, only in the last few years has the collaboration between researchers and participants started to be reported in the literature. Third, aligned with the use of collaborative approaches, the study of cultivated CoPs in which participants are not obliged to attend meetings is still lacking. Fourth, the use of ongoing assessments is gaining attention, especially with the implementation of the VCF. Fifth, out of the interventions cited above, only one participant was identified as coaching disability sports. This speaks to the importance of cultivating CoPs for coaches of athletes with disabilities. Thus, based on the most current literature, this dissertation aimed to address many of the gaps identified. Notably, Article 2 mapped the wheelchair curling landscape; Article 3 reported on the framing of a social learning intervention aimed to increase the learning capability of the landscape; Article 4 assessed the intervention using the VCF.

Disability Sports

The definition of terms is an important aspect that needs to be clarified before we can further discuss the context of disability sport. The few key terms selected for definition and explanation of their use throughout this dissertation include: disabilities, disability sports, parasport, and Paralympic sport.

Disabilities. Disability is an umbrella term to simplify communication around persons living with impairments, participation restrictions, and activity limitations. The World Health Organization (WHO, 2019) defines an impairment as a problem in body function or structure; a participation restriction is a problem a person faces when engaging in life situations; finally, an activity limitation is a constraint faced by an individual in executing any given action or task.

Although the intervention was not conceptualized with a critical disability studies lens, readers are highly encouraged to refer to other papers that connect the coaching and disability studies and reflect on a few disability models (e.g., see Townsend, Smith, & Cushion, 2015).

Disability sport. The term disability sport includes people living with physical, mental, and sensorial disabilities; and the varying degrees of functioning within these disabilities. This dissertation makes reference to disability sport and parasport interchangeably as in both cases the terms assume sport without posing any restrictions to the level of ability or the need for official classification. Moreover, many disability sports are not offered in the Paralympic programme.

Paralympics. The term Paralympics is associated with the highest-level competition in the world for athletes with disabilities: the Paralympic Games (e.g., Brittain, 2016; DePauw & Gavron, 2005). The Paralympic movement growth and reach are further explained in Article 1. While the classification of able-bodied sports in general is restricted to gender, age groups, and in combat sports (e.g., boxing, judo) weight classes, within Paralympic sport two additional broad categories of classification exist: medical (i.e., type and level of disability) and functional (i.e., muscle strength, range of motion, co-ordination, and balance). Athletes compete against others with different disabilities but with similar physical function (Athletics Canada, 2012; DePauw & Gavron, 2005). For instance, at the London 2012 Paralympic Games there were 29 gold medal winners for the individual 100-meter races, divided by gender and class type (Duarte & Culver, 2014; IPC, 2013). Therefore, when the terms Paralympic athletes and Paralympic coaches appear, they designate the highest level of sport performance within the context of sport for people with disabilities.

While we chose to define only a few terms, there are many more traditional organizations spread across the disability sport landscape such as the sport for the Deaf who have hosted events

since 1924 (DePauw & Gavron, 2005) and other new organizations are achieving worldwide recognition like the Invictus Games (Brittain, 2016) with his popular ambassador, Prince Harry (Invictus Games Foundation, 2016).

Next, Article 1 of this dissertation presents a literature review focussed on the parasport coach development research conducted in Canada. Due to the date of the publication, the most recent reference of Article 1 is 2017. Nonetheless the most recent references regarding disability sports are discussed in the next chapters of this dissertation.

Article 1

Parasport Coach Development: Evidence from the Canadian Context

Duarte, T., Culver, D. M., Trudel, P., & Milistetd, M. (2018). Parasport coach development: Evidence from the Canadian context. *LASE Journal of Sport Science*, 9(1), 78-90.

Abstract

Despite the exciting evolution of the Paralympic movement as it relates to high performance Paraspport, there are concerning evidence that shows many barriers people with an impairment have to overcome to participate in sports. The access to knowledgeable coaches is a barrier that permeates both high performance sports as well as grass roots. The purpose of this paper is to introduce the reader to the disability sport coaching in Canada. A brief historical overview of the Canadian context referring to people living with an impairment situates the readers. The multiple layers of coaching are presented and a summary of recent studies that have examined parasport coach development from the perspectives of coaches into this country. The paper uses the concepts of formal, nonformal, and informal learning to frame the literature and provide the readers with an overview of the subject. Based on the broader coach development literature, the paper offers some recommendations for parasport coach developers.

Key words: *Disability sports, coach learning,*

Introduction

Over the past two decades the disability sport movement has been growing steadily (Banack, Sabiston, & Bloom, 2011; Tawse, Bloom, Sabiston, & Reid, 2012). One of the most impressive examples relates to the London 2012 Paralympic Games. A survey conducted by the International Paralympic Committee (Spence, 2015) shed light on many indicators such as the popularity and interest of the public for the event. Spence revealed the cumulative number of 3.8 billion TV viewers over the 12 days of competition in London. According to Topping (2012) the Games exceeded the local committee expectations, selling 2.7 million tickets, surpassing by 900,000 the previous Games in Beijing. To provide a sense of the progression, the 2004 Paralympic Games in Athens sold 850,000 tickets (Eccles, 2012). Moreover, for the first time in the history of the Paralympic Games the tickets sold out even before the start of the Games (Eccles, 2012; Hirst, 2012). These numbers elevated the Paralympic Games from second-tier status, without adequate support and funding in 1996 (Le Clair, 2011), to the third sporting event in the world behind the Olympic Games and the FIFA World Cup of soccer (Spence, 2015). In Canada, the worldwide increase of interest and popularity brought more funding opportunities to sport federations. For instance, Own the Podium (OTP), the organization that controls high performance funding opportunities in Canada, has increased by 30 percent the funding during the first two years of the Rio 2016 quadrennial compared to the last three years leading up to Beijing 2008 (OTP, 2015).

Despite the exciting evolution of the Paralympic movement as it relates to high performance Parasport, there are concerning statistics regarding the grass roots. Within Canada, a 2012 Standing Senate Committee on Human Rights report (Jaffer & Brazeau, 2012) indicated 37 percent of children and youth with disabilities never take part in organized physical activities

compared to 10 per cent amongst those without disabilities. These alarming numbers are linked to the many barriers prohibiting people with a disability from participating in sport ranging from structural and environmental to social and personal (Canada Heritage, 2006; Shikako-Thomas & Law, 2015). Not surprisingly the lack of specialized coaches is one of these barriers. Based on this reality, the purpose of this paper is to introduce the reader to the disability sport situation in Canada and to provide an overview of recent studies that have examined parasport coach development from the perspectives of coaches into this country. The paper concludes with some recommendations for Parasport coach developers.

Canadians with Disabilities

According to Statistics Canada (2012), people with disabilities represent approximately 14 per cent of the 35 million Canadians. Canada was the first country to award equal opportunities for persons with a disability in its 1982 Charter of Rights and Freedoms (Valentine & Vickers, 1996) which in theory would guarantee the equality rights of Canadians including the provision of government services such as the access to sports and recreational activities (Jaffer & Brazeau, 2012). However, only three per cent of Canadians with a disability compared to 30 per cent of able-bodied Canadians are enrolled in sport organizations (Canadian Heritage, 2006). The acknowledgment of people's rights is just the first step in achieving substantive equality. In order to make real changes, proactive steps need to be taken to minimize the barriers that create social disadvantages with the goal of making society more inclusive. Throughout times disparities have occurred, for instance the Canadian Sport Policy written in 2002 (Canadian Heritage, 2002) referred solely to able-bodied sport. Only in 2006 did Canada release a complementary policy specific for people with disabilities (Canadian Heritage, 2006). The 2002 omission was corrected with the release of the most recent Canadian Sport Policy, which calls for barrier-free and

relevant sport programming customized for “traditionally underrepresented and/or marginalized populations to actively engage in all aspects of sport participation” (Canadian Heritage, 2012, p. 10).

Coaching Parasport in Canada

As stated above, one of the barriers identified by the Canadian Policy on Sport for Persons with a Disability (Canadian Heritage, 2006) relates to the area of coaching in disability sport. The need to develop coaches is not novel. In 1986, the US Committee on Sports for the Disabled designated it a research priority (DePauw, 1986). More than a decade after DePauw highlighted the need for studies in coaching Parasport, Reid, and Prupas (1998) found that only five data-based articles on the topic had been published. Later, DePauw, and Gavron (2005) published a book on disability sports that still emphasized the need for studies and programs to develop coaches. Looking at articles published after the year 2000 within Parasport coach development the contribution of Canadian researchers is noticeable. It is the Canadian perspective that will guide this chapter.

In able-bodied sport, the number of participants is such that we can often draw typical profiles of coaches at the recreational, developmental, and elite level (Trudel & Gilbert, 2006). In Parasport, it is common to see a coach training athletes ranging from children to adults and recreational to elite levels, all in the same session (McMaster, Culver, & Werthner, 2012; Sawicki, 2008). To add to the complexity of the Parasport coach’s role, the wide range of disabilities within the same sport (or event) requires coaches working with these athletes to not only acquire sport specific and general coaching knowledge common to all coaches, but to also understand each athlete’s specific disability and its influence on development and/or performance (Cregan, Bloom, & Reid, 2007; McMaster et al., 2012; Tawse et al., 2012). For

instance, within disability sport two additional broad categories of classification exist: medical (i.e., type and level of disability) and functional (i.e., muscle strength, range of motion, coordination, and balance). Athletes compete against others with different disabilities but similar physical function (Athletics Canada, 2012; DePauw & Gavron, 2005). According to the IPC (2013), at the London 2012 Paralympic Games there were 29 gold medal winners for the individual 100-meter races, divided by gender and class type.

The disability aspect adds a number of coaching challenges specific to Parasport (Burkett, 2013; Hanrahan, 2007). Considering that at the core of Parasport is the ability to adapt the rules, training, and equipment to allow for participation and fairness, a question that intrigued a group of researchers was: How are coaches learning to work in Parasport? In order to provide the context for this question we will examine the literature on coach development in able-bodied sport. In support of this, Cregan and colleagues (2007) argued that a Parasport coach needs to train the athlete not the disability. This and the lack of supporting evidence related to Parasport, justifies a review of coach development opportunities in general.

Coach development

Able-bodied sport coaching as an academic discipline has blossomed since the 1990s (Rangeon, Gilbert, & Bruner, 2012). New coaching journals have appeared such as the *International Journal of Sports Science & Coaching*, and just recently, the *International Sport Coaching Journal*. The research literature on coaching has shown that coaching is complex and it has been suggested that a one-size-fits-all approach is ineffective (Abraham & Collins, 1998; Cushion, Armour, & Potrac, 2003). This has stimulated efforts to understand how coaches are learning to solve issues that arise in their daily practices (Gallimore, Gilbert, & Nater, 2013; Gilbert & Rangeon, 2011). Researchers who sought to understand how coaches learned to

become coaches found idiosyncratic pathways (Werthner & Trudel, 2006) in which the coaches learned from their athletic experience, from coach education, coaching courses and clinics, mentoring, informal learning situations, and learned by doing (Jones, Armour, & Potrac, 2003; Lemyre, Trudel, & Durand-Bush, 2007; Saury & Durand, 1998; Wright, Trudel, & Culver, 2007). A piece of research that shaped how coach development researchers, working from the seminal work of Coombs and Ahmeds (1974), classified these many learning situations was written by Nelson, Cushion, and Potrac (2006). Nelson and colleagues proposed coaches learn through formal, non-formal, and informal learning. Next, we will look at the Canadian context of coach development through the lenses of these three learning situations, and highlight the few studies of Parasport coaches conducted in Canada.

Formal

Coombs and Ahmed (1974) defined formal learning situations as those in which learning occurs in an “institutionalized, chronologically graded and hierarchically structured education system” (p. 8). Formal educational programs follow guidelines such as a standardized curriculum and often offer coaches a certification. The Coaching Association of Canada (CAC) is the national sport governing body responsible for coaching education in Canada. CAC has operated the National Coaching Certification Program (NCCP) for upwards of three decades and has trained more than 1 million coaches (Werthner, Culver, & Trudel, 2012). Werthner and colleagues suggested NCCP trains around 50,000 coaches from about 67 sports each year. Coach development agents from around the world have considered the NCCP a model for formal coach education. In 1997 the CAC did a thorough review of their programs, shifting thereafter from an approach that prioritizes ‘what a coach knows’ compared to ‘what a coach can do’. Through this evolution the NCCP moved from a knowledge based program (Levels 1 to 5, based on a novice

to expert continuum), to a competency-based program (three streams, instruction, competition, and instruction) that aims to develop the abilities required to coach specific groups of sport participants (Werthner et al., 2012). The NCCP's five core competencies are: Valuing, interacting, leading, problem-solving, and critical thinking. Coach training within the NCCP involves a theory component often delivered in a multisport setting, and a sport specific component. Currently, only half of the 27 NCCP partner sports providing a Paralympic program have developed a module of sport-specific training for coaches of athletes with a disability (Taylor, Werthner, & Culver, 2014).

Coach education programs have sparked different opinions regarding their value to coach development. Werthner and Trudel (2009) looked at 15 Canadian Olympic coaches' learning pathways and found that many cited formal coach training as useful to their development. Erickson, Bruner, MacDonald, and Côté (2008) studied 44 coaches from various sports found that NCCP courses were the third most frequently reported source of knowledge behind 'learning by doing' and 'by interacting with others'. For coaching sport with intellectual disabilities, MacDonald, Beck, Erickson, and Côté (2015) mentioned the shortfalls of NCCP courses as being too generic and not addressing the needs of Special Olympic coaches. For Parasport, Duarte and Culver (2014) had similar findings as their participant stated the sport specific module was not tailored to athletes with a disability. Taylor, Werthner, Culver, and Callary (2015) mentioned the new design of the NCCP to be conducive to reflection an important ability to coaching.

Nonformal

Nonformal learning situations may include coaching conferences, seminars, and workshops. They are usually guided, voluntarily attended, and lie outside of formal education

systems (Mallett, Trudel, Lyle, & Rynne, 2009). Nonformal situations are often opportunities for coaches to learn about a specific coaching topic of their choice. Considering that most coaches are volunteers, only a few of them devote time and money to such clinics (MacDonald et al., 2015; Nelson et al., 2006). Nonetheless, coach development administrators in Canada have recently embraced the concept of mandatory continuous professional development in order to maintain certification (e.g. Coaching Association of Canada, n.d.). This implies that sport organizations at all levels (club, regional, national, international) will be required to offer continued learning opportunities to their coaches. While coaches in the Erickson et al. (2008) study voiced a preference for nonformal learning situations, they remarked that such opportunities are sparse. In Parasport, the participant in Duarte and Culver's (2014) research mentioned that early in her disability coaching career, she was fortunate to learn through numerous workshops that were provided by the clubs where she worked. While further evidence for nonformal learning opportunities in Parasport is lacking, this disability coach, based on her experience, has developed sport specific workshops for novice coaches in her Parasport.

Informal

Informal learning situations are linked to the concept of self-directed learning. The coach's desire to learn/solve a problem can spark a search for information/solution through books, videos, Internet sources, and discussions with others (Nelson et al., 2006; Winchester, Culver, & Camiré, 2012); mentoring (Nelson et al., 2006; Werthner & Trudel, 2009), and learning through personal experiences (Wright et al., 2007; Nelson et al., 2006). Recently, a number of studies have found that coaches emphasize the impact of informal learning experiences on their development (Cushion et al., 2003; Erickson et al., 2008; Lemyre et al., 2007; Mallett et al., 2009; Wright et al., 2007). While informal learning experiences encompass a

variety of potential processes, interactions with others have been cited by coaches in able-bodied as an important means of learning (Erickson et al., 2008). In Canada, interactions with others seem to be of particular importance to coaches who coach athletes with disabilities (Duarte & Culver, 2014; McMaster et al., 2012). Recently, a study with 45 Special Olympic coaches cited learning by doing to be the most important source of knowledge (MacDonald et al., 2015). However, when asked about what would be the ideal sources of knowledge in addition to experiential learning, they referred to a combination of support from others such as coaches and mentors. The few published studies on Parasport coach development have highlighted the importance of learning from others (social learning) in a slightly different way than in able-bodied coaching (e.g., Cregan et al., 2007; McMaster et al., 2012).

Parasport coaches learn from mentors, peer coaches, and their integrated support teams (ISTs), and others (Cregan et al., 2007; McMaster et al., 2012). All five coaches studied by McMaster et al. (2012) reported being mentors or mentees. Taylor et al. (2014) mentioned the mentorship of a Parasport coach by a former Olympic level coach. Duarte and Culver (2014) found many mentors in the story of a parasailing coach; interestingly these mentors were not necessarily linked directly to the sporting context in which she coached, being for instance an administrator at an elementary school and an occupational therapist. Moreover, whereas in able-bodied sports a novice coach will likely learn from a more experienced one, within Parasport some coaches start with their first para athletes after having a lot of experience with able-bodied sport. Thus, Davey (2014) mentioned an experienced coach in able-bodied sailing who was able to learn from novice sailing coaches who were more knowledgeable than he about the Parasport context. Contrary to research that suggested coaches are not willing to share information with rival coaches (e.g., Lemyre et al., 2007; Wright et al., 2007), Duarte and Culver noted numerous

interactions among an adaptive sailing coach and coaches from different sailing clubs. Taylor and colleagues mentioned interactions between the coach and peers from other disability sports. Tawse et al. (2012) found wheelchair rugby coaches engaging in constant interactions with IST members. Taylor et al. (2014) suggested the use of a physiologist by her elite coach whereas Duarte and Culver found the use of an occupational therapist by a developmental coach to address unique para athletes' demands. Taylor et al. also mentioned collaboration with a university professor who taught adapted physical activity. Moreover, within Parasport some others were shown to play relevant roles; these included the athletes, athletes' family members (Cregan et al., 2007; Tawse et al., 2012), and coaches' family members (Duarte & Culver, 2014; Taylor et al., 2014). Cregan et al. studied Para swimming elite coaches. These authors suggested that athletes contributed equally to the coaching process, with the coach being the expert on technique, and the athlete being the expert on his or her own disability.

Besides who exactly coaches learn from, a second social learning consideration relates to the contexts where social learning might occur. Duarte and Culver (2014) and Davey (2014) reported that at development sailing competitions (regattas) there is a tradition of pairing coaches and athletes from different clubs. Davey suggested that competitions aimed to be cooperative environments and seemed to promote knowledge construction of both coaches and athletes. Taylor et al. (2014) noted the mentorship that occurred at a camp initiated by the mentee.

Conclusions

As noted, coaching is a complex activity. The literature review above portrays Parasport coaching as being even more complex than able-bodied coaching, with relatively fewer formal and nonformal learning opportunities offered specifically for Parasport coaches. In this conclusion we will offer some ideas for Parasport organizations about moving forward with

Parasport coach development. For this we will refer further to the literature on able-bodied sport coach development and a study that examined what characteristics Parasport athletes say they want to see in their coaches. These suggestions build on the current disability sport coaching situation in which the main source of knowledge of Parasport coaches comes from informal learning.

Recently, Trudel, Culver and Werthner (2013) recommended the creation of optimal learning environments in the hope of offering coaches meaningful learning opportunities. While the three learning situations (i.e., formal, nonformal, and informal) individually provide coaches with different avenues to development, using them in conjunction with each other could provide unique learning opportunities and magnify their potential impact. For instance, coach educators might structure a formal coach education module to present coaches with ideas on how to explore social learning skills. Interpersonal skills have been proposed as one of the three pillars of coaches' knowledge (i.e., interpersonal, intrapersonal, professional) (Côté & Gilbert, 2009). The content of such a module could include ideas to nurture learning through interactions with others. Activities would help coaches understand how to optimize one's network, and build and sustain communities of practice. Sawicki (2008), an elite Parasport coach, suggested cross-context partnerships as a way to develop better coaches. Potential social learning spaces should consider linking high-performance coaches with development coaches to share knowledge, or even Parasport coaches working with able-bodied sport coaches (Sawicki, 2008). Davey (2014) also pointed out the potential benefits of cross-context collaboration for coach development. Both Sawicki and Davey offer examples of how the boundaries between contexts are fertile grounds for knowledge creation (Wenger, 1998). In addition to developing interpersonal knowledge, this learning opportunity could allow Parasport coaches to supplement their

professional knowledge in areas such as the large variety of disabilities that can reasonably be expected to be found in their athletes. As well, NCCP core competencies such as interacting, problem solving, and critical thinking would be developed.

The need for reflection in Parasport coaching was documented by Taylor et al. (2015) who found that Parasport coaches spent a lot of time reflecting on how to adapt equipment to fit the needs of their athletes. The ability to reflect is part of a coach's intrapersonal knowledge. No matter the learning situation, the Parasport coaches in the studies presented earlier in this chapter spoke of reflecting with a lens of adaptability, filtering information to best figure out how to apply it to their athletes' specific physical and mental needs, whether these were related to equipment adaptations, or the adjustment of training programs determined in large part by the specific disabilities. Reflection was often engaged in with others including athletes, family members, and various healthcare experts, each of whom contributed to the co-construction of parasport coaching knowledge.

Culver and Werthner (2017) asked athletes with disabilities about their ideal coach. The athletes said that Parasport coaches need to enhance certain crucial characteristics for effective coaching. In addition to qualities such as empathy, patience, good communication, adaptability, an understanding of the disability, the athletes stressed the ability to work *with* them. Athletes wanted coaches to engage in on-going conversations: As one athlete said, "Because, I'm doing the sports. I have some idea what is going on. And, I know myself" (Culver & Werthner, 2017, p.5). Again, we see an important need for Parasport coaches to develop their interpersonal knowledge, as well as their professional knowledge. Parasport coach developers should offer workshops in which coaches can try out some of the Parasports that they coach; to sit in a

wheelchair and play basketball for example. This would help coaches to better understand the technical and tactical challenges of their athletes as well as develop their empathy.

A final word is devoted to the promotion of the Internet as a medium for Parasport development. Canada and other larger countries face obstacles when it comes to geography. The fewer numbers of Parasport coaches compared to coaches of able-bodied sport, means that interacting with others face to face is problematic. However, Parasport coach developers could promote social learning spaces using such platforms as Adobe Connect, and Skype. With properly trained facilitators, these platforms can afford cost effective learning opportunities for the development of coaching effectiveness by helping coaches augment their professional, interpersonal, and intrapersonal knowledge.

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Chapter 4: Research Approach

Research Approach

The research approach is presented in five sections. The collaborative inquiry approach that guided this research project is discussed in the first section. The second section provides a description of the participants, including the recruitment strategies. The third section outlines the procedures and data generation methods. The fourth section presents an overview of the strategies used to analyze the data. Finally, issues of qualitative research quality are addressed in section five.

Collaborative Inquiry

Collaborative inquiry is the methodological approach that guided this research project. Though the epistemology and ontological assumptions are presented above, this section aims to introduce the methodology as it relates to this research project. Bray and colleagues (2001) suggested this participatory action research as a research strategy that could simultaneously promote adult learning. One of the considerations for adult learning is the motivation to learn (Jarvis, 2005; Moon, 1999). An important aspect of the participatory paradigm is knowledge accumulation. While positivism and post-positivism aim their efforts at drawing generalizations and identifying cause-effect linkages that are viewed as building blocks that accumulate to form the ‘building of knowledge’, within the participatory paradigm, knowledge occurs “in communities of inquiry embedded in communities of practice” (Lincoln, Lynham, & Guba, 2018, p. 112). Within collaborative inquiry, the participants are encouraged to become co-researchers and drive this journey to answers questions of importance to them (Bray et al., 2000; Heron, 1996). However, Heron warned that the initiator should focus on educating co-researchers “and not indoctrinat[ing], in collaborative research method” (Heron 1996, p. 39). As increasing the learning capabilities using social learning theory was a broad purpose for the research project, attempts to educate the participants were made at every opportunity in which

participants would face a decision that could potentially steer the agenda of the research and therefore their practice (e.g., selecting the topics, dates, priorities, what was shared online).

Before we introduce the participants, it is important to delineate how this dissertation views the members of the community we created. Within participatory action research, a variety of terms are used to describe the involvement of participants as it pertains to their roles in conducting or being involved as a subject of research. For instance, the term *co-researchers* is a way of defining people involved in decision making as it relates to the research design and methodology (Bray et al., 2000; Heron, 1996), whereas the term *co-subjects* is used to highlight the engagement of participants with the practice or action within a certain community (Heron, 1996). Furthermore, these people will eventually engage in both roles (i.e., co-researchers and co-subjects), either partially or fully, as the cycles of action and reflection take place (Heron, 1996). For instance, a traditional qualitative research methodology (e.g., ethnography) is conducted both by researchers who are fully involved in the research and participants who are fully involved with the practice. Within participatory action research, it is expected that all who are involved are at least given the opportunity to be partially involved with the research and the practice (Heron, 1996). Therefore, the co-researcher role played by coach participants included the decision of which types of data were shared online (e.g., online meetings were not included, online camps were included). The co-subject role refers to the first author. As a co-subject, he attended competitions and joined coaches and athletes during many activities (e.g., meals, games).

In this study, the preliminary plan was rather simple and conservative as it included in-depth interviews before and after the intervention with a targeted group of three to five coaches. Supported by the VCF (Wenger et al., 2011; Wenger-Trayner et al., 2017), the first author initially planned to organize and facilitate monthly in-person group activities to provide the

participant-coaches with the opportunity to share their experiences within a social learning space context. These meetings were intended to last from 60-90 minutes and would include people identified, in the in-depth interviews, as relevant to the coaches and their landscape (e.g., NSO representatives, coach mentors). However, as we explain below, the intervention design changed in scope and depth to best meet the needs of the participants recruited and their corresponding landscape.

The partnership and empowerment aspects of the collaborative inquiry methodology made it an appropriate way to structure this research project, as collaborative inquiry couples well with Wenger's social learning theory (e.g., Wenger, 1998; Wenger-Trayner et al., 2015). At the core of both collaborative inquiry and CoPs are groups of people who care to make a difference and interact in order to advance their goals. While collaborative inquiry views every participant as being deeply engaged in answering a research question, for Wenger-Trayner and colleagues (2015), people will participate in CoPs at different levels. This distinction should be explained further due to the lesser involvement of participants with the research focus than with the practical focus of the project. Recently, Wenger-Trayner and Wenger-Trayner (in press) suggested that participants have different needs and perspectives and will interact with the CoP based on their needs. Their interactions could be divided into five levels of engagement: (a) core group members (passionate and engaged members who nurture the CoP), (b) active participants (practitioners who define the community), (c) occasional participants (members who join activities of special interest), (d) peripheral participants (newcomers or members at the boundaries of a CoP), and (e) transactional participants (non-members who provide value to or receive value from the CoP occasionally).

Participants

The following section presents an overview of the participants who were involved at some level within the WC landscape and the present collaborative inquiry. Moreover, the participants are grouped according to their roles (i.e., CC technical leaders, WC coaches, and researchers) and their level of engagement is denoted.

Curling Canada technical leaders. The CC technical leaders have a wide range of roles and levels, from the long-standing High Performance Director (HPD, executive level), to national team program Head Coach (managerial level), and consultants (operational level) who work with the national team. They ranged in age from 34 to 70 years old ($M = 47.3$ years). Please refer to Chapter 5 (Findings) for a contextualization of the important roles played by the CC technical leaders. The CC technical leaders' influence on the broad landscape and within the WC landscape is presented in Article 2 and Article 3. The roles, as presented in Article 3 (Table 1), illustrate the many hats these technical leaders are responsible within CC.

Wheelchair curling coaches. This group of participants are formed by 15 wheelchair curling coaches (9 males, 6 females; see Table 3). At the beginning of the research, these WC coaches ranged in age from 51 to 67 years old ($M = 57.5$ years). Five of the coaches were considered core members due to their participation in the many research activities, nine coaches were active members, and two occasional members. Eight coaches were level three or equivalently certified according to the National Coaching Certification Program (NCCP), while three were level four or the highest level of certification in Canada, while the other five coaches had attended introductory levels of coaching modules. Seven coaches were retired from their employments when they joined the PLG. Based on their ages and comments during interviews, many of the remaining coaches are retiring within the next few years. Overall, their experience coaching AB curling ranged from zero to 36 years ($M = 20$ years), while their experience coaching WC ranged from one to 13 years ($M = 6.3$ years). The coaches come from seven

Canadian provinces and live in 14 different cities. The province of Ontario has the most coaches, which is representative of the size of province when compared with the Canadian population. Since the size of the WC community is very small, if we identify the coaches by the letters assigned to their names, it would be easy to unveil their identities. Therefore, within Table 3 we present coaches by numbers that are not connected to their identities.

Table 3. Demographics of Participant Coaches

Coach	Age	Years coaching		Occupation	City Size	Engagement
		AB	WC			
C1	50-60	10	5	Retired – Retail management	>400,000	Core member
C2	50-60	25	1	Retired – Canadian Forces	>400,000	Core member
C3	50-60	5	6	Public servant	> 1,000,000	Core member
C4	50-60	5	5	Accountant	< 100,000	Core member
C5	60-70	24	12	Retired – Engineer	< 50,000	Active member
C6	50-60	20	10	Retired – Physical therapist	< 50,000	Active member
C7	50-60	19	3	Project Manager	<100,000	Occasional member
C8	60-70	28	7	Retired – Health Canada	>100,000	Active member
C9	60-70	0	8	Retired – Telecommunications	<100,000	Core member
C10	50-60	0	4	Retired – WC industry	<100,000	Active member
C11	50-60	36	8	Entrepreneur	>100,000	Active member
C12	50-60	20	12	Telecommunications	>100,000	Active member
C13	50-60	0	8	Religious Leader	>1,000,000	Active member
C14	60-70	20	13	Public servant	< 50,000	Active member
C15	50-60	18	9	Coach	>2,000,000	Active member
C16	50-60	17	7	Retired – Self-employed	>400,000	Occasional member

Notes. AB = able-bodied curling; WC = wheelchair curling;

Researchers. While including researchers in the participants section is not the norm, since this is a collaborative inquiry that calls for co-researchers to also be partial co-participants, we chose to add some basic information about the researchers. Specifically, three researchers participated in this research project. Their predominant fields of study include sport pedagogy and psychology, disability sports coaching, and social learning. Tiago Duarte (R1) has been

involved with disability sports as a volunteer and did his Master's degree utilizing a narrative approach to describe the developmental pathway of a disability sport coach. Besides being a scholar in the sport field, Diane Culver (R2) has a strong applied background of coaching as a former national team ski coach coupled with a pedagogical background formed during years of experience as a Learning Facilitator for the NCCP, a PhD in teaching and learning, and her role as a professor. Kyle Paquette (R3), has consulted many NSOs over the last few winter and summer Olympics. His role is further explained on Article 3 since it was an instrumental in supporting the intervention.

Table 4. Demographics of Researchers

	Research Experience	Coach Development Experience	Engagement
Tiago Duarte (R1)	8 years conducting research within coach development	5 years coaching youth sports NCCP competition & development trained coach	Co-researcher and core member
Diane Culver (R2)	20 years conducting research and nurturing coaches' CoPs	35+ years coaching from youth to high performance 30+ years as NCCP Learning Facilitator	Co-researcher and occasional member
Kyle Paquette (R3)	10 years conducting research within coach education	10+ years as coach developer for many national sport organizations	Co-researcher and core member

Notes. NCCP = National Coaching Certification Program, CoPs = communities of practice.

While these participants are grouped in three tables, some key members had roles that sometimes overlapped, as is expected in social learning spaces in complex landscapes (Wenger-Trayner & Wenger-Trayner, 2015). Figure 2 provides a visualization of the overlap of roles.

Moving forward (including within the articles in the findings section), the term participant coaches will refer to the WC coaches who took part in this PLG community, CC technical leaders will be used to identify the participants who had an employment or consultancy role involved primarily with CC, and researchers will refer to Tiago Duarte, Dr. Kyle Paquette,

Figure 2: Participants with Multiple Roles

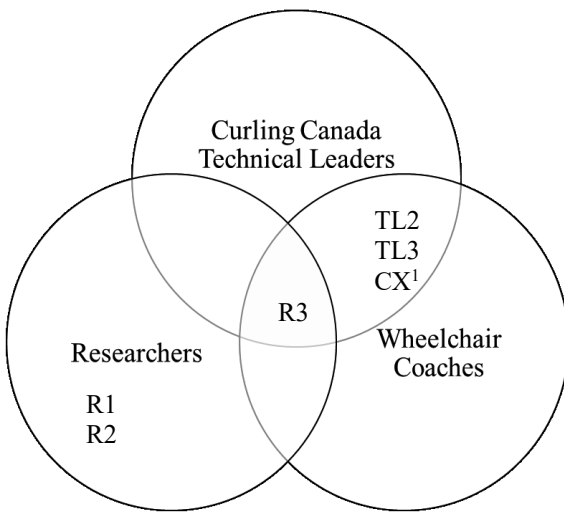


Figure 2: ¹This coach was not identified to maintain anonymity

and Dr. Diane Culver. Because Kyle Paquette had overlapping roles, at specific places, the designation of the role he is playing will be highlighted.

Recruitment. Historically in Canada, the recruitment of parasport coaches as research participants has been a challenge (i.e., McMaster et al., 2012; Taylor et al., 2015). At first, although the objectives of the study and initial intervention design were conceptualized, finding the landscape and corresponding group of participants became the initial obstacle. After several months lapsed between our initial contact with the Canadian Paralympic Committee and our request for coach referrals, a sport representative from Curling Canada came forth to join this intervention due to his interest in the potential mutual benefits offered. R3 played a vital role in the selection of the sport. While he was pursuing a Ph.D. at the University of Ottawa, he was also working as the Sport Science and Sport Medicine (SSSM) Lead for Curling Canada. Aware of the proposed project, he approached R1 to conduct the research with the wheelchair curling program. Some of the participating coaches referred other coaches to join the study (i.e., snowball sampling, Sparkes & Smith, 2013). Likewise, a coach suggested that R1 should contact

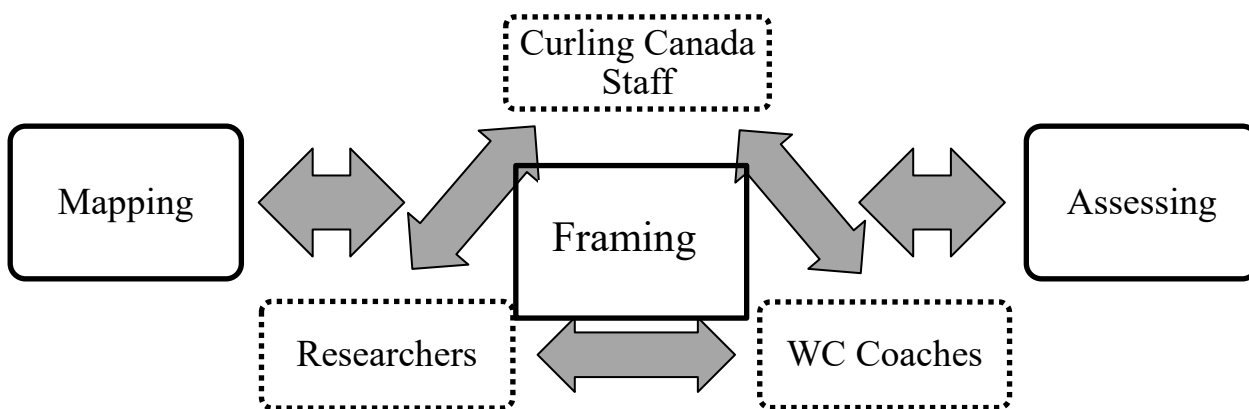
the Ontario Curling Council to recruit more participant coaches. R1 sent the Ontario Curling Council the letter of recruitment and a representative forwarded the email to other coaches (snowball sampling). These additional coaches were subsequently interviewed online.

R1 sent the invitation letter to Curling Canada's HPD who authorized access to the coaches. R1 travelled to the 2016 Canadian Wheelchair Curling National Championships. The aim of the trip was to present the research proposal to the coaches attending the competition. Curling Canada arranged for one of the national team program coaches to help coordinate and promote a coach meeting (i.e., social gathering) during the event where coaches were invited to join the collaborative inquiry. During the next four days, 11 coaches who expressed interest in participating in the study were interviewed face-to-face.

Procedures

While the next sections are neatly separated, the reader should keep in mind that the framing and assessment processes overlapped as the assessment provided input that shaped the next learning activity within the overall intervention (see Figure 3).

Figure 3 – Overview of the Intervention's Components



Mapping the landscape. This was the pre-intervention phase and it is described further in the findings section of Article 2. This phase started when the first and third author designed ideas in order to recruit coaches to partake in the intervention. At this moment, the activities described below aimed to cultivate a culture of collaboration, which is shown to be critical for CoPs of coaches (e.g., Callary, 2013). Therefore, the opportunity to establish the first contact was planned as the first author attended the 2016 National Championships (the sport's biggest event within Canada). To facilitate this first contact, Curling Canada hosted a social gathering with the coaches. Also, observations and mapping interviews were planned to better understand the landscape and the coaches' biographies. The first cohort of coaches joined the intervention at the 2016 National Championships, and a few other coaches were later referred to the group and subsequently joined, later including during a national level competition in November of 2016.

Framing the social learning space. This phase is presented in detail in Article 3 of the findings. This phase involved the ongoing process with many actors including CC technical leaders and coaches. The constant reflection, sharing, co-construction, and continuous feedback of all parties were at the core of this phase. Framing encompassed the bulk of activities of the intervention and lasted 13 months. Article 3 summarizes the many strategies utilized as learning activities (e.g., online camps led by coaches and SSSM) and data generation techniques (e.g., follow-up interviews, focus group), the goals these activities sought to achieve, and the level targeted (i.e., individual, group, or organizational).

Assessing the value created. This phase is further explored in Article 4 of the findings section. The objective of the ongoing assessment was to provide feedback on whether the activities were achieving the aspirations of the participants. Since “articulating the value of communities of practice is complex because this value mostly manifests in a member's practice,

which takes place outside the community” (Wenger-Trayner & Wenger-Trayner, in press, p.i), we adopted an investigative stance to understand if learning value was being created for the coaches. This was operationalised by paying close attention to the many places where the coaches were interacting (e.g., learning activities) which lead us to the data analysis.

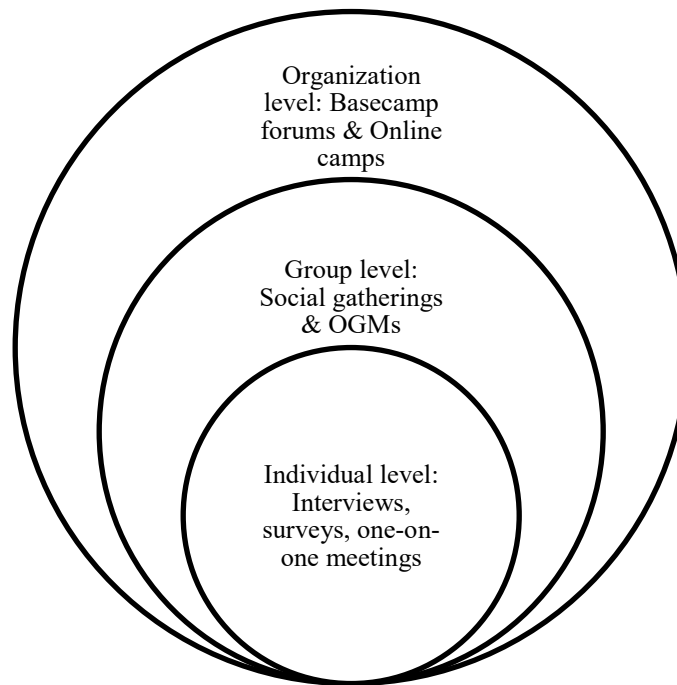
Constructing Knowledge

In line with collaborative inquiry approaches (Bray et al., 2006; Heron, 2015) and with the VCF (Wenger-Trayner & et al., 2015), this research project makes use of multiple sources of data to capture the complexity and experience of the participants. Given the landscape approach and the foremost objective of enhancing the learning capability of the landscape, developing strategies to target various levels of influence beyond the individual level (i.e., the coach) was an ongoing priority of the intervention (see Figure 4). As presented in the literature review, the developmental pathways of coaches are idiosyncratic but they happen when coaches experience and reflect (individual level), when they interact with their athletes and assistant coaches (group level), and when they interact with members of their sport communities (organizational level). For the present dissertation, *individual level* interactions are defined as interactions between the individual coaches and R1. *Group level* interactions were designed to allow the coaches to meet, share, and co-construct knowledge in an environment formed by peer coaches, as facilitated by R1. *Organizational level* interactions focussed on learning situations that provided the coaches opportunities to interact with CC technical leaders, which were convened by R1. All of those interactions contained within the three levels as presented in Figure 4 were viewed as opportunities to better understand the landscape and its actors, and therefore generated data.

In addition to being able to divide these interactions based on their level within the intervention, and for the purpose of this section, they can be further categorized in the following two types of data generation strategies: (a) formal and structured and (b) experiential and

reflective. Within each type of data generation strategy, a variety of data generation methods that were used in this project will be presented and discussed. The formal and structured strategies to generate data included three different in-depth interviews (i.e., at the beginning, after six months, and at the end of 14 months), focus groups, participant observations (as an outside observer), and brief surveys. The experiential and reflective data generation strategies included participant observation (as a participant observer in the PLG during competitions, social gatherings), strategic conversations (with CC technical leaders), online interactions on Basecamp, and prompts sent out through online surveys.

Figure 4: Level of Intervention's Interactions



Interviews. A total of 37 in-depth semi-structured interviews (Brinkmann, 2013) were conducted with the participants. These interviews occurred at three different moments of the inquiry. During the pre-intervention phase, the goal was to map the WC learning landscape and a total of 14 interviews were conducted ($R = 24-119$ min). More details about the construction of the mapping interviews are provided in Article 2 (Chapter 5). At the mid-point of the

intervention, 10 follow-up interviews ($R = 15\text{-}57$ min) collected feedback that helped framing of subsequent activities and also started to assess the value creation. Finally, at the end of the intervention, 13 interviews ($R = 24\text{-}54$ min) were conducted to assess the value creation provided by the PLG. These in-depth interviews utilized semi-structured guides and were conducted both in-person or online (see Article 3 for more details). The different interview guides were created using the VCF (Wenger et al., 2011; Wenger-Trayner & Wenger-Trayner, in press). The follow-up and final interviews were influenced by the cycles of reflection and action generated through the other data generations techniques and social encounters with participants (Bray et al., 2000). A copy of interview guides can be found in Appendices C, D, and E.

Focus groups. A focus group interview is considered a convenient way to generate data from several coaches in a relatively short window between games (Kamberlis & Dimitriadis, 2013). The use of focus group interviews encouraged coaches to comment and/or challenge each other's experiences (Kamberlis & Dimitriadis, 2013; Sparkes & Smith, 2013). Two focus groups were conducted; the first interview occurred during the second National Championships (66 minutes), facilitated by R1 and with the presence of six participant coaches. The second focus group was conducted online (61 minutes) with three CC technical leaders. Both focus groups utilized the same interview guide (Appendix E) and also an infographic with indicators of the health of the PLG until that moment (Appendix L).

Brief survey. An online survey was created using Survey Monkey as a starting point to examine the coaches' biographies (i.e., process of becoming a coach), coaching beliefs, and coaching practices. More specifically, the survey was comprised of seven questions from a brief scale to rate specific aspects of the online camp (e.g., content, format), to provide a practical application, and reflect on possible roadblocks (see Appendix C). In total, six surveys out of the eight online camps were sent (the two exceptions were the camps led by participant coaches) and

resulted in 52 responses. A link to the survey was posted on Basecamp thus accessible to all coaches. In addition to providing coaches with the opportunity to reflect on the content to which they were exposed, the surveys provided areas for additional probing during the follow-up interviews, the final interviews, and during the social gathering conversations with coaches.

Making Meaning

The making meaning process involved two data analysis strategies. The different sources of data generated were analyzed using interpretive analysis (Bray et al., 2000) and thematic analysis (Braun, Clarke, & Weate, 2016). Interpretive analysis, proposed by Bray and colleagues, was utilized to make sense of the reflective journal and dialogues between the first and third authors. Braun and colleagues' thematic analysis was employed to make sense of the data generated through interviews, focus groups, Basecamp, OGMs, online camps, and field notes.

The data analysis adopted a qualitative orientation to thematic analysis or “big Q” (Braun et al., 2016, p.192) which values a more provisional and contextualized way of understanding meaning. The interpretation of the data used Braun and colleagues' (2016) thematic analysis and Bray and colleagues' (2000) interpretive analysis. These two methods share a few similarities as both highlight the importance of the analysis' flexibility to interpret the data. For Braun and colleagues, a researcher must move back and forth through the six phases, as “Your themes do not simply ‘emerge.’ Instead, your analysis is produced through the intersection of your theoretical assumptions, disciplinary knowledge, research skills and experience, and the content of the data themselves. Analysis is an active process...” (Braun et al., 2016, p. 296). Moreover, for Bray et al., (2000) meaning is co-created in a non-linear process and starts even “at the early stages of planning the inquiry, during the cycles of action and reflection” (p. 89). Thus, the active process of engaging with co-researchers is highly valued in both approaches for data analysis. Likewise, both are flexible approaches to data collection. Braun and colleagues (2016) named a

few active choices researchers should state when using thematic analysis (i.e., semantic focus or latent focus, inductive or deductive theme development, epistemological choice). While the coding and theme development used latent and semantic elements, it was more focussed on the latter (Braun et al., 2016). For Braun and colleagues, metaphors, dialogues, and storytelling might be used in conjunction, and even the way researchers choose to report the inquiry is an opportunity to make sense of the data. An example of how the VCF (Wenger-Trayner & Wenger-Trayner, 2015) was used deductively is in the creation of the map of the landscape (see Articles 2, 3 and 4) in which the cycles of value creation identified the main themes, while an inductive approach allowed us chose to use the metaphor of travel guides and bridges to refer to influential people on the landscape and also the relevant structures pointed to by the participant coaches to their development.

The thematic analysis phases include (1) familiarizing, (2) general initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report (Braun et al., 2016). In sum, the phases proposed by Braun and are inclusive of the pre-data collection phase, when the researcher is selecting the participants, and what types of questions would provide the best data for answering the research questions. This way, familiarization with the data refers to every activity the researcher conducts that can lead to a better understanding of the participants or the context. For instance, if a researcher is the one conducting the interview, he is getting familiarized with the data; the same works if he is the one transcribing the interview recordings. Ultimately, the immersion in the data is key to be able to move through the phases. Thus, familiarizing stands for the process of immersing oneself in the data, reading, and rereading while making notes of potential meaning units. Generating initial codes refers to the process of identifying a feature of the data that appears interesting to the researcher (Braun et al., 2016). During the first two phases, the first author read through the

transcripts multiple times and began to inductively analyze the data looking for key words (e.g., training camps and competitions) that became codes. Searching for themes occurs when the transcription has been coded. It is the act of grouping codes into larger themes. The analysis of themes occurs on an on-going basis. During phases 3 to 5, through a process of layering the individual pathways over each other, the common patterns of the landscape emerged (e.g., camp and playground). The process of reviewing themes (fourth phase) happened as the themes were collapsed, separated, and even disregarded from the analysis. In phase 5, defining and naming themes, Braun et al. suggested the identification of the essence of each theme and how it fits into the overall study. During phases 5 and 6, the authors reviewed the themes deductively using both the landscape metaphor and the LoPs theoretical framework (Wenger-Trayner & Wenger-Trayner, 2015) to categorize the themes into three levels: overarching themes (e.g., higher order such as “landscape of origin”), themes (e.g., mid-level “AB curling hill”), and subthemes (e.g., lower level “coach developer hill”). This iterative process involved a back and forth between creating the figure (e.g., mapping the hills, creating the legend) and selecting the quotations which characterized phase 6, or writing the report. According to Bray et al. (2000), every opportunity the data is shared with any group of people, the reflection involved of telling a compelling story of the inquiry supports the meaning making process. The present study was presented on several occasions to a varied audience from coach developers at the Coaching Association of Canada, to coach development scholars, to disability sport coaches and sport administrators, and also, importantly, to the participant coaches.

A total of 615 single-spaced pages were uploaded to Nvivo (versions 11 and 12), a qualitative data analysis software, to facilitate the management and coding of the data (Merriam & Tisdell, 2016). The different pieces of data were treated differently. For instance, interviews and focus groups were audiotaped and transcribed verbatim, comments posted on Basecamp

were captured and transformed to PDF format and later analyzed as a regular transcription.

Finally, field notes and observations were scanned and uploaded as PDF files.

Trustworthiness and Validity

There is a debate within the literature regarding the choice of words and strategies used to increase the quality of qualitative research findings (Maxwell, 2013; Sparkes & Smith, 2013).

While Sparkes and Smith suggested the use of trustworthiness for research in sport, exercise, and health, Maxwell (2005, 2013) acknowledged the debate and used the term validity for the section that refers to strategies to judge qualitative research. Maxwell (2005) affirmed that validity should be a goal rather than a product. This research program was guided by a relativist approach to conceptualizing trustworthiness and validity in qualitative research (Burke, 2016). Burke (2016) proposed that validity should include open-ended characteristics that are internalized and act in the back-drop of the researchers' actions (Burke, 2016). The relativist approach contrasts with the concepts of transferability, confirmability, dependability, and credibility often used in qualitative studies as a check list to be verified at the end of the research process (Sparkes & Smith, 2013). Moreover, to illustrate how quality and rigour could be increased according to the relativist approach, Burke offered a parallel list to the concepts cited above including:

transparency, coherence of the research, the resonance, and the impact of the topic. Transparency includes the ongoing use of processes that shed light on the many research decisions being made (Burke, 2016). The processes this current dissertation made use of are the inclusion of an audit trail with the hundreds of pages from the data generated (e.g., transcriptions, observations, focus groups), the audit trail of the data analysis include the Nvivo files (with codes, themes, categories), and finally during the writing of the report the three authors were constantly reflecting on the most impactful way to convey the message (Burke, 2016; Sparkes & Smith, 2013). Coherence was defined as internal (how the parts of the interpretation fit together) or

external (how the findings fit against existing theories; Burke, 2016). Internal coherence was increased by our commitment to create composite vignettes with four coaches instead of just presenting the values detached from the participants' residence in the landscape. Additionally, the choice to write a series of articles to be published (or at least submitted) in the same journal refers to the researchers' personal preference to improve coherence as the audience of the selected journal might be particularly impacted by these articles. The three researchers' biographies encompass many years of qualitative research, coaching education, and the applied aspects of coaching and coach development. The expertise of the researchers was theoretical, methodological and practical; their contributions increased the transparency because they were involved in all stages of the project. This process also augmented the coherence in terms of the alignment of the study's purpose, methods, and findings. Nancy's vignette from Article 4 is presented (Appendix H) with footnotes included to shed light on the how the data analysis was integrated into the creative writing process in an effort to enhance the internal coherence, credibility, and resonance of the data representations and, more broadly, the research project. Finally, the ongoing engagement both online and face-to-face during competitions provided opportunities for R1 to structure the data generation as cited above. However, a crucial aspect was engaging with WC coaches, WC athletes, coaches and athletes' family members, curling club members, umpires, CC staff, and many other actors of the landscape. These interactions afforded many opportunities to build relationships, hear family anecdotes and jokes, and even to mourn the death of a PLG member. All of which impacted R1 in a substantial way since these participants became acquaintances from which grew the responsibility to rigorously portray the landscape with honesty and transparency.

Ethics

Ethical approval was granted by the Health Sciences and Science Research Ethics Board at the University of Ottawa in November 2015 (see Appendices F and G). Invitation emails were sent to CC (see Appendices I, and J). Informed consent was obtained from all participants (see Appendix K). Williamson and Prosser (2002, p. 589) proposed that three questions should be considered:

- If researcher and participants collaborate closely, how can confidentiality and anonymity be guaranteed?
- If action research is a ‘journey’ and ‘evolves’, how can informed consent be meaningful?
- As AR can have political consequences, how can the researcher avoid doing harm to the participants?

While a close collaborative relationship between researchers and participants was sought out to nurture a healthy learning environment, Williamson and Prosser (2002) pointed out that these types of relationships could be potential sources of political and ethical problems. Since the WC community is small, it would not be difficult for someone to identify the owner of a quote that provided the depth necessary. Therefore, even before the beginning of the data gathering, the first author and the participants engaged in conversations to clarify potential risks and agreed on implementation of some plans according to the suggestions of the ethics committee. Researchers and participants negotiated what types of data were shared, as well as to whom and how they would be shared. For instance, the first author would be the only one to have access to the raw data of individual interviews/interventions following the recommendations of anonymity and confidentiality. First, it was explained that the researchers could not protect their anonymity or

their confidentiality of what they choose to share on the online forums or during the discussions. Second, the first author engaged in an ethical code by which he discussed beforehand with the other authors that every time they would discuss individual interviews, they would not mention information that could disclose the participants' identity. Another example was the decision to not share the online group meetings on the website of the project. This decision was taken collaboratively to provide a safe environment for coaches to share their thoughts without being concerned that the material could be shared. However, the participants asked for online data (both coach and SSSM led) to be shared. Such a decision obliged another round of negotiation to keep their confidentiality and anonymity. In order to provide a safe place for those who wished to remain anonymous, all the questions a coach might have asked during an online camp would be directed to the first author and he would address the presenter. As the project evolved, many coaches started to become more comfortable with the boundaries and would forfeit their right to remain anonymous and would ask questions directly to the presenter, but a couple coaches would still send their questions to the first author. While this initiative was mainly due to ethical concerns, it proved to be a way to facilitate the interactions between the coaches and presenters as the self-presentation concerns would not be an impediment to their participation. To further enhance confidentiality in the published materials, the participants are identified by numbers and the demographic information is provided using a broad range. The participants also had access to the final quotations used in the Articles and had the opportunity to edit, delete and/or add any piece of information pertaining to them.

Chapter 5: Findings

Findings

The overall purpose of this doctoral research programme was to enhance the learning capability of the Canadian wheelchair curling coaches' landscape. To achieve this overall purpose, the study was divided in three phases (i.e., pre-intervention, framing, and assessment). The pre-intervention phase aimed at understanding the disability sport coaches' landscape; the framing phase aimed at building on the pre-intervention findings to frame a social learning space intervention for disability sport coaches; finally, the assessment phase looked at assessing the learning values created through the intervention. The Article 2 introduces the metaphor of a landscape to create a visual representation via a map that includes the major elements of the Canadian wheelchair curling coaches' landscape. The framing phase, as presented in Article 3, includes the process through which the researchers, coaches and Curling Canada technical leaders co-construct the social learning space intervention. Additionally, Article 3 built upon the considerations from the pre-intervention phase to report how the intervention managed the limitations of the landscape, prioritized meaningful learning, incorporated influential people, as well as produced reflections on the consequences of the lack of enabling conditions. Article 4 expands the landscape metaphor and presents four composite vignettes of the participants according to their wheelchair curling coaching local of residencies within the landscape. While the three articles below represent the bulk of the findings, not all the data made it into article format. The first section of the findings starts with a contextualization of curling generally and in Canada.

Curling Context

The curling context is presented in an effort to situate the reader within this complex system. We start with a brief history of curling and how the sport has been traditionally dominated by Canadian athletes. Next, we contextualize the curling model in Canada. While this dissertation is not focused on the history of the sport, able-bodied curling traditions remain important today and influence wheelchair curling (WC), especially as many of its coaches come from able-bodied curling. The origin of WC globally is followed by the Canadian WC context, as we contrast athletes' pathways for able-bodied and wheelchair curlers. Then, we present the situation for coaches and technical leaders. Finally, we showcase how Curling Canada has supported a number of research projects and innovative initiatives.

Curling

The history of curling originates in Scotland in the 16th century. The country is also the home of the World Curling Federation headquarters (WCF, 2019), the sport's international governing body and leader of its 61 member nations. The first recognized curling clubs were created in the 19th century as the immigration of Scots across the globe expanded the sport mainly to countries with cold weather climates, such as Norway, USA, and Canada (WCF, 2019). Despite the presence of curling at the very first Winter Olympic Games in 1924 in Chamonix, and later as a demonstration sport in the 1932 Games in Lake Placid, it would endure a 56-year hiatus from the Games due a lack of international representation. The efforts from the six nations heading the WCF resulted in the sport being re-instated as a demonstration sport in both the 1988 Winter Olympic Games in Calgary and the 1992 Games in Albertville. Curling became part of the official medal count for men's and women's team disciplines at the 1998 Games in Nagano. Outside of the Olympic movement, curling has a rich history of international competition with the first men's world curling championships being hosted in Perth in 1959, and

women's world championships hosted, also in Perth, in 1979. In the history of the two championships, Canada has been dominant, winning 92 of the 102 medals awarded including 53 gold medals. Canada has equally been dominant at the Olympic Games, winning 10 of a possible 12 medals (five gold, three silver, and two bronze). Recently, a third discipline, mixed doubles, has been added to the sport (inaugural event at the World Championships in 2015 and Olympic event in 2018) with Canada continuing to showcase its competitive abilities, winning gold at the demonstration event at the Olympic Games in PyeongChang (WCF, 2019).

Curling in Canada

In Canada, curling is played from “coast to coast to coast” since the first curling club (and recognized Canadian sport club) was formed in Montreal in 1807 (Curling Canada, 2019). One explanation for such an influence on the country is the social aspect of the game and how it is prevalent in the rural communities of Canada (Leipert, Scruby, & Meagher-Stewart, 2015). Curling Canada is the national governing body with 14 provincial/territorial member associations. There are an estimated 1,100 clubs that host upwards of 1.5 million curlers annually (Curling Canada, 2019; Potwarka & Wilson, 2015). Curling Canada and its member associations are responsible for the organization of Canadian championships for men, women, juniors (U20), seniors (over 50), mixed, and wheelchair curling. Moreover, Curling Canada's (2019) mission is “to encourage and facilitate the growth and development of curling in cooperation with [its] network of affiliates.”

In order to fulfill its mission statement, Curling Canada supports the organization of the provincial championships which are the initial stages of the qualifying pathway for the Olympic Games. The able-bodied curling model is based on a four-year cycle where teams compete to represent the country at the Olympic Games. Each year, hundreds of teams, both men and women, take part in their provincial/territorial playdowns aspiring to represent their provinces at

the national championships. To represent Canada at the Olympic Games, teams have to win at the Canadian Olympic Trials called “Roar of the Rings”. Moreover, the team who represents Canada at the world championships is not necessarily the number one team in the Canadian Team Ranking System (CTRS), but the winner of the Canadian national championship. To provide insight of the level of competition and depth of Canadian talent, in 2017-2018 season, eight men’s teams and seven women’s teams were ranked in the top ten in the Order of Merit (WCF world rankings) and of those teams, three men’s and five women’s teams did not advance beyond their provincial/territorial playoffs and therefore did not qualify to participate in the Canadian national championships – despite being among the top teams in the world. Contained within that sample were the reigning women’s Olympic champions, who lost during the semi-final of their provincial/territorial championship. In addition to the men’s, women’s, and mixed double disciplines, Curling Canada has recognized the value of parasport by promoting and organizing a few adapted versions of curling, including visually impaired curling, stick curling, and wheelchair curling (Curling Canada, 2019), all of which involve a Canadian national championship organized and funded by Curling Canada.

Wheelchair Curling

The sport of wheelchair curling presents many similarities with traditional curling; it is played on the same field of play (i.e., same ice surface and dimensions) with the same rocks (and number of rocks), number of participants and number of ends, and with a series of the same generic rules that govern play. The major differences are that rocks are thrown from a stationary wheelchair and there is no sweeping. Although, according to the official rules, rocks may be thrown by hand, the vast majority of athletes use a stick with a handle to push the rocks from a stationary position while the athlete who is throwing is being “anchored” by a teammate positioned behind him/her and holding his/her wheelchair (Curling Canada, 2019). Wheelchair

curling does not require any type of special wheelchairs or tires. It is a mixed gender sport and therefore teams have to play with at least one male or female on ice at all times. Eligibility is limited to athletes who have a physical impairment in the lower half of their body, including spinal-cord injuries, cerebral palsy, multiple sclerosis, and double-leg amputation (WCF, 2019).

With respect to the sport's history, wheelchair curling originated in the 1990s in Europe. The sport arrived in North America in 2002, the same year Switzerland hosted and won the first World Wheelchair Curling Championship. Despite the lack of experience and opportunity to prepare, Canada was the runner-up. The sport was granted status into the Winter Paralympic Games by the International Paralympic Committee in Turin 2006. The sport is now practised in 25 different countries (WCF, 2019). When examined more closely, similar to able-bodied curling, Canada has achieved tremendous success internationally. Since the sport was introduced to the Paralympic program, Canadians have dominated the podium, winning four medals at four Games, including three gold medals (2006, 2010, 2014) and one bronze (2018). At the world championships, the Canadian program is the most decorated among nations, having won three gold medals (2009, 2011, 2013), one silver (2002), and a bronze (2004) over the 13 events that have occurred to date.

Wheelchair Curling in Canada

In Canada, only 114 wheelchair curlers were registered in their member associations in 2019. While WC *could* be played from coast to coast to coast like its able-bodied counterpart, it lacks participation numbers and accessibility. Based on the list of provincial/territorial member associations, only nine of them are able to send a representative to the national championship due to a lack of local, regional, and provincial participation. Despite the similarities with curling as presented above, making it possible to share the same training/competition structures, accessible curling clubs are rare. Information about current accessibility of clubs nationwide is not easily

trackable. However, we can gain some insight into these numbers using Ontario as a reference, given that their accessibility data is available online. The province of Ontario had a population of 14,490,207 habitants on April 1, 2019, which represents around 38% of the Canadian population (Ontario Ministry of Finance, 2019). The Ontario Curling Council, the provincial sport governing body, has approximately 250 member clubs (OCC, 2019a) that provide services for 45.6% of all Canadian curlers (Potwarka & Wilson, 2015). Among those member clubs, 15 were identified as wheelchair accessible and eight offer WC programs (OCC, 2018, 2019b). It is the provincial organization's responsibility, along with its affiliates, to sanction and operate around 50 provincial championships encompassing different ages, stages, and abilities (OCC, 2019a). Two of those championships are dedicated to wheelchair curling.

Athlete development pathways. Another noteworthy distinction between WC and curling in Canada relates to its athlete development pathway and support structures. Within WC, it is not uncommon for athletes to pick up the sport later in life and reach competitive levels, which is consistent with most parasports (e.g., DePauw & Gavron, 2005). For example, Mark Ideson (current skip of Canada's national team) started playing WC three years after the helicopter accident that resulted in his impairment in 2007 (CPC, 2018). Inspired by a Canadian Olympian competing at the 2010 Games in Vancouver, Ideson started playing the sport and progressed rapidly and was selected as the alternate for the team that won a gold medal at the 2014 Winter Paralympics in Sochi. Only four years later he would play a central role as the skip for the bronze medal winning Canadian team in PyeongChang. While Ideson seems to be an extreme case of an athlete's expedited movement through the developmental pathway to competing at the high-performance level, out of all 114 wheelchair curling athletes identified across Canada, almost half of them (56 athletes) competed at the 2019 Canadian Wheelchair

Curling Championship – Canada's highest level of competition for WC. See the findings of Article 2 for more details about the WC landscape.

In the competitive stream, the WC athletes participating at the National Championship are mature adults. The average age of the athletes competing at the national championship was 56 years, while the Canadian wheelchair team that took the bronze in PyeongChang was only marginally younger, averaging 54.3 years old. In curling, the pathways are well established and involve decades in the sport to reach the highest levels of competition. For instance, the athletes who skipped for Canada for the men's and women's teams started playing the sport at a very young age: Kevin Koe age six (Heroux, 2018), Rachel Homan when she was five years-old (Wyman, 2018), and the average age of the teams they led was 35.3 years old for the men's and 31 years old for the women's team. If in curling the vast majority of able-bodied participants are in the community sport stream and only the very top athletes are participating at provincial/territorial and national competitions, almost half of the wheelchair curlers are taking part of national championships and the separation between the community sport stream and the competition stream is very unclear.

Coaching and technical leadership. Up until now, we mentioned a few differences between the able-bodied and WC programs. One similarity between programs is the effort of the Curling Canada directors to keep the technical leadership consistent. Different to other parasport organizations that work independently from their able-bodied counterparts, Curling Canada makes efforts to devote its attention to both programs. This effort to effectively support curlers, wheelchair users or not, starts with having the same High Performance Director (HPD), Gerry Peckham, who oversees both programs. Peckham has been responsible for recruiting able-bodied coaches to run the HP WC program since its creation. In Article 2, there are mentions of how Peckham shaped the coaching landscape with coach developers who would be able to nurture the

(at the time) new Paralympic sport. The programs also favor continuity as only three head coaches have worked with the WC national team program. For instance, the current head coach of the WC national team program was the assistant coach and the team manager at the first Paralympic Games in which wheelchair curlers participated. Additionally, the sport medicine and sport sciences service providers like the nutritionist, strength and conditioning coach, mental performance consultant, among others, work with both the able-bodied and WC national programs. Article 1 provides a deeper analysis of coach education in Canada. Although curling is among the National Coaching Certification Program partner sports that developed sport-specific training for coaches of athletes with disabilities, the module is not recognized for certification purposes. Further information on the usefulness of the WC module is presented on Article 3.

Research and Innovation

To accomplish the Curling Canada mission of facilitating the growth and development of the sport, the NSO's leadership has engaged in many collaborations with researchers and academic institutions. Upon conducting a literature review of the context and a complementing dialogue with the HPD, many examples of studies conducted in partnership with Curling Canada were published in peer reviewed outlets on a variety of topics, including coaches' use of psychological skills training strategies (Paquette & Sullivan, 2012), perfectionism in HP athletes (e.g., Lizmore, Dunn, & Dunn, 2016, 2018), optimal group functioning (Collins & Durand-Bush, 2010, 2014, 2016, 2018), strategy and decision making (e.g., Stewart & Hall, 2016; Westlund Stewart & Hall, 2017; Westlund Stewart, Kouali, & Hall, 2017), and curling in rural communities (e.g., Leipert et al., 2015). Specific to WC, researchers looked at the biomechanical modeling of the throw (Laschowski & McPhee, 2016; Laschowski, Mehrabi, & McPhee, 2017, 2018) and technical aspects of the game (Baudin & Krepps, 2010). With such a tradition of building partnerships with researchers to conduct studies within curling, there has yet to be

research conducted on WC outside the scope of the technical aspects and equipment. Thus, Curling Canada welcomed the first author's efforts to create a social learning space intervention, or as the participants called it, a peer learning group with their WC coaches.

Article 2

Mapping Canadian Wheelchair Curling Coaches' Development: A Landscape Metaphor for a Systems Approach

Duarte, T., Culver, D., & Paquette, K. (2020). Mapping Canadian wheelchair curling coaches' development: A landscape metaphor for a systems approach. *The International Sport Coaching Journal*, 1-29.

Abstract

The present paper addresses the pre-intervention phase of a larger project aimed at enhancing the learning capability of the Canadian wheelchair curling coaches' landscape. To understand the learning leverage features and learning barriers of this landscape, a mapping exercise was conducted. We interviewed 16 people using a semi-structured interview guide. The thematic analysis and a landscape metaphor resulted in a map illustrating the main features of the landscape and where the learning potential might be. Our findings suggest that geographical isolation, the high costs associated with coach training, and the low number of athletes are all barriers to coaches' learning. Therefore, with the information gleaned from this phase, an intervention for these coaches should be designed to prioritize meaningful learning opportunities, incorporate influential people noted by coaches, and leverage opportunities at training camps and competitions in order to mitigate the barriers identified. The landscape view allows for a systems approach that considers the potential of involving the different levels of the sport system in order to best serve the learning needs of coaches. Rather than focus on individual coach learning, research is needed to better understand how the landscape approach can build learning capability within sport organizations.

Key words: *Social learning, disability sport, landscapes of practice*

Wenger's (1998, 2010) social learning theory has gained a lot of attention mainly due to the influential concept of communities of practice (CoPs). In recent developments of social learning theory, Wenger (2010) defined a CoP as a simple social learning space, and landscapes of practice (LoPs) as the interrelations of multiple social learning spaces, such as CoPs and networks. For Wenger, CoPs and LoPs form a broader conceptual framework reflecting "a perspective that locates learning, not in the head [of the learner] or outside it, but in the relationship between the person and the world" (Wenger, 2010, p. 178). Wenger made use of the metaphor of a 'journey through a landscape' composed of various interrelated practices, their boundaries, and peripheries. The body of knowledge is not only the curriculum of a profession, but our ability to access the knowledge produced in practice and shaped in such landscapes (Wenger, 2010). Similarly, in sport, governments are actively engaged in developing resources and support strategies to help athletes and coaches navigate various pathways. For instance, the Government of Canada has linked National Sport Organization (NSO) funding to specific Long-Term Athlete Development plans (LTAD), as well as requiring pathways for coaches that are aligned with the Coaching Association of Canada's framework (Legg & McClure, 2017).

To expand the journey through a landscape metaphor, for nearly four decades, researchers have investigated coaches' pathways from a variety of perspectives (Christensen, 2013). For example, some researchers have focussed on specific sections of coaches' journeys (e.g., prior to becoming a coach and both early and late coaching careers, Nash & Sproule, 2011); other researchers examined prominent crossroads or learning opportunities (e.g., different types of coach education programs, Trudel, Gilbert, & Werthner, 2010); some have explored the use of different learning interventions to support coaches' journeys at the individual level (Stoszkowski & Collins, 2017; Taylor, Werthner, Culver, & Callary, 2015), small group level (i.e., other travelers on a community, Culver & Trudel, 2008), and at the organizational level

(e.g., Deek, Werthner, Paquette, & Culver, 2013; Paquette & Trudel, 2018). Finally, there has been significant research interest in the various individuals who support coaches' learning along their journey (other travelers and travel guides; Cushion, Armour, & Jones, 2003; Erickson, Côté, Fraser-Thomas, 2007). If we look at the above research through the lens of the landscape metaphor, researchers have spent considerable time exploring the various pathways, crossroads, and fellow travellers involved in coaches' learning and development, regularly referred to by coaching scholars as a lifelong journey (Duarte & Culver, 2014; Trudel et al., 2010).

While the majority of the research highlighted above has been conducted in able-bodied (AB) sport, the parasport landscape has remained relatively unexplored (DePauw & Gavron, 2005; McMaster, Culver, & Werthner, 2012). Coaches' journeys in parasport have been shown to be largely serendipitous (Kohe & Peters, 2017). Their development has occurred not only through their personal willingness to learn, but also due to the infrastructure found in their landscapes, including their networks, teams, and organizational support (Peters & Kohe, 2017). Some of the barriers to their development included the lack of learning opportunities, such as coaching courses and workshops (e.g., Cregan, Bloom, & Reid, 2007; Tawse, Bloom, Sabiston, & Reid, 2012), the lack of peers involved in the same sport (Fairhurst, Bloom, & Harvey, 2017), and the scarcity of competitions (Silva, 2017). Interestingly, the literature suggests that some coaches are using different routes to avoid these barriers through social learning. For instance, mentors (e.g., Fairhurst et al., 2017) could be considered as travel guides leading the way for those navigating the landscape. Moreover, seminars and competitions can be viewed as learning crossroads along the way where coaches meet other travellers who become part of their networks to exchange information (e.g., Douglas, Falcao, & Bloom, 2018; Duarte & Culver, 2014).

Although many of the above elements can fit tidily into the landscape analogy, at this point, this is only theoretically supported given that to date, no research has specifically used a

LoP approach to study coach learning, neither in AB sport nor parasport. Lyle (2018) made an urgent call to emphasize intervention strategies that are context relevant and that take into consideration the particular sport system (i.e., the landscape in which coaching is situated). Learning interventions that are designed to influence a coaching landscape are guided by different objectives than those targeting individual coaches (e.g., coach education) and small groups of coaches (e.g., communities of practice). With a landscape approach comes an intention to maximize the learning capability of the landscape (Wenger, 2010). In line with Wenger, the present paper is the first part of a larger project that aimed to enhance the learning capability of the Canadian wheelchair curling coaches' landscape. Whereas understanding the individual learner or characteristics and needs of the community are starting points for interventions at the individual and small group levels, an initial mapping of the landscape is critical for LoP interventions. This mapping exercise, being a pre-intervention phase in the larger study, is the first step in building learning capability across the landscape. The exercise allows us to understand which areas to focus on to enhance or leverage existing learning structures. As such, the purpose of this paper is to map the Canadian wheelchair curling coaches' landscape to understand both its learning leverage features and learning barriers.

Methods

This research is situated in the fifth inquiry paradigm, participatory research, which subscribes to an ontology that reality is participative (subjective-objective) or, in other words, created by the mind and the surrounding environment (Lincoln, Lynham, & Guba, 2011). A critical subjectivity epistemology guided this inquiry and a collaborative inquiry methodology was employed; we conducted research *with* people (Heron, 1996). The paradigm, ontology, epistemology, and methodology were deliberately aligned. The third author played a vital role in the selection of the sport. While he was pursuing a PhD at the same institution as the first two

authors (one a student and the other a faculty member), he was also working as the Sport Science and Sport Medicine (SSSM) Lead for Curling Canada (CC), Canada's national sport federation for curling. Aware of the proposed project, he approached the first author to conduct the research with the wheelchair curling (WC) program. The first author sent the invitation letter to CC's High-Performance Director (HPD) who authorized access to the coaches. The first author travelled to the 2016 Canadian Wheelchair Curling National Championships. The aim of the trip was to present the research proposal to the coaches attending the competition. CC organized for one of the National Team Program (NTP) coaches to help coordinate and promote a coach meeting (i.e., social gathering) during the event where coaches were invited to join the collaborative study. During the next few days, 11 coaches who expressed interest in participating in the study were interviewed face-to-face. Some of the participating coaches referred other coaches to join the study (i.e., snowball sampling, Sparkes & Smith, 2013); these additional coaches were subsequently interviewed online.

Participants

A total of 16 participants were interviewed for this study (2 CC technical leaders, 14 coaches). The CC technical leaders included the long-standing HPD (male, 67 years old) and the SSSM Lead for the wheelchair National Team Program, also third author (male, 34 years old). Among the group of coaches, there were eight males and six females, ranging in age from 56 to 68 years old ($M = 59.5$); all of whom worked at a regional/provincial level. Their number of years coaching AB curling varied from one coach having never coached AB curlers to a few with 25 years of experience ($M = 19.5$). The same wide range of years coaching WC was found with one having just started coaching to a few others with 12 years dedicated to WC ($M = 6.5$). Two coaches worked exclusively with wheelchair curlers. Most coaches participated as curlers, mainly recreationally, with two coaches being wheelchair curlers themselves. Five of the coaches

were coach developers, delivering coach education modules. The coaches came from seven provinces and from 12 cities. Due to the snowball sampling, Ontario was the most represented province with nine participants; this number is representative of the quantity of WC teams across the country. According to CC, there are no more than 30 active WC coaches in Canada. The heterogeneity of the participants in the study supported the landscape approach (Wenger-Trayner & Wenger-Trayner, 2015), since it added multilayered perspectives from many stakeholders in the field.

Data Gathering and Analysis

To map the WC coaching landscape, two data gathering techniques were utilized: semi-structured interviews and participant observation. Both techniques had the goal of understanding the (a) individual learners (i.e., landscape participants), (b) predominant features of the landscape, and (c) learning structures and opportunities within the landscape. First, semi-structured interviews were conducted with each participant ($n = 16$) and audiotaped ($R = 41-73$ min, $M = 58$ min). For the CC technical leaders, the interviews focussed on understanding the NTP, the sport, its culture and its intricacies (e.g., “How does the organization provide learning opportunities for coaches?”). For the coaches, the interviews focussed on understanding the coaches’ journeys to and within the WC landscape (e.g., “Can you tell me how you started coaching?”, “Can you describe where you go to continue your learning as a WC coach?”). Next, the first author engaged in the role of a ‘participant as observer’ (Sparkes & Smith, 2013) and kept a researcher journal to document strategies such as direct observations and non-recorded conversations. Direct observations typically took place at competitions, whereas the non-recorded conversations occurred on an ongoing basis throughout the study in different ways (e.g., by phone, in-person). Ethics approval was granted by the university’s research ethics committee and informed consent was obtained from all participants.

Data analysis was guided by Braun, Clarke, and Weate's (2016) six-phases for interpreting qualitative data which was concurrently organized using the software Nvivo 11. All the interviews were audiotaped and transcribed verbatim, resulting in 211 double-spaced pages of transcripts. The thematic analysis phases include (1) familiarizing, (2) general initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report. During the first two phases, the first author read through the transcripts multiple times and began to inductively analyze the data looking for key words (e.g., training camps and competitions) that became codes. During phases 3 to 5, through a process of layering the individual pathways over each other, the common patterns of the landscape emerged (e.g., camp and playground). During phases 5 and 6, the authors reviewed the themes deductively using both the landscape metaphor and the LoPs theoretical framework (Wenger-Trayner & Wenger-Trayner, 2015) to categorize the themes into three levels: overarching themes (e.g., higher order such as "landscape of origin"), themes (e.g., mid-level "AB curling hill"), and subthemes (e.g., lower level "coach developer hill"). This iterative process involved a back and forth between crafting the figure (e.g., mapping the hills, creating the legend) and selecting the quotations. Thus, the creation of the figure was an integral part of the analysis, which involved continuous and extensive conversations between the first and third authors, with the second author serving as a critical friend.

Validity

The study was guided by a relativist approach to conceptualizing validity in qualitative research (Burke, 2016). The authors included the following criteria to enhance quality and rigour (Burke, 2016): transparency, coherence of the research, and the resonance and impact of the topic. For transparency, the second and third authors worked as critical friends (Burke, 2016; Sparkes & Smith, 2013). The second author is a renowned researcher specializing in qualitative

research, social learning, and coaching. The third author is familiar with the applied context as he was responsible for the HP WC program for the year of 2016 during which the study occurred, and he also has a strong background in qualitative research. The expertise of the researchers was theoretical, methodological, and practical, and their contributions increased the transparency because they were involved in all stages of the project. This engagement is exemplified in the many hours dedicated to creating Figure 1. This process also augmented the coherence in terms of the alignment of the study's purpose, methods, and findings. Because the third author could have a potential power imbalance with some of the coach-participants, the authors agreed on an ethical code (Williamson & Prosser, 2002). For instance, the third author did not have access to the raw data, and the first author was always cautious with how the quotations were discussed to avoid a breach of confidentiality. This allowed the owners of the quotes to remain anonymous. To further enhance confidentiality, the participants are identified with initials not linked to their names, and in some cases the gender of a coach was changed in the text. Finally, the participants had access to the final quotations used in the paper and had the opportunity to edit, delete and/or add any piece of information pertaining to them.

Findings

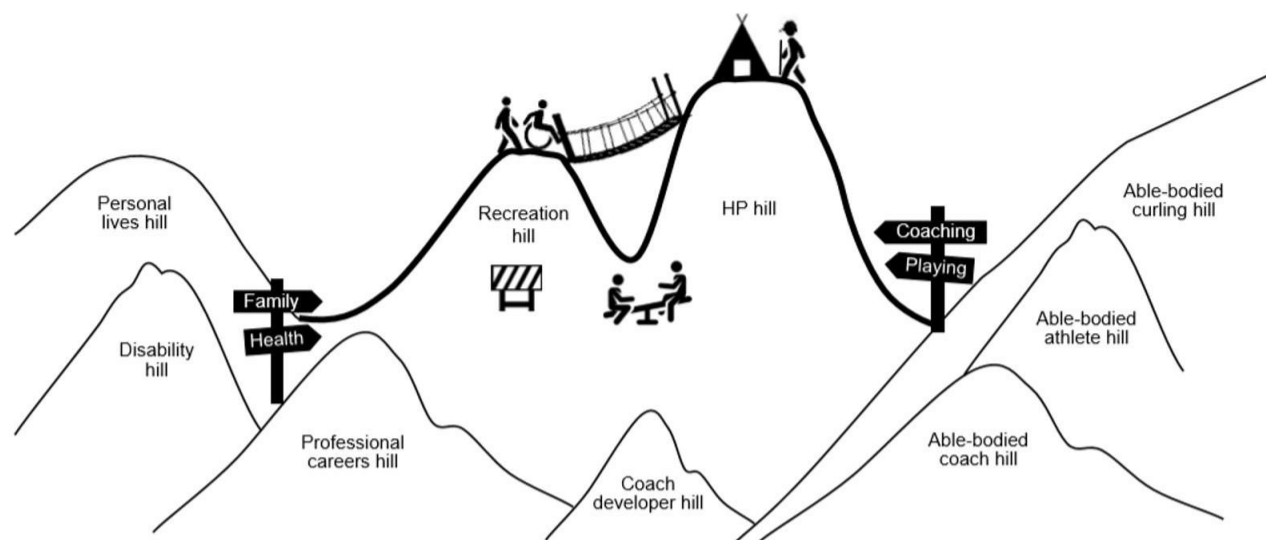
Figure 1 is at the core of the findings and presents a map of the WC landscape and an approximation of the surrounding environment. Various categories of features are identified in the table within the figure, including: (a) landscapes of origin, (b) trailheads, (c) travellers and travel guides, (d) camps and playgrounds, and (e) bridges and barriers. The features presented in the legend are the result of our thematic analysis and will be expanded below. The order of the hills is not representative of how the coaches navigated the landscape. While some of the coaches have crossed all of the hills through their life journeys, others have only navigated a couple of hills. Given the abstract nature of LoPs and the idiosyncratic pathways of coaches,

Figure 1 is not intended to cover all the details of any individual journey. Rather, the map aims to act as a reference tool to guide our understanding of the WC landscape based on the most prominent pathways observed during the data analysis; this includes the common resources and features utilized by the individual participants.

To complement Figure 1, we created a composite vignette of a participant's experience using real quotes from various participants in this study (Ely, Vinz, Downing, & Anzul, 1997). The vignette allows the reader to visualize a coach pathway through the landscape with the most prevalent themes, while illustrating how the thematic analysis guided the creation of the map.

I became a coach because of my children (Personal lives hill). In the summer time, I would coach softball, and in the wintertime, I coached curling (AB coach hill). I played many sports recreationally and curled competitively at club bonspiels (AB athlete hill). As I got more involved in the sport, I took my coach certification and later was invited to become a coach developer (Coach developer hill). As my kids grew up and stopped playing the game, I kept up my involvement with the sport in many ways. My profession got me into disability sport, because I am a physical therapist (Health trailhead and Professional career hill). I connected with a wheelchair curling team that had just started to play and became their coach. It was an interesting mix. I had three Paralympians on my team; then one was a swimmer, so some sport background (WC recreation hill and WC high-performance [HP] hill). Although we live far from another team which makes it hard to practice as a team (Barrier), we won the Provincial's and qualified for the National Championships (Playground). One of my athletes became NTP carded and had access to many training camps (Camps). Since then, every time I have a question, I connect with the NTP coaches (Travel Guides).

Figure 1: The Landscape of Canadian Wheelchair Curling



Symbol	Element	Definition
	Landscapes of origin	Hills surrounding the WC landscape; represent coaches' experiences before entering the WC
	Barriers	Coaches who want to develop themselves have to overcome the geographical and funding barriers
	Trailheads	Factors connected to coaches' biographies that lead them to WC landscape
	Travellers	Coach-participants
	Travel guides	Influential people across the landscape often accessed for guidance
	Bridge	Some coaches utilized the camps and playground to bridge the gap caused by the barriers
	Camps	Training camps organized by NSO or by the provincial organization
	Playground	Competitions and events where athletes can play
	WC landscape	Includes recreational and high-performance hills

A detailed account of our thematic analysis is presented in the following section, where we individually portray each feature of Figure 1, supported by the words of the participants.

Landscapes of Origin

The coaches' journeys started years ago as they navigated within different 'hills' that eventually led them to WC. During the interviews, four major overlapping hills were identified as presented in Figure 1: (a) personal lives, (b) disability, (c) professional careers, and (d) AB curling.

Personal lives hill. Although their journeys were idiosyncratic, many coaches pointed out the involvement of their family members in sport as a major motivation to start coaching. The beginning of a participant's pathway is symbolized on the map by an arrow sign representing a 'trailhead' (see Figure 1). The 'family' is the first major trailhead as many participants had coached their children. As C9 mentioned, "My oldest daughter curled as a junior on a competitive team... they were looking for another coach and I think my daughter at the time probably would have preferred to have a non-parent [but] non-parents are hard to find to volunteer." A few coaches had personal experiences related to family members with disabilities; thus, these two hills, personal lives and disability, share a boundary. For C6, "My son-in-law lives in a wheelchair, coaching is a way to stay connected with him". Therefore, their involvement with sports (for people with disabilities or AB) is also related to the desire to contribute to their family experiences and their community. Interestingly, the family was a trailhead for them to start coaching (enter the AB hill) and, for a few, to enter the WC landscape. However, family was not necessarily a factor to keep them coaching since only one of them still coaches a family member.

Disability hill. Two major subthemes were identified as the most prominent opportunities for coaches to enter into the WC landscape. First, some coaches are wheelchair

users themselves; two coaches acquired a disability later in life, while one had lived in a wheelchair for half a year prior to the time of this study. C16 mentioned, “Five years ago I had a surgery that didn’t go very well and I ended up in a wheelchair.... I hadn’t curled up to that point in my life, I had always wanted to, and I never had time.” The second notable subtheme of this hill is identified in the landscape as rewarding experiences with parasport, as a few coaches described the enjoyment they experienced working within this context. In C2’s words, “I really enjoy working with athletes with disabilities, because you get to see the biggest reward.” C13’s experience portrays the deep emotions associated with parasport coaching:

It was my first time dealing with people with disabilities, other than filing sales forms....

It was just phenomenal! I got to the end of the week, when I got into the bus to say goodbye to them, most of them were men and young men and a lot of them had tears in their eyes and I had too... maybe that’s how I am going to use my coaching, with someone who needs help.

Professional career hill. The coaches’ professional careers is the third hill in this landscape of origin. These experiences influence how the coaches became engaged in wheelchair curling. C1 recounted, “our wheelchair curling coaches tend to be previous teachers, business people, workers, you know; [they have] a broader experience than just sport, with a lot of background.” The careers with the biggest influence on coaching within the WC landscape are the ones related to health such as; nursing, physical therapy, and in one case working at a wheelchair factory. Resultantly, ‘health’ is the second identified trailhead (sign legend) leading into the WC landscape (see Figure 1). Coaches who worked in health fields have an inherent understanding of disability, both inside and outside the curling rink. Such knowledge allowed these individuals to effectively navigate the WC landscape. C1 explained “I am a retired nurse

with a Master's Degree in nursing and in some ways, coaching is just a continuation of the type of work and the skills I used when I was a nurse."

AB curling hill. It is worth noting that, given the relative size of the AB curling hill compared to the WC landscape (e.g., number of participants, competitions, clubs, international audience, media exposure), only the portion that relates to the WC landscape is depicted in Figure 1. The AB curling hill is represented by three subthemes or smaller hills (i.e., AB athlete, AB coach, and coach developer). 'Playing' and 'coaching' are trailheads (see Figure 1). Within the AB athlete hill, almost all of the coaches curl at least recreationally, with a few playing competitively at the regional level. The AB coach subtheme illustrates that participants have a wide range of clientele including different age groups (i.e., youth, junior, and adults) with different goals (i.e., recreational and competitive). Many of the coaches had also experienced coaching both genders as well as other diverse groups. The broad experience found in the AB curling hill led many of the participant coaches to bounce ideas off others in the AB curling hill, whether they were AB world champion curlers or club coaches. For the latter, C2 said, "Every other coach is sort of my mentor. I can learn a little bit off him and what he has done with his team."

The coach developer hill emerged unexpectedly as almost one third of the participant coaches are learning facilitators (i.e., coach developers) who train other coaches during coach education courses, and one coach participant is a master learning facilitator, all within the AB context. According to C1, "As a master learning facilitator I train learning facilitators and they do the [NCCP] workshops... you always learn something when you teach these workshops." It should be noted that for many of these coaches, their entry into the WC landscape was not accidental, but rather by design. Due to their roles as coach developers and other relevant biographical characteristics (e.g., passion for the sport, age, professional career) they were

handpicked by trailblazers from different provincial organizations, or by the long-standing HPD of CC, a worldwide pioneer within the WC landscape. C10 commented, “I am a coach facilitator for the [Provincial] Association and I am a HP coach... too, and one day I was approached through the association to see if I would train with a wheelchair curler.”

Wheelchair Curling Landscape

The WC landscape is young. Since 2002, a total of 12 Wheelchair Curling World Championships were held with Canada participating in every edition. The Wheelchair Curling National Championships started in 2004, while the Canadian NTP was created during the 2005-06 season in preparation for the sport’s debut at the 2006 Paralympic Games. Once the coaches entered the WC landscape, their journeys began to share similar pathways. The notable features contained within the map of the WC landscape include (a) the two hills (i.e., recreation hill and HP hill), (b) the influential people along the way (i.e., travellers and travel guides), (c) notable learning crossroads (i.e., camps and playground), and (d) learning infrastructure (i.e., bridge) and the barriers presented to it.

Recreation and HP hills. As illustrated in Figure 1, there are many similarities between these two hills. First, the width of the recreation hill is nearly as wide as the HP hill, this because there are approximately 75 wheelchair curlers across the country. For instance, at the National Championships, 10 provincial teams with at least four athletes played for the title. Thus, almost half of the athletes have competed at the national level. C9 exemplifies this subtheme: “We have about 10 teams [at the Nationals], there would be seven teams that probably came because they were the only team in their province.” Second, the summit of the recreation hill is nearly as high as that of the HP hill, given the sometimes marginal differences in performance between top end recreational athletes and their HP counterparts. It is not uncommon for athletes on the recreational hill one year to be invited to the NTP atop of the HP hill the following year. Third,

almost a third of the total WC athletes have engaged in some capacity with the HP hill. These engagements occurred because the major events in Canada are open to both national teams and recreational teams looking for opportunities to play or compete. Since Canada is a highly regarded curling nation, many national teams make the trip to play at these competitions represented as the playground on Figure 1. Moreover, nearly a third of athletes attended NTP training camps led by national level coaches and SSSM providers. Some of the coaches who were at the national championships referred to their athletes as recreational athletes while other coaches were adamant they were coaching HP athletes. Nevertheless, many of the coaches work with athletes who have goals to either represent Canada at international competitions and/or who are trying to make the national team.

Within the HP hill the NTP comprises around 14 carded athletes. The carded athletes are invited to attend NTP training camps and go through the selection process to make the final list of five athletes who will represent the country at each specific major international competition such as the Paralympics or World Championships. In order to provide competitive opportunities to more of its top curlers, sometimes the NTP will send two Canadian teams to lesser international competitions held in Canada or nearby. Moreover, many of the HP athletes have competed internationally in other parasports. For instance, C8 exemplifies the competitive profile of the athletes: “When I first got involved, the first time around, of the four players that I had, all had competed internationally for Canada in other [para]sports”. The majority of the coaches needed to adapt their coaching to a mix of goals, having both competitive athletes and recreational participants on their teams.

Travellers and travel guides. This feature comprised influential people on the map. Travellers include peers (i.e., others WC coaches) and athletes. As the coaches started their journeys working with wheelchair curlers, they started realizing the need to adapt what they

knew to their new surroundings, exploring new ways of coaching and thus pioneering new trails in the landscape. As C7 described, the experience with AB curling supported his learning as he tried to carry his own experiences from AB curling to WC: “I was trying to incorporate the strategy from an AB curler into wheelchair curling, and that sometimes is a bit of a challenge, because a lot of these people never really curled before.” Although, they needed to carve new ways, they were not travelling alone. Accessing their peer coaches was a preferred way in which coaches navigated the landscape since almost every coach worked collaboratively with at least one wheelchair coach, in their club or their province. According to C15:

The friendships and the connections that I’ve made in the last five years kind of enable me to get into the little circle. The few times we’ve been participating, I’ve found 99% of the coaches to be absolutely sharing and wonderful to deal with.

Travel guides included NTP coaches and SSSM providers. All of the coaches mentioned learning from more experienced coaches within their journeys. In some cases, the same guides were cited by almost half of the coaches due to their pioneering role and/or expertise in WC. For instance, the NTP coaches’ names kept being repeated and their availability and willingness to support other coaches clearly surfaced in the data. This is exemplified with the following quote from C13 explaining how she reached out to one NTP coach: “I phoned [NTP coach] and invited him to come down [to city X] and just have coffee... He got me in contact with people in [city X] that have a wheelchair curling program and that’s that!”. As mentioned, SSSM service providers were also travel guides in the landscape. For instance, C9 had financial support from the provincial organization to hire a mental performance consultant, while C4 solved a coaching dilemma by contacting “a university professor of adapted physical activity”.

Similarly, the subtheme of connection with travel guides emerged. It was clear that some coaches had strong, well-established relationships with certain travel guides. These relationships

were referenced by certain coaches as facilitating or blocking access to learning opportunities. Some coaches voiced their concerns about being left out of training camps and important learning opportunities, and in turn not having that access to information. C11:

It can sometimes feel that there are a few secrets with the NTP that I don't know about, [perhaps] in order to keep [NTP athletes] on top of their game. It would be good that we all knew it because I think [development coaches] would raise the whole bar for the whole country as we're working with their athletes.

Moreover, during the mapping interviews, C4, sounded frustrated when he mentioned that he needed to “find out by trial and error. We have to test everything, no one is telling anything or what we should be doing”. Thus, having a space in which coaches could share ideas and perspectives could promote not only the spread out of innovations but increase the likelihood of others feeling comfortable to share as a community.

Notable learning crossroads. Playgrounds (i.e., competitions) and camps (i.e., training camps) as depicted in Figure 1, are characterized as important learning spaces due to the interactions with other coaches, including the NTP coaches, and the engagement with HP athletes, exposing them to learning from influential others (i.e., travelers and travel guides). Playgrounds are cited among the best places to develop coaching knowledge in the WC landscape. Almost all of the teams joined AB leagues in order to provide the athletes with playing time. A drawback of this is that their competitors would not necessarily follow WC rules (e.g., sweeping is not allowed). It is at competitions that athletes and coaches can compare their performances with WC benchmarks, and see what everyone else is doing in terms of equipment, techniques, and strategies. As mentioned above, even coaches who do not attend major competitions learn from their athletes who have done so. C7 reflected on his ongoing effort to adjust his coaching based on athletes' feedback after major competitions:

So, what is best? We do not know.... The [athletes] go to World [Championships] to see what the rest of the world is doing, they see that the [world's] getting better, okay. Well, maybe we need to try something different.

The second crossroad identified was camps. One aspect that differentiates the camps from competitions is the access to workshops with SSSM providers specific to WC. C9 described the openness and willingness of the NTP to share during training camps, “I learned a lot of technical stuff there. If I hadn't gone there, I wouldn't have gotten that [knowledge].... Team Canada has been more than gracious with information for me.... I was exposed to everything.”

Learning infrastructure and barriers. As cited above, some coaches bridged their learning gaps by attending competitions and training camps. In a few cases, coaches had access to learning crossroads due to the availability and proximity of the NTP camps and/or NTP coaches; only rarely did provincial organizations organize camps. Because of the fragility of the infrastructure provided, the bridge depicted on Figure 1 is a rope bridge. Coaches who lived close to where the NTP coaches lived had easier access to them at their home-curling clubs. C7 recognized the benefits of this proximity:

We get a lot of information from Team Canada and we are fortunate that we are playing in my city, because [NTP coach] comes to all our camps, and he comes to anything that we need, he shares the information from Team Canada, and he comes and helps us.

A major feature of the WC landscape are the barriers (i.e., frequency, location, and costs). First, both camps and competitions are sparse. According to a CC technical leader, “Competitions are great, but you can count on one hand the number of events [annually]; not every province has their own provincial championship.” Second, due to the size of the country, the locations of the camps and competitions normally involve travelling long hours, requiring

important financial resources. C5 describes how difficult it is to even play at the club level because of the lack of wheelchair teams: “There are only two teams right now. We are six to seven hours away from each other. So, we can't play each other to find out, to gauge how we are doing against other wheelchair teams”. Once asked if he ever attended camps, he replied: “I find it tough because of where we are.... a lot of stuff happens in the major metropolitan areas...and it's a 22-hour drive” (C5). Not surprisingly, the further away a coach lives, the more expensive it is to attend to competitions and camps, as mentioned by C14: “Hopefully next year they'll be able to go to a bonspiel because going to a bonspiel costs around five thousand dollars.” C1 described how the costs are not purely financial. Her concern also involved the preservation of her athletes' energy for competition:

And there's a physical aspect to the wheelchair coaching.... You should see some pictures I have with three chairs stuck in a van you know, you're lifting ramps.... You have to have a big vehicle like not a normal rental car. You're carrying people's bags or equipment or sticks, even though they can carry their stuff.

Notably missing from the landscape figure is the presence of formal coach education. While a wheelchair specific module co-created by one of the participants and a travel guide does exist, it is not recognized by the NCCP and therefore not required for formal certification. Although many of the coaches are Level 3 certified in AB curling, no single coach referenced taking this wheelchair specific module. C1 reflected on this matter: “the WC module exists, but we don't have enough coaches to open a class”.

Discussion

The present paper details the first part of a larger project with the goal of designing and implementing a coach development intervention based on social learning theory. Mapping the WC landscape encompassed (a) major hills (i.e., recreation hill and HP hill), (b) influential

people along the way, (c) notable learning crossroads, and (d) learning infrastructure (i.e., bridge) and barriers. From a social learning perspective, learning occurs through participation (Wenger, 2010); therefore, interacting in a meaningful way with others through coaching engenders learning. Based on the findings above, many features of the map are aligned with both the disability sport and coach development literatures.

Understanding the Landscape

Trailheads. The main trailheads on the map started in the landscapes of origin. Research shows that AB coaches have idiosyncratic pathways along their journeys (e.g., Christensen, 2013; Erickson et al., 2007), and according to the findings of this study, parasport coaches are no different. The findings are in alignment with many studies in which coaches were purposefully invited to work with parasport in unexpected ways (Kohe & Peters, 2017; Legg & McClure, 2017). The trailheads that started at the AB hill are very consistent with the disability sport literature in which coaches started working with athletes with disabilities mainly due to their involvement with the AB sport (e.g., Cregan et al., 2007; Kohe & Peters, 2017). The professional careers hill is consistent with coaches' journeys in other parasport studies. The recognition of the benefit of parasport coaches' professional backgrounds is evident in the literature (e.g., Taylor et al., 2014). The adaptation of parasport coaches' professional knowledge, perhaps from other domains, is a key aspect within the LoP as Wenger-Trayner and Wenger-Trayner (2015) advocate the importance of the rich opportunities for learning at the boundaries of different practices, something that coach developers should remember when designing coach learning opportunities. These findings also should encourage sport administrators to look beyond strictly coaching competencies when assessing a disability sport coach's knowledge and potential contribution.

Travellers. The coaches' profiles (i.e., biographies) are very unique. The coaches can be described as very knowledgeable part-time volunteers, senior citizens (almost all retired or close to retirement), with decades of experience in the sport. While DePauw and Gavron (1991, as cited in DePauw & Gavron, 2005) conducted a survey with 155 parasport coaches and found that 71% fell within the ages of 20 and 40; only one of our participants was in that age group. The participants age and experience definitively expand the literature. Volunteerism was found to be a prevalent aspect of other disability sport coaching studies (e.g., Cassidy, Burrows, Bates, & Merrilees, 2017; Legg & McClure, 2017). Congruent with our findings, some studies found disability sport coaches to be lifelong learners (e.g., Douglas et al., 2018; Taylor et al., 2014). Not only were the coaches in this study learning through different opportunities, but many of them were AB coach developers or had the NCCP Level 3 AB coach certification. As such, they were very engaged in professional development. Our findings support other parasport studies in that the participating coaches are dedicated to developing others, the sport, and coaching (Cregan et al., 2007; Kohe & Peters, 2017). This dedication led them to build learning partnerships with other coaches who might be 'competitors' (Campbell, 2017). Another aspect of the coach participants' profiles is their willingness to create and share resources with others (e.g., WC manual) in order to grow the sport. Such collaboration is not rare in parasport (Douglas et al., 2018; Duarte & Culver, 2014) even among rival countries (Campbell, 2017), which is what reinforces our personal belief that a social learning intervention can be fruitful with this demographic.

Mentors and guides. Much of the recent work on disability sport coaching recognizes the importance of learning from more experienced people, whether these others are SSSM service providers (Tawse et al., 2012), family members of the athletes (Cregan et al., 2007), mentors from the same sport (e.g., Fairhurst et al., 2017; McMaster et al., 2012), or mentors from

outside the sport (Duarte & Culver, 2014). Moreover, the findings highlight the importance of navigating the landscape with others, thereby sharing information with like-minded coaches from other clubs and even those from other sports. This learning opportunity seems to be more related to parasport (Douglas et al., 2018; Duarte & Culver, 2014) than to AB sports where coaches are apt to keep secrets from other coaches (Culver & Trudel, 2008). Such openness to share further made the case for the future use of social learning intervention (the next stage of the larger project).

WC landscape hills. Our findings also support other studies in that many parasport coaches work with a wide range of athletic levels from youth to adults and from recreation to HP (e.g., Cassidy et al., 2017). Legg and McClure (2017) suggested “the difficulty inherent within the parasport system is that because there are so few athletes and coaches, ensuring that appropriate programs are being offered for each level of athlete at the appropriate times and stages is almost impossible” (p.133). Moreover, the competitive and recreational hills are so close because of the lack of peers within the same sport (Fairhurst et al., 2017) and the scarcity of competitions (Silva, 2017). Our study grows the literature by adding a team sport perspective. Within WC, some coaches have to recruit and mix recreational athletes with HP athletes on the same team, which results in recreational athletes competing at the highest national level and sometimes playing against National teams after a few months of involvement. The characteristics of these hills might expand coaches’ breadth of required competencies, which in turn might influence how the coaches share information among themselves.

Infrastructure. Our findings advance the parasport literature by adding another layer as to why courses specific to this population are so scarce, and propose other solutions for the development of this coach population. Despite the fact that our coaches were highly involved with formal AB curling coach education, there are not enough WC coaches to attend the WC

specific events, making these unfeasible for organizers. Moreover, when these courses are offered, there are high costs associated with travelling to attend these coaching courses. As such, throughout the interviews, some coaches identified other options to develop their knowledge and competencies, such as attending competitions and training camps. While coaches mentioned competitions as learning crossroads that interconnected them with other WC coaches and athletes, in competitions the learning took place as they observed what other teams were doing. At training camps, the coaches were more open to exchanging information and trying different approaches. There are a number of studies that suggest camps as a platform to develop parasport coaches (e.g., Cassidy et al., 2017). Training camps are a place to get access to athletes (Cregan et al., 2007) and talk to other coaches (McMaster et al., 2012) about diverse topics and to develop personal connections with HP coaches (Douglas et al., 2018; Duarte & Culver, 2014). National training camps are generally highly regarded as opportunities for coaches to meet experts in different areas of their sport (Campbell, 2017; Tawse et al., 2012). The informal conversations that are facilitated during camps and competitions are at the core of the social learning theory (Wenger, 1998) and present an opportunity for a coach development intervention appropriate for parasport coaches.

Considerations for a Social Learning Intervention

The map of the WC landscape illustrates the main features that could be better exploited to develop coaches within this particular landscape. Our findings suggest that geographical isolation, the high costs associated with coach training, and the low number of athletes are all barriers to coaches' learning. Therefore, an intervention for these WC coaches should be tailored to create meaningful learning opportunities that mitigate such barriers and leverage the current infrastructure. More specifically, based on social learning theory (Wenger-Trayner & Wenger-Trayner, 2015) and the understanding of the WC landscape, the subsequent intervention should

consider the following: (a) prioritizing meaningfulness of learning initiatives with coaches (Paquette & Trudel, 2018), (b) incorporating identified influential people and their willingness to share (Duarte, Culver, Trudel, & Milistetd, 2018; Trudel, Culver, & Werthner, 2013), and (c) leveraging preexisting infrastructure (i.e., bridges) considering the limitations of the landscape (Duarte et al., 2018; Stoszkowski & Collins, 2017).

Given the idiosyncratic nature of all sport landscapes, each map will be unique. That said, for researchers and practitioners interested in using a landscape approach to support coach development within their organizations, we hope this article has provided an insightful example with practical guidance on some of the relevant physical structures that are worthy of exploration. More specifically, we encourage stakeholders across the sport landscape (i.e., not just coach developers) to consider (a) the various landscapes of origins of the coaches, (b) who are the predominant travel guides that are positioned to support these coaches in their journeys, (c) what are the major crossroads that provide valuable social learning opportunities for coaches, (d) what are the existing learning structures that promote coach development, and (e) what are the barriers within the landscape that undermine the learning capability of the landscape. In addition to the relevant physical features of a landscape, we believe an important next step in enhancing this approach would be to deliberately explore the psycho-social features of a landscape as well (e.g., communication policies, interpersonal effectiveness, and trust).

Conclusion

The present paper portrays the first part (i.e., pre-intervention phase) of a larger project that aimed to promote a social learning intervention based on a specific WC landscape. A major contribution of this paper is the description of how, using a collaborative approach, we were able to pinpoint, within the specific landscape of WC in Canada, learning could be leveraged.

Although the data gathered allowed the creation of a map, it is important to highlight that the

current figure is only a snapshot of the landscape and that the map will likely change as participants of the landscape engage with one another forging new pathways and features. After mapping the current landscape and its many features we are able to draw a few considerations before moving to the conceptualization of a suitable intervention. It is important to highlight one major limitation of the map; maps are never intended to be perfectly detailed representations of an area of land. Maps helps us to carefully navigate any given landscape by identifying key features and notable routes. While many of our findings related to the sources and barriers to parasport coach learning support the literature, the landscape metaphor permits a unique view of the specific opportunities for coach development within one disability sport coach landscape. While the findings are discussed here in an academic format, many discussions were held to formulate and present our findings with both the coaches involved and the NSO (as per the collaborative inquiry) in order to co-construct the social learning intervention. The mapping was the first effort to draw up intervention strategies that are context relevant, as urged by Lyle (2018).

The adoption of a LoP approach to sport and parasport allows a broad view of potential coach learning situations, highlighting the existing structures that can be leveraged and new spaces opened up for knowledge sharing and co-creation. Also, the landscape approach allows for a systems approach that considers the potential of involving different levels of the sport system to best serve the learning needs of coaches. Additional research is needed to better understand how this approach can build learning capability within sport organizations. It is our hope that presenting our methods for this pre-intervention phase will assist other researchers and coach developers to pursue this approach. Comparing the building of theory in the social sciences to the same in the hard sciences, Wenger-Trayner (2013) suggested “a more constructive alternative, which celebrates the diversity of theories in light of the complexity of

human experience.... The plug-and-play principle” (pp. 108-109). Thus, as coach education researchers we must seek to explore this concept of running one theory through another to lead to different understandings and improved practice for developing coaches. In particular, for parasport in which every landscape is small and unique, it is important to map and understand the boundaries, the crossroads, and the guides in the specific landscape in order to leverage the features conducive to knowledge creation and sharing.

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Article 3

Framing a Social Learning Space for Wheelchair Curling

Duarte, T., Culver, D., & Paquette, K. (revised and re-submitted). Framing a social learning space for wheelchair curling. *The International Sport Coaching Journal*, 1-34.

Abstract

The purpose of this paper is to delineate how an intervention aimed at increasing the learning capability of Canadian wheelchair curling coaches was framed by a systems convener in collaboration with stakeholders from different levels. Social learning theory, in particular a landscape of practice perspective provides the conceptual framework. The methodology was collaborative inquiry with people from across the landscape to delineate the intervention strategies through cycles of reflection and action. The participants included parasport coaches, researchers, and Curling Canada technical leaders. Based on pre-intervention findings, the intervention was driven by: (1) the use of technology to overcome barriers and the implementation of learning activities at competitions, (2) the use of a collective learning map to promote meaningful learning, (3) the involvement of the sport organization leadership to promote the participation of influential people, and (4) a reflection of how subpar outcomes occurred when the systems convener failed to engage with the sport organization leadership. The discussion sheds light on the many roles of systems conveners and the importance of promoting strategic and enabling values. Sport organizations should engage a systems convener who can effectively align learning goals with the available resources and the strategic mission of the organization.

Keywords: *Social learning, disability sport, landscapes of practice*

Framing a Social Learning Space for Wheelchair Curling

Beginning a decade and a half ago, coach developers began to frame studies about coach learning within social learning theory (Lave & Wenger, 1991; Wenger, 1998), particularly through the concept of communities of practice (e.g., Bertram, Culver, & Gilbert, 2016; Culver & Trudel, 2006, 2008). Wenger (1998) provided some basic assumptions underlying social learning theory: (a) human beings are fundamentally social, (b) learning is at the very core of our existence, (c) knowing is active participation in an enterprise that we care about, and (d) as we learn we become, that is our identities change. Communities of practice are but one form of a social learning space; that is, a space where learners can engage openly and authentically with others as learning partners with the aim of making a difference, small or big, that will impact their practice(s). Such spaces range in form from conversations, to networks, to different learning communities or teams. The participants in a social learning space will not necessarily care about making the same difference, but as long as their interactions benefit their individual aspirations, the learning partnership will be healthy. The likelihood of such interactions resulting in benefit to the participants depends on the nature of their engagement in the social learning space. It is therefore important, if coaches are to have their aspirations met through their participation, that we understand what that nature of engagement looks like. Engagement and participation being intricately linked to social learning has led to the need to develop social learning leaders whose role is to nurture such learning. This paper introduces the idea of the systems convener as a social learning leader in a parasport coach landscape of practice (see below) and describes the work of this leader as well as the social learning space and its learning activities. The paper also reveals how the value creation framework (Wenger, Trayner, & De Laat, 2011; Wenger-Trayner, Wenger-Trayner, Cameron, Eryigit-Madzwamuse, & Hart, 2017) was used to frame and explain the social learning space.

Communities of practice have gained popularity within different domains due to their ability to engage passionate people eager to make a difference to a common practice (E. Wenger-Trayner & Wenger-Trayner, 2015). Organizations that provide optimal conditions for communities of practice to prosper involve collaborators in thinking and acting strategically. This has been true in sport coaching where scholars have highlighted the importance of both involving leadership and key people (e.g., Bertram, Culver, et al, 2016; Culver & Trudel, 2008), and aligning social learning objectives with broader organizational strategies (Culver, Trudel, & Werthner, 2009; Occhino, Mallett, & Rynne, 2013). In an effort to expand our understanding of the complex nature of most professions that involve multiple communities of practice and networks throughout the different levels of the broader practice, Wenger-Trayner and Wenger-Trayner (2015) introduced the landscapes of practice concept and metaphor.

Landscapes of practice are unique from communities of practice and have only recently begun to be explored within sport coaching (Culver, Kraft, Din, & Cayer, 2019). The potential of a landscape of practice perspective for sport lies in the potential to build learning capability across sport organizations. Learning capability is different to learning capacity in that capability is the ability to learn. While critiques of the concept of communities of practice have raised issues such as power imbalances within the community and the potential for the reproduction of existing practices (e.g., Cushion, 2008; Cushion & Denstone, 2011) the convening of new social learning spaces that cross the boundaries between various communities of practice and leverage the learning potential at their boundaries, can build this capability on a systemic level (Wenger, 2009). For instance, the system convener can address possible power imbalances as already identified in some types of sport structures in which the hierarchy is extremely rigid (e.g., karate dojo, Culver et al., 2008). Thus, taking a landscape of practice perspective allows for the strategic targeting of system wide changes to practice when framing interventions.

Wenger-Trayner and Wenger-Trayner (in press) dedicate a whole section of their new book to framing. As defined by them, the term framing is used very intentionally to portray a distinct activity that includes aspects of designing and planning but which is much broader. Framing as a mode of social learning is neither procedural nor closed-ended, it is ongoing and integral to the process of social learning. For the Wenger-Trayners, framing is both an emergent and dialogic process which can provide the contours of a social learning space but not the specifics of what the learning will look like. In the act of framing, participants in a social learning space engage with each other as they strive to make a difference. An important role within a social learning space is that of the systems convener. A systems convener is someone who develops relationships and partnerships in order to maximize the synergies that respond to common learning needs or goals within a landscape of practice (Wenger-Trayner & Wenger-Trayner, 2015). In doing so the systems convener is a partner with the other participants in the framing process.

While communities of practice usually already exist in landscapes of practice, a systems convener may forge new communities of practice. Wenger-Trayner and Wenger-Trayner (2015, p. 97) aptly nuanced the relationship between communities of practice and landscapes:

For [systems] conveners, however, communities of practice are primarily interventions in the landscape. Along with networks, projects, conversations, and relationship building, communities of practice are ways for conveners to forge new learning partnerships, create new capabilities, and enable new identities in the landscape.

Although communities and landscapes of practice are contributing to the development of coaches within able-bodied sport, in the disability sport coaching context these concepts are yet to be implemented. The literature has suggested many aspects of coach development that are found within able-bodied sport, such as the importance of learning from those on the integrated

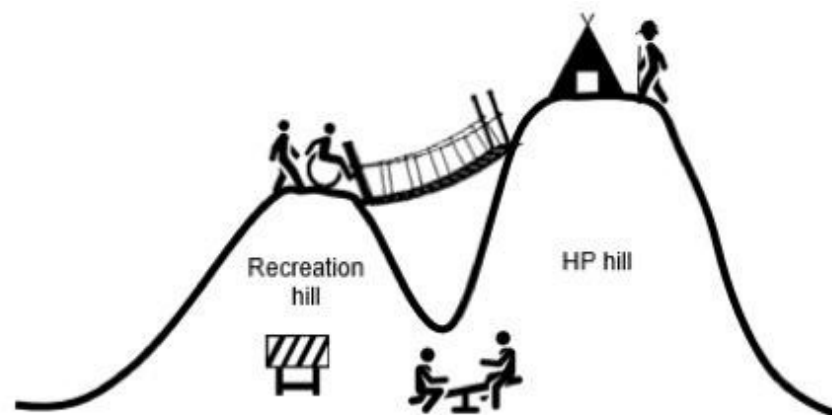
support team (e.g., Tawse, Bloom, Sabiston, & Reid, 2012), peer coaches (e.g., McMaster, Culver, & Werthner, 2012), and mentors from the sport (e.g., Douglas, Falcão & Bloom, 2018). Coaching people with disabilities requires coaches to further develop a network outside of the sport realm to learn how to best work with their athletes' abilities (DePauw & Gavron, 2005). Notably, disability sport coaches were found to expand the network of people they access to include athletes, athletes' relatives and caregivers (Cregan, Bloom, & Reid, 2007; Duarte & Culver, 2014), mentors from outside the sport (Duarte & Culver, 2014), and classification specialists (e.g., Purdy, Purdy, & Potrac, 2017). Moreover, as an example of how coaches use their networks, interactions during competitions allow coaches to observe new equipment and technologies (Legg & McClure, 2017; McMaster et al., 2012). There are however some major impediments that coaches face to learning from others. For instance, disability sport participants are sparse geographically (Kohe & Peters, 2017), competitions (Silva, 2017) and coach education programs are very limited (McMaster et al., 2012), and financial resources are scarce even at the highest levels of the sport (Peters & Kohe, 2017). Such a complex context lends itself to the use of a guiding framework that recognizes the complexity of learning landscapes.

In disability coach development studies, often the coach or coaches provide the sole perspective utilized to describe their developmental pathways (e.g., Peters & Kohe, 2017). Coaches' pathways in disability sport are highly influenced by the support found in their networks, team, and organizational infrastructure (Cregan et al., 2007; Peters & Kohe, 2017). Peters and Kohe (2017) called for more strategic approaches to disability sport coach education and development pathways. One way that organizations could strategically support coaches interested in advancing their knowledge, is by enabling a social learning space. Within coaching, researchers have highlighted the crucial role of a person who nurtures social learning spaces such as communities of practice (e.g., Culver & Trudel, 2006, 2008) and learning communities

(Bertram, Gilbert, & Culver, 2016). In a landscape of practice, this person is the systems convener.

While the coach development literature has already introduced the concept of communities of practice for coaches (e.g., Bertram, Gilbert, et al., 2016; Culver & Trudel, 2006), to our knowledge, only Duarte, Culver, and Paquette (2020) have looked at coach development from a broader landscape perspective. As every landscape is unique in its composition, this perspective requires a thorough understanding of the context. To do so, Duarte and colleagues created a metaphorical representation of the wheelchair curling (WC) landscape in Canada (see Figure 1). Many of the notable features contained within the WC context represented in Figure 1 can be found in other disability sport coaching literature. For example, Fairhurst, Bloom, & Harvey (2017) found the recreational and competitive hills (contexts/streams) overlap and in curling teams comprising recreational athletes and Paralympic medalists (both wheelchair curlers and from other parasports who transitioned to curling) curl against the national teams of other countries (Duarte & colleagues, 2020). Many of the WC coaches were actually seeking advice from the same influential people (e.g., national team coaches, sport science experts), mirroring what was previously found (e.g., Cregan et al., 2007; Taylor, Werthner, & Culver, 2015). In Figure 1, training camps and competitions are identified as places for coaches to have access to other athletes (cf. Cregan, Bloom, & Reid, 2007), sport experts (cf. Tawse et al., 2012), peer coaches (cf. McMaster et al., 2012), and observe new tactics and equipment (cf. Legg & McClure, 2017). A few barriers were identified within this landscape that are in agreement with the literature including the frequency, location, and costs of attending competitions (e.g., Campbell, 2017; Silva, 2017) and training camps (e.g., Taylor, Werthner, & Culver, 2014; Wareham, Burkett, Innes & Lovell, 2018), making them exclusively accessible to very few

Figure 1: Canadian Wheelchair Curling Landscape



Symbol	Element	Definition
	Barriers	Coaches who want to develop themselves have to overcome the geographical and funding barriers
	Travellers	Coach-participants
	Travel guides	Influential people across the landscape often accessed for guidance
	Bridge	Some coaches utilized the camps and playground to bridge the gap caused by the barriers
	Camps	Training camps organized by NSO or by the provincial organization
	Playground	Competitions and events where athletes can play
	WC landscape	Includes recreational and high-performance hills

Figure 1: Elements of the Canadian wheelchair curling landscape that can be leveraged or avoided to build learning capability. Adapted from: Duarte, T., Culver, D., & Paquette, K. (in press). Mapping Canadian wheelchair curling coaches' development: A landscape metaphor for a systems approach. *The International Sport Coaching Journal*, 1-29.

coaches and teams. These barriers make interactions among coaches very rare, which explains the obvious constraint for social learning.

Following as it does from the mapping exercise described in Duarte and colleagues (2020), this study is the next step in a collaborative effort to frame a social learning space to increase the learning capability of the WC coaching landscape. To our knowledge, this study is the first work that presents the framing process for nurturing a social learning space of (para)sport coaches using a landscape approach. The purpose of the current paper is to delineate how the intervention was framed by the systems convener in collaboration with stakeholders from different levels (i.e., recreational and high-performance coaches, and sport leaders). To situate this paper within the overall research project, the framing of the intervention follows the pre-intervention, which comprised mapping the landscape and the exploration of the coaches' learning interests (see Duarte et al., 2020). The final part of the larger research study is the assessment of the learning value: a subsequent paper will report on the outcomes of the intervention.

Methodology

Given the purpose of creating a social learning space intervention, employing a research methodology that accounts for the integration and ongoing collaborative involvement of its participants was essential. Collaborative inquiry is among the many methodologies that conduct research with people (Heron, 1996) located within the participatory research paradigm (Bray, Lee, Smith, & Yorks, 2000). Two philosophical traditions influenced the collaborative inquiry: (a) Dewey's American pragmatism and (b) phenomenology (Bray et al., 2000). On one hand, Dewey's pragmatism lends its perspective in that people's experiences are validated through the application of the empirical method (e.g., problem formulation, reasoning based on data,

developing and testing hypotheses, etc.). On the other hand, hermeneutic phenomenology views learning as the dialogic act between what is being interpreted and the interpreter. Therefore, the reality of collaborative inquiry is both objective (pragmatism) and subjective (phenomenology; Heron, 1996). In its essence, collaborative inquiry requires cycles of reflection and action on lived experiences (Bray et al., 2000). One of the characteristics of collaborative inquiry is that the initiating researcher (in this case, the first author) has a preliminary plan that is then shaped by the co-researchers as the project advances (Bray et al., 2000). At the core of both collaborative inquiry and social learning are groups of people who care to make a difference and interact in order to advance both the inquiry and the practice. Recently, Wenger-Trayner and Wenger-Trayner (in press) suggested that participants have different needs and perspectives and will interact with the social learning space. According to their needs, their interactions can be divided into five levels of engagement: (a) core group members (passionate and engaged members who nurture the CoP), (b) active participants (practitioners who define the community), (c) occasional participants (members who join activities of special interest), (d) peripheral participants (newcomers or members at the boundaries of a community), and (e) transactional participants (non-members who either provide value to, or receive value from the community only occasionally). In the proceeding section, the participants and their various roles and levels of engagement will be presented.

Participants

A total of 25 participants representing three groups (i.e., coaches, technical leaders, researchers) formed the social learning space. To recruit the first group of 16 coaches, purposeful and snowball sampling strategies were employed (Creswell, 2007; Sparkes & Smith, 2013) to reach active regional and provincial WC coaches in Canada. The first group (i.e., C1, C2...C15) accounted for a majority of the population of active WC coaches in Canada and these coaches

came from seven provinces and 14 cities. In this study, quotes from coaches are presented to illustrate how the communication between different levels occurred as it was facilitated by the systems convener (first author). Because of that, these coaches are only presented briefly in Table 1. Although two coaches led a learning activity, the only role for the members of this group was to participate in the social learning space activities.

Table 1. Demographics of Wheelchair Curling Coaches

Characteristics	Number of coaches
Gender	
Male	9
Female	7
Age	R= 51 – 67; M = 59.5
50-60	12
60-70	4
Residence/population	
Town of <100,000	7
Small city 100,000 to 400,000	3
Big city >400,000	6
Curling coaching context* (years coaching)	R= 0 – 36; M = 19.5
No experience	2
Recreational stream	2
Developmental stream	2
Competitive stream	8
Coach developers	5
Wheelchair curling coaching context*	R= 1 – 12 years; M = 6.5 years
Mainly recreational athletes	4
Recreational & competitive athletes	6
Mainly competitive athletes	5
Professional background	
Retired	7
Working	9
Level of engagement SLS	
Peripheral participant	2
Occasional participant	3
Active participant	6
Core member	5

Note: SLS = social learning space. * Coaching contexts are based on Trudel and Gilbert (2006). Two participant coaches are wheelchair users and one coach made use of a wheelchair during a six-month period.

Table 2. Curling Canada Leadership Roles and Engagement Within the Social Learning Space

Identifier	Curling Canada Roles	Role Within the Intervention	Level of Engagement
TL1	Oversees HP programs and technical leaders for the AB and WC NTPs (including NextGen for both)	Sponsored the intervention by providing the time of the other technical leaders and other logistical support	Occasional participant
TL2	Oversees programing for the WC NTP (including NextGen) Supports coach development	Co-led two online camps with TL3	Active participant
TL3	Oversees programing for the WC NTP (including NextGen) Supports coach development	Co-led two online camps with TL2 Active participation on the online platforms	Core member
TL4	Oversees nutrition services and programing for the AB and WC NTPs (including NextGen for both)	Led one online camp	Peripheral participant
TL5	Oversees strength and conditioning services and programing for the AB and WC NTPs (including NextGen for both)	Led one online camp	Peripheral participant
TL6 ¹	N/A	N/A	Transactional participant

Note: AB = able-bodied, HP = high-performance, N/A = non-available, NTP = National Team Programme, TL = technical leader, WC = wheelchair curling.

Table 3. Researchers' Roles and Engagement Within the Social Learning Space

Identifier	Experience	Role Within the Intervention	Level of Engagement
First author	10 years of experience with disability sports, 8 years of coach development research, and 5 years as a coach	Systems convener, learning facilitator, logistics coordinator, liaison between coaches and CC	Core member
Second author	20 plus years of experience as a coach, 20 plus as coach developer, and 20 as qualitative researcher including areas of social learning and disability sports	Supervised the work of the first author	Peripheral participant
Third author	10 years of experience in applied and research coach development, 10 years of mental performance consulting, CC technical leader of the NTP	Multiple roles as he acted as the liaison between researchers and CC; ranging from designing of the project and also delivered two online camps	Core member, critical insider

Note: CC = Curling Canada, NTP = National Team Programme.

The next two groups of participants had more complex and varied roles. The second group of participants included six Curling Canada (CC) technical leaders (i.e., TL1, TL2...TL6). The term technical leader is commonly used within the Canadian amateur sport system to refer to positions pertaining to governance and leadership such as the high-performance director/coordinator, head coach, and coaching staff. As this paper is focused on the framing of the intervention, the roles of the technical leaders and researchers are further explained in Table

2. The third group of participants includes the three researchers (the authors), as presented in Table 3.

Ethical approval was granted from the university's research ethics board and informed consent was obtained from all participants. Since the WC community is small, the risk of identifying the owner of a quote was/is possible. Because researchers and participants (co-researchers) collaborated closely, confidentiality and anonymity were negotiated throughout the research (Williamson & Prosser, 2002). Resultantly, a few initiatives were undertaken to mitigate this issue. First, the first author was the only person to have access to the raw data of the individual interviews. Second, the group chose not to share the online meetings on Basecamp. This decision facilitated the provision of a safe environment for coaches to share their thoughts without being concerned about the revelation of their identities.

Making Meaning and Constructing Knowledge

Collaborative inquiry calls for methods that are highly experiential and the meaning making process involves analysis, interpretation, reflection, and contemplation (Bray et al., 2000). These methods serve research objectives while simultaneously developing the learning of adults. The social learning space included a series of online and face-to-face activities that provided participants with opportunities to interact with others at different levels (i.e., individual, group, organizational) during a 13-month time frame.

Table 4 describes the social learning space activities that took place from April 2016 to May 2017. The first activity was a social gathering that occurred during the Canadian Wheelchair Curling National Championship where the first author invited coaches to participate and co-create the social learning space, while the last activity comprised the final interviews. In-person and online in-depth interviews occurred at three different moments of the inquiry, at the beginning (mapping interviews), mid-point (follow-up interviews and mapping interviews for

new participants), and at the end of the intervention (final interviews). These in-depth interviews utilized semi-structured guides and were conducted in-person or online through GoToMeeting. The interview guides were created using the value creation framework (Wenger et al., 2011; Wenger-Trayner et al., 2017). The interviews encompassed questions to understand the coaches' experiences within the social learning space, ranging from the user friendliness of the platforms, barriers to participating, relevance of the themes, and value gained. These interviews provided feedback on the intervention and allowed coaches to individually communicate their perspectives.

Table 4: Social Learning Space Activities

Level	Activities	Goals	When	How
Individual level	3 Meetings in-person	Relationship building and knowledge sharing/constructing	April & November 2016, March 2017	In-person at competitions
	38 In-depth interviews	15 Mapping interviews: Understand the WC landscape and map coaches' learning needs+ (M= 58 min.)	April & November 2016	In-person or using GoToMeeting
		10 Follow-up interviews: Monitor their perceptions of the learning activities (M= 32 min.)	November 2016	GoToMeeting
		13 Final interviews: Assess* the value creation (M= 38 min.)	April 2017	GoToMeeting
	Brief surveys	Receive feedback on the relevance of the webinars, and check how they intended to apply the knowledge	After online camps	Survey Monkey
Group level	3 Social Gatherings	Provide a space for relationship building and knowledge sharing/constructing	April & November 2016, March 2017	In-person at competitions
	4 Online group meetings (R= 88-93 min.)	Co-construct knowledge, share information, decision making on the next steps	May, June, November 2016; February 2017	GoToMeeting
	2 Focus Groups (R= 60-66 min.)	Assess* the participants perspectives as a group	April 2017	In-person and GoToMeeting
Organizational level	Online Forums (1001 posts)	Enhance coach to coach communication across the country	From May 2016 until April 2017	Basecamp
	9 Online Camp (R=87-95 min.)	TL led: increase transparency and share NTP best practices	July, August, October, November, December, 2016; January, March, 2017	GoToMeeting
		Coach led: share and co-construct knowledge		GoToMeeting

Note: NTP = National Team Programme, TL = technical leader. + See Duarte et al. (2020). * A subsequent paper will report on the outcomes of the intervention.

Four types of online tools were used to facilitate the interaction among participants. Both Basecamp and GoToMeeting were at the core of the intervention while Survey Monkey (online

surveying tool) and Doodle (online polling tool) added a few functions to help tailor and assess the learning activities. Specifically, Basecamp is an online collaborative website used by people to work remotely on various projects. Within the social learning space, Basecamp leveraged the social interactions as it was a hub for coaches to engage in a variety of key learning tasks, such as (a) posting questions and responses to each other, (b) seeing and adding to the group agenda and schedule of the learning activities, (c) sending direct messages to each other, and (d) accessing and posting resources for the community (e.g., videos of online camps, presentations, interesting articles). Given the online engagement experience of the coaches, there was some learning that was involved for certain participants to be able to use the program (as well as the other three online tools). As such, training sessions were conducted to facilitate the use of these tools. Next, GoToMeeting was used to host the online meetings and online camps. GoToMeeting is an online platform that supports audio for up to 25 attendants and live video for up to seven attendants at a time. It also provides a recording feature that allows users to record both the audio and the presenter screen during the meeting.

Meaning making. In collaborative inquiry, typically the starting point of meaning-making is the experiential stories of participants (Bray et al., 2000). Thus, the findings will explore some excerpts of stories from the coaches, dialogues between the first and third authors, and our reflections as we attempted to make sense of how to create new learning partnerships in the landscape. While Braun, Clarke, and Weate's (2016) thematic analysis was the process used to identify, interpret, and report themes from the pre-intervention and the assessment of the intervention, the present paper focusses on how the intervention occurred. Therefore, following the collaborative inquiry process, an interpretative analysis was used to make sense of experiential data (Bray et al., 2000). Because collaborative inquiry is not a linear process, meaning can emerge in the early stages of the process. Thus, it is important to keep a trail of

experience (Bray et al., 2000). Aligned with collaborative inquiry, our trail of experience was composed of conventional qualitative research material like audio and video recordings of meetings and interviews, a reflective journal, documents shared online, and concept maps (Bray et al., 2000). The many different pieces of data generated were organized in the qualitative data analysis software Nvivo 12 (QSR International, 2018). For instance, the comments posted on the online platform were captured and transformed into PDF format and later analyzed as a regular transcript. The interviews, focus groups, and online meetings were audiotaped and transcribed verbatim. The field notes, observations, and reflections were scanned and uploaded as PDF files into NVivo. Resultantly, 615 single-space pages were analyzed. Explicitly, the on-going cycles of reflection and action in the framing of the learning activities (a major part of the analysis) involved extensive strategic conversations between the first and third authors. Wenger-Trayner and colleagues' (2017) value creation framework provided the theoretical scaffold that allowed the researchers to frame the intervention using a deductive-inductive approach.

Value Creation Framework

At first, the value creation framework (Wenger et al., 2011) was developed as a tool to promote and assess complex social learning interventions. In sport, researchers have used it to assess the value created within a coaches' communities of practice (Bertram, Culver, et al., 2016). More recently, the value creation framework has also been suggested as a framing tool for social learning spaces due to its potential to understand the nuances of creating learning values (Wenger-Trayner, et al., 2017; see Table 5). The term cycles is used in the framework because the learning occurs as value is 'transported' across the different cycles and sometimes within a specific cycle. For example, sometimes applied value is not realized due to a lack of enabling value (e.g., see Bertram, Culver, et al., 2016). Given the current paper's interest in framing a social learning intervention, we focus on enabling and strategic values because they are critical

for healthy social learning spaces (Wenger-Trayner & Wenger-Trayner, in press). Without considering these complementary value cycles, any given intervention will be much less likely to succeed. Enabling value refers to support processes from logistical, financial, technological, and human resources that make the existence of the community possible. Strategic value entails the maintenance of strategic conversations with influential people (e.g., NTP coaches, sport experts) who can provide clarity regarding the context. Thus, the use of the value creation framework, and particularly by focusing on enabling and strategic values we were better positioned to increase the learning capability of the landscape (Wenger-Trayner & Wenger-Trayner, in press).

Table 5. Value Creation Framework Cycles

Cycle	Example	Key question	Value created
Immediate value	Activities and interactions	What is the experience like?	"I enjoyed attending the meeting."
Potential value	Knowledge capital	What comes out of it?	"They shared drills A, B, and C."
Applied value	Changes in practice	What are you learning in the doing?	"I used a new drill."
Realized value	Performance improvement	What difference does it make?	"Athletes seemed to like the variety."
Strategic value	Conversations with stakeholders	What is the quality of engagement with strategic stakeholders?	"The online camps were aligned with the NTP."
Enabling value	Raising effectiveness	What makes it possible?	"CC provided logistical support."
Transformative value	Redefining success	Does the difference you make have broader effects?	"Participant coaches felt empowered."
Orienting value	It's a big world out there	What else is potentially relevant?	"The authors consistently looked at other learning theories."

Note: CC = Curling Canada, NTP = National Team Programme.

Validity

Validity was considered within this study through a relativist lens (Burke, 2016). This relativist-qualitative research perspective draws criteria for validity from an ongoing list of characterizing traits, in contrast to utilizing a universal list of judgement strategies. This approach enabled the authors to select criteria appropriate to the unique nature of the study, thus enhancing both quality and rigour (Burke, 2016). Specifically, the criteria of transparency, coherence of the research, and the resonance of the topic were selected. Within the criterion of transparency, the authors worked as critical friends to each other (Burke, 2016; Sparkes & Smith,

2013). This collaboration was significant as both the second and third authors offered unique and important perspective as mentioned above. Next, coherence was deemed integral to this study in order to demonstrate alignment between the study's purpose, methods, and results. In an effort to do so and create the desired resonance, the authors have attempted to highlight rich accounts to promote naturalistic generalizations (Burke, 2016). Finally, the participants were given access to the final quotations chosen for the paper in order to edit, delete, or add any pertinent or personal information they wished.

Findings

The purpose of this manuscript is to report on the design and delivery of an intervention aimed at increasing the learning capability of Canadian WC coaches using the landscape of practice conceptual framework. Given that the intervention was preceded by a mapping exercise to help tailor the intended landscape of practice intervention for the respective participants (see Duarte et al., 2020), the next step was to make use of the information provided from the mapping exercise to increase the learning capability of the landscape. Thus, Duarte et al. (2020), as a result of their analysis and interpretation, provided a list of three main considerations for systems conveners who seek to lead social learning interventions in complex landscapes: (a) manage the limitations of the landscape by leveraging pre-existing infrastructure, (b) prioritize meaningfulness of learning initiatives with coaches, and (c) incorporate the influential people noted in the mapping exercise and make use of their willingness to share. These three considerations are what drove the framing of the intervention. Moreover, the challenges experienced by the systems convener are subsequently reported.

Manage Limitations of the Landscape by Leveraging Pre-existing Infrastructure

Managing limitations. The coaches came from seven different provinces, making face-to-face interactions very difficult, and consequently rare. During the initial, in-person social

gathering that launched the project, the first author asked the group of coaches: “When was the last time you met with a group of WC coaching peers?” The answer came almost immediately from C4: “Last year at Nationals”. Some coaches’ personal connections and their proximity to the NTP coaches and camps (distributed across the country) made it possible for them to have access to information more often than those coaches who lacked these personal connections or geographical proximity. Given the geographical barriers of this landscape, we believed that the use of online tools and platforms could provide a valuable opportunity to enhance connections within the WC coaching group and between the WC coaches and the NTP. Therefore, to provide regular group meetings, we sought out technological options to hold different types of learning activities that promote social interactions among the participants. At the time, the third author was making use of a few different platforms to support his work with the NTP athletes:

We [NTP coaching and support staff] are currently in the process of integrating a few different tools to streamline our ability to communicate with each other and the [NTP] athletes.... We trialed Slack [software] for a while, but it didn’t meet all of our needs, so we’re thinking of moving to a program called Basecamp. We also use GoToMeeting for all of our online conference meetings and video review sessions. We’ve really enjoyed it...and the athletes have provided great feedback so far. (Third Author)

As a result, the intervention used four online tools: Basecamp, GoToMeeting, Survey Monkey, and Doodle¹. CC provided access to its subscription to GoToMeeting, while Basecamp, Doodle, and Survey Monkey were free of charge at the time of the intervention. Although these online tools afforded many advantages to the intervention, their use was not without a few challenges. For instance, C6 apologized on Basecamp: “I am sorry I couldn’t attend the meeting last night. My internet connection was very bad.” Also, other coaches commented on difficulty hearing others at times due to audio interference on GoToMeeting: “The program worked great other

than the sounds going in and out at times, and I would miss something what was said” (C2).

Following each online camp, the recordings were shared on Basecamp. Doodle facilitated the scheduling of learning activities and agenda items/topics, and Survey Monkey was used to support coach reflection following their engagement in online camps. For instance, after an online camp on tactics and drills, C13 answered the question “what do you believe you can apply immediately to your practices?” stating, “I plan on using the NTP drills showed on the online camp with my team leading to the championship, however I envision some struggles as some athletes don’t like to change the way they practice.”

Leveraging existing infrastructure. Given that increasing the number of competitions and training camps exceeded the scope of this intervention, we aimed at implementing social learning activities within the existing events, thereby leveraging existing infrastructure. Thus, instead of leaving the connections, sharing, and co-creation of knowledge that might take place to chance, learning activities were designed to improve the likelihood that learning would occur. At competitions, the learning activities involved individual discussions between the first author and coaches including group meetings and social gatherings. Two face-to-face social gatherings were organized at the National Championships (one per year). The first social gathering involved some basic catering and beverages (budget \$150) at the hotel of the championship and was very much appreciated by the coaches. For instance, C9 mentioned the social gathering during an in-depth interview,

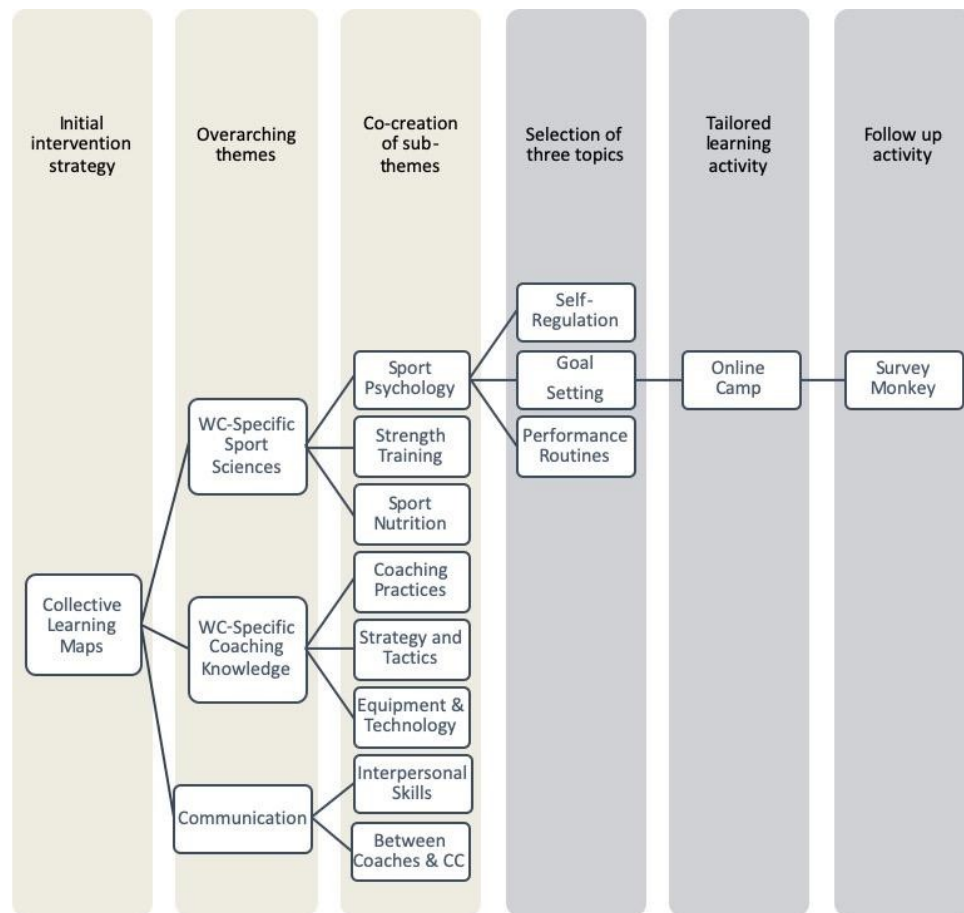
I’ve been to three nationals... so I have a whole lot of experience, but this is the first time that at the event there has been something offered of value of recognition for the coaches as opposed to sitting around saying, well what did I like about the event? And what I didn’t... This was the first time that somebody like [the first author] would come in.

For the training camps, the social learning strategy was to create online camps that would increase the access of the coaches to CC technical leaders including SSSM providers, NTP coaches, and other coaches who were invited to share their expertise on specific topics (see *Prioritizing Meaningful Learning*). Another way to leverage the structure already in place to support coach development was to recognize the coaches' participation at both online meetings and online camps as professional development credits. The third author connected the first author with the staff member responsible for coaching accreditation at CC and during a strategic conversation, the intervention and the major concepts of social learning were explained. The commitment of CC to not only make professional development credits available, but also the material they have developed for coach education was positively surprising: "We generally control electronic access to coach education resources due to copyright issues and loss of revenue generation. That being said, the way people learn is changing and we need to change with it" (TL6). This comment sheds light on the weight CC put on coach development in the face of business decisions. As a result of that phone call, a total of 147 professional development credits were awarded for the coaches who participated in the online meetings and online camps during the first 13 months of the intervention.

Prioritizing Meaningful Learning

Figure 2 describes the overall process for designing and delivering one learning activity. The first three columns (lighter colour) occurred within the first few months of the intervention while the last three columns are only one example of the seven online camps which occurred across the time space of the intervention. Thus, the initial intervention strategy consisted of in-depth interviews (mapping interview) to identify potential areas of interest. A thematic analysis from these interviews resulted in the creation of a collective learning interest map. During the first two online meetings, the learning interest map was discussed thoroughly, and it facilitated

Figure 2. Overall Process for Framing One Learning Activity



the process of establishing common learning goals for the intervention. Each of these overarching themes was discussed further during the online meetings and on Basecamp which resulted in the co-creation of seven sub-themes (Figure 2). Since these seven sub-themes were still broad and a learning activity would likely be introductory and therefore not as pertinent, we continued to dissect these topics through communications on Basecamp and by sending Doodle surveys with options of topics to finally narrow down to three topics considered most pertinent and meaningful for the coaches (for an example of the first online camp on sport psychology see Figure 2). The fourth column illustrates the topics selected. The first author contacted the online camp facilitators to make sure the content of the online camps were tailored to align with the coaches' interests. The first author had strategic conversations with the facilitators of the seven

online camps to plan these learning activities. The day after the camp, a survey was sent using Survey Monkey to follow up with the coaches about their impressions and plans to use the knowledge gained through the activities.

The coaches' interests were divided into three overarching themes: WC specific sport-sciences, WC specific coaching knowledge, and communication (see Figure 2). The sport-science theme encompassed material offered on AB coaching courses, but not tailored for WC, such as sport psychology, nutrition, and strength training. C7 mentioned the particularities of WC athletes' physical training, "[if a strength and conditioning coach] trains them the wrong way, the [athletes] hurt their shoulder, [then] they do not live properly! They cannot transfer. So, it is all pretty delicate". However, these sport science topics were not a homogenous choice among the participants. A group of six coaches who are highly qualified (i.e., coach developer, advanced diploma certified, and/or long-time coach of national champion teams) did not demonstrate much interest in the sport-science topics.

WC specific knowledge was the second most relevant theme. Some coaches wanted to learn about chair adaptations and equipment, as exemplified by C1: "what is the better arm position to start, which head is the best head, how should [athletes] angle their chairs?" The final theme was communication (e.g., interpersonal skills and communication from the CC); while many coaches talked about interpersonal skills, only a few coaches mentioned the need to develop them further. This theme overlapped with WC specific knowledge as some coaches wished to learn about game strategy and tactics with their peers. "I would really enjoy more discussions with other coaches about strategy because it is different from AB curling" (C8).

The communication from the NTP was a sub-theme that emerged in a very nuanced way. Particularly, some coaches praised the NTP coaches' availability to support their teams' efforts,

while other coaches mentioned being isolated at their clubs. The first author commented at the end of the second online camp:

“The whole reason for this group to exist is to provide you [coaches] the opportunity to engage with them to engage with each other and to engage with those sports scientists like the strength and conditioning trainer, mental trainer, the NTP coaches and to tackle needs that you are currently having.”

Due the large influence the CC technical leaders had on a few of the coaches, the next section describes further how the intervention increase the access to these leaders

Incorporating Influential People

A major task for the systems convener was to connect the CC technical leaders (e.g., NTP coaches, SSSM providers), deemed influential leaders, with the participants of the social learning space. The first author wrote in his reflective journal: “My job became so much easier! I don’t have to build any bridges; the bridge already exists – albeit a rope bridge. I just need to facilitate the access to [these individuals].” Once the collective learning interest map was discussed with the coaches, it was presented to the third author during a strategic conversation, the content of which is paraphrased here:

I will connect you with the SSSM providers who work with the NTP program. I will send them an email introducing you and your project. They are busy individuals, so, an email coming from me will position you better than if you approach them directly.

TL3 was also very active with the social learning space and recorded a video to be uploaded on Basecamp, referring to the plans of increasing communication with CC and sharing of information:

I am conducting strategic planning meetings for the WC program to take us into the next two years. So, it’s very timely that we are starting the [social learning space]...I think CC

has something cool to offer across the country. I look forward to spending and sharing time with you on these [online camps] and doing a better job in the next while of disseminating information to you from the NTP, whether we share practice ideas, drills, competition and performance ideas, access to any of our SSSM providers. And just any new news on equipment...I just want to make this a free-flowing exchange of information. I know that I've always said to you that I'm here to welcome any new ideas or any questions or any thoughts. But we are going through a fairly major restructuring this year, and I will share more about that after we're done. I think a lot of the answers will come after this [planning weekend]. (TL3)

Given his role as SSSM Lead, the third author was instrumental in orchestrating the access to the other members of the SSSM team. During the second OGM, the first author mentioned to the coaches a conversation he had had with the third author.

He [third author] told me: your job is to ask the coaches what kind of information they already have. We don't want to deliver a presentation that is formatted for AB athletes. What do coaches want to know? Let's have smaller capsules in which the presenter is going to conduct a topic and after 20 minutes we have 10 minutes for the coaches to discuss and ask questions related to that topic and then move on. If the coaches still have questions that could not be resolved during the call, the coaches can contact the SSSM with no charges. (First author)

During the check in interviews, C10 suggested the participation of CC leaders at competitions. "I think it would be good to have the High Performance Director come here to chat with us." The coaches' interests were communicated to the third author and an effort was made to involve other technical leaders. At the second social gathering during the subsequent National

Championship, the High Performance Director attended the event and addressed the group of coaches.

Lacking Enabling and Strategic Conditions

Until now, all of the experiences shared in the findings have been somewhat positive. This theme portrays some of the situations where the lack of enabling and strategic conditions resulted in subpar outcomes. At one regional event, none of the NTP coaches were able to confirm their participation. This led the first author to delay the logistics of a social gathering that should have occurred with the coaches attending the competition. As it turned out, only one coach stayed after the games and had a conversation with the first author. The first author wrote about the episode in his reflective journal: “Certainly the coaches did not see much relevance in meeting only with me, which makes sense, I am not a WC expert... I should reinforce the importance of having some NTP coaches for the next time”. When discussing the attendance (or lack) from the coaches, the third and first authors reflected on the importance of timing. The third author explained why none of the NTP coaches could attend the social gathering even though all three were at the event,

I apologize, but we were focussed on the selection of the athletes travelling to the World Championship next month. I do understand that the meeting with the coaches is crucial for the social learning space; however, the pressure to decide who’s on Team Canada drained us all during the competition. Also, we had two teams represented at the event while neither team performed particularly well; we did not have the energy to prioritize the social learning space. Plus, we would not have been good company to be around.

That was a valuable learning lesson that systems conveners should take into consideration: the emotions related to an important sporting event. The plans might quickly change when the competition outcomes are not those expected, making coaches prioritize more competitive goals

rather than learning goals. Finally, another challenge was that of connecting with the third author; something that constrained the planning the activities. While the third author was doing his Ph.D. at the same university as the first author, his responsibilities with CC and other athletes required frequent travelling, working from home or remotely, and staying away for weeks. Thus, the connection between the two did not occur as often as desired, and in some instances, delayed the provision of enabling and strategic value.

Discussion

The purpose of the current paper is to delineate *how* an intervention aimed at increasing the learning capability of Canadian wheelchair curling coaches was framed by a system convener in collaboration with stakeholders from different levels. As such and as previously mentioned, this paper does not address the outcomes of the intervention, that is, the specific learning value created. Rather, our concern is in how the participants engaged in the social learning space, remembering that in social learning theory, learning occurs through participation in social learning spaces. In early iterations of social learning theory, learning a practice was proposed to occur as a person navigates from the periphery of a community of practice to its core while engaging with more experienced others within the practice (Lave & Wenger, 1991; Wenger, 1998). With time, the idea that knowledge is most often spread across a much broader space than one community of practice led to Wenger-Trayner and colleagues (2015) to scale up the theory whereby such a broader space might be construed as a landscape of practice, encompassing multiple social learning spaces of various sizes and forms. The current literature using a landscape of practice perspective is yet very limited, with a few papers related to interdisciplinary research (e.g., Clark et al., 2017) and education (e.g., Hodson, 2020). The examination of how a landscape of practice approach to coach development in para sport is

timely and advances our understanding of coach learning and social learning in sport in several ways.

First, Cushion (2008) raised some concerns about communities of practice for coach development. For instance, he proposed that there is a danger that rather than being a venue in which coaches critically reflect on their practices, they might instead reinforce the rooted beliefs and old ways of doing things. E. Wenger-Trayner and Wenger-Trayner (2015) acknowledged this critique and highlighted that a community of practice can, if not being critical of the way things are done, become ossified. In other words, in a community of practice, when there is no further negotiation of meaning and where the regime of competence goes unchallenged, this community of practice will become an avenue for the reproduction of 'the way things are'. An example in sport of this could be traditional martial arts where the sensei has the ultimate power on what competence is. The possibilities for cross pollination when different social learning spaces are nurtured across a landscape is a way forward for knowledge creation.

Second, the landscape of practice approach recognizes the different levels in which coaches are operating, along with the accompanying veils of power inherent in the system. Indeed, communities of practice are not often seen in the sport system outside of teams and clubs (Galipeau & Trudel, 2006) and this is at least in part related to issues of competition and power. The sport system is complex and depends of multiple layers of society to provide positive sport experiences for participants. A landscape of practice approach allows us to focus on coach development in a way that takes into account these multiple levels. Furthermore, the value creation framework, and in particular strategic and enabling value, effectively guide the framing of sport social learning spaces, raising the likelihood of learning value being created, but also permitting us to understand when learning does not ensue.

An intervention framed for this landscape should find ways to create new learning partnerships, that is, connect coaches with others in the landscape, in a deliberate and possibly facilitated way (Duarte, Culver, Trudel, & Milistetd, 2018; Trudel et al., 2013). The facilitation of learning activities as well as the creation of a learning environment that leverages the synergies of different stakeholders within the landscapes is the responsibility of the systems convener (B. Wenger-Trayner & Wenger-Trayner, 2015). This individual should understand how these learning efforts are going to impact the organization's outcomes. Thus, an understanding of how to promote strategic and enabling values is an important asset for systems conveners, and integral to the process of framing a social learning space within a landscape perspective. Within the present intervention, the first author was the systems convener who made efforts to increase the learning capabilities of the landscape and support the learning of people based on their learning goals.

Enabling and Strategic Values

It is important to highlight that enabling and strategic values are complementary and depending on the perspective taken, the same action could be interpreted as enabling or strategic. Enabling value includes social learning support, logistics and technology, strategic facilitation, and resources (Wenger-Trayner & Wenger-Trayner, in press). The load of generating enabling value was shared in this intervention mainly by the first and third authors, that is the systems convener and CC's SSSM lead. The communication between them created a 'robust back-channel' that generated enabling value. For instance, the many strategic conversations between the first and third authors were a way to align expectations and increase the engagement of the CC technical leaders with the coaches. Wenger-Trayner and Wenger-Trayner (in press) label these conversations between key stakeholders' strategic facilitation enabling value. The first author was responsible for the social learning support that encompassed the meeting facilitation,

documentation, and agenda design (Wenger-Trayner & Wenger-Trayner, in press). Although this type of support may seem more logistical than theoretical, given the importance of participation and engagement in social learning spaces, they are critical for learning to carry across the cycles of the value creation framework. This type of support is crucial as previously reported in other coaches' communities of practice, some of which did not continue after the facilitator left (e.g., Culver & Trudel, 2008; Culver et al., 2009).

At first, the focus was on the coaches' perspective. Therefore, the value created for coaches was at the core of the intervention. As the intervention unfolded, it became apparent to the systems convener that in facilitating learning value for the coaches, the potential for value to the CC was recognized by the organization. This was evident through the resources provided by CC for the social learning space. So, what was initially a researcher guided initiative to develop coaches, became a collaborative effort between the researchers, the CC, and the coaches themselves. The CC involvement surpassed the first author's expectations and the quote from the NTP coach above regarding sharing information illustrated their involvement in attaining the interventions' goal of increasing the learning capability of the landscape. The first and third authors shared the responsibilities of framing the learning activities taking into consideration coaches' different priorities and contexts (some coaches work with HP while others work with recreational athletes). The access to staff, including the NTP coaches and SSSM providers from CC, increased the transparency of the program, allowing the coaches to pose any questions or have any type of conversation about the NTP. This fostered strategic value as sharing the same language between the coaches, the NTP, and the SSSM providers resulted in better alignment among these landscape actors (Wenger-Trayner & Wenger-Trayner, in press).

The provision of professional development credits is a good example of how one policy change could be viewed as both enabling and strategic. In the view of the coaches, being able to

receive professional development credits was enabling because it diminished the negative impact of the structural barriers (i.e., geographical distance, costs, travel time) and allowed them to attend, free of charge, learning activities from their homes. From the perspective of CC, the provision of professional development credits was strategic because it stimulated the coaches to engage in their ongoing development, with the possible outcome of an improved athlete pathway to high performance. Moreover, the assignment of the professional development credits also leveraged the SSSM providers already available for the NTP to share best practices across the landscape.

The Role of the Systems Convener

The work of a systems convener encompasses much preparatory work and different tasks (B. Wenger-Trayner & Wenger-Trayner, 2015). Such work requires an understanding of the boundaries and how to leverage learning opportunities. For instance, the systems convener in this case (a) built relationships, (b) opened new learning opportunities, (c) balanced power relations, (d) facilitated learning activities, and (e) brokered strategic conversations.

Build relationships. Through mapping the coaches' learning landscape (see Duarte et al., in press), the systems convener was present at events and started to build relationships. He also made efforts to understand of the boundaries and learning leverage points. One point raised by coaches was the perceived secrecy of the NTP (Duarte et al., in press), which might have contributed to a lack of trust. Trust is of major importance in social learning spaces and its absence is a constraint to successful communities of practice (Roberts, 2006). Within sport coaching, coaches are very selective of the few people with whom they share information and learn (Gilbert & Trudel, 2001; Lemyre, Trudel, & Durand-Bush, 2007). Callary (2013) suggested that the creation of a culture of sharing and collaboration was a major aspect of developing trust and maintaining a coaches' community of practice. Aware of this, the systems convener would

make use of social gatherings, face-to-face interactions, and the endorsement of the CC leadership to advocate for social learning in disability sports. In doing so he attempted to counter such contextual lacunas as the absence of resources and other structural barriers (e.g., few competitions and great geographical distances). These activities were targeted at building relationships and therefore trust among stakeholders.

Open new learning opportunities. Systems conveners should open new avenues for learning (B. Wenger-Trayner & Wenger-Trayner, 2015). In this intervention, the systems convener created a variety of learning activities (e.g., online meetings, online camps, forums) that utilized learning material in different formats (e.g., manuals, articles, videos, podcasts) to increase the learning capability of the landscape. Since coaches' pathways are unique, offering a range of learning activities and formats could facilitate their access to knowledge that is historically either inaccessible or non-existent (Trudel, Culver, & Werthner, 2013; Werthner & Trudel, 2006).

Balance power relations. Power is an important concept not to be ignored in social learning systems (B. Wenger-Trayner & Wenger-Trayner, 2015). The systems convener in this case made efforts to balance the power in the landscape by empowering the coaches in shaping the intervention. The coaches were at the helm of selecting the themes to be discussed during the online camps and online meetings, of scheduling, and of choosing what was shared in Basecamp. To ensure that every coach was heard (B. Wenger-Trayner & Wenger-Trayner, 2015), the systems convener allocated time to group meetings and also individual interviews. Moreover, the intervention was continually presented as belonging to the coaches, not the researchers. Therefore, the coaches were encouraged to leverage their respective power to optimize the intervention and the gains made throughout their participation. This is highly aligned with the

collaborative inquiry methodology in which power is balanced between the researchers and participants (Bray et al., 2000).

Facilitate learning. On many occasions, the systems convener facilitated learning by following a few learner-centred principles (Paquette & Trudel, 2018). As mentioned in the findings, many of the initiatives were designed to be meaningful learning activities for the coaches and therefore increased the likelihood of promoting learning. One such method involved prompting the coaches' reflections which has been suggested to improve coach development (e.g., Taylor et al., 2015; Trudel et al., 2013). At different times during the intervention, the coaches were asked to self-assess and reflect on their strengths, weaknesses, and on how they would apply what was discussed in the social learning space.

Broker strategic conversations. Finally, a major aspect that differentiates the landscape of practice approach from the community of practice one is the strategic conversations with external stakeholders whose practices are linked but different to that of the coaches (B. Wenger-Trayner & Wenger-Trayner, 2015). The systems convener was pivotal in brokering strategic conversations between CC and the coaches. Once the learning needs and goals of the coaches were established, CC was able to provide many instances of enabling value for the intervention that were strategically aligned with the long-term goals of CC.

Reflections and Recommendations

To our knowledge this is the first time that the landscape of practice approach has been utilized to frame an intervention in the domain of coach development. Moreover, while many barriers to coach development have been systematically found within disability sports (e.g., DePauw & Gavron, 2005), this intervention was the first of its kind to employ a collaborative approach between researchers, a national sport organization, and coaches, aiming to minimize the impact of the barriers inherent in the disability sport coaching landscapes. As researchers we

put forth an important caveat since it is our hope that these findings should provide naturalistic generalizations that guide the building of learning capability in other unique landscapes. An important strength of collaborative inquiry is that it is based on lived primary experience, and not secondary experience as is often the case in qualitative studies that seek to understand the insider perspective of participants. With researchers at the centre of this lived experience they are “in a position to ‘do justice’ to their experience (Bray et al., 2000, p. 94). However, given the important role of the system convener in a social learning space (here the collaborative inquiry group) caution must be applied. The systems convener must have a very good understanding of social learning theory and be trained in the various skills of a social learning leader. If not, the social learning space may not increase the learning capability of the landscape.

Lyle (2018) has challenged coach development scholars to conduct more applied research moving forward. For those interested in using this framework in the future, we believe it could be of value for work with coaches from individual sports and sport organizations, regardless of geography; or even coaches who do not compete against other members of the community. Moreover, the involvement of the sport organization leaders was substantial and future interventions should be aware that such support will likely differ. Finally, sport organizations looking to utilize a landscape approach for coach development are strongly advised to have a systems convener who can work towards organizing the many stakeholders and facilitating the framing of appropriate activities to address the group’s collective goals. In this study, the systems convener was pivotal in building relationships, balancing power, opening learning avenues, and facilitating both learning and strategic conversations that promoted enabling and strategic values. Sport organizations should seek a systems convener as a first step towards providing enabling value, since this individual is responsible for linking the collective goals with available resources to achieve the strategic mission of the organization.

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Article 4

**Assessing the Value Created in a Social Learning Space Intervention: Four Vignettes of
Parasport Coaches**

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Abstract

In this paper we reflect on the current literature and the evolution of coach communities of practice and how the coach development area has embraced Wenger-Trayner's social learning theory. Studies examining parasport coach development interventions, and specifically those using a landscape of practice approach are lacking. This paper is the third in a series about increasing learning capability in the wheelchair curling landscape. We utilized a collaborative approach to assess the learning value created through a 13-month social learning intervention. Four composite vignettes based on the coaches' pathways and residency within the landscape were created from the data generated and analyzed using the value creation framework. The vignettes illustrate the many dimensions of learning values experienced by the coaches. This paper advances the literature surrounding social learning theory by providing examples of the novel concept of different dimensions of learning value. Applied implications are included.

Keywords: Coach development, disability sport, landscape of practice

Coach development scholars have worked towards consolidating sport coaching as a profession and attempted to understand coach development through broader lenses of human learning (e.g., Vygotsky, 1978; Jarvis, 2009). These broader theoretical approaches have framed different types of interventions as described by various authors (e.g., Cushion et al., 2010; Trudel, Gilbert, & Werthner, 2010). Moreover, researchers believe that coach development is more than that which occurs in mediated learning situations (e.g., coach education) suggesting a deeper investigation of unmediated (e.g., social interactions) and internal learning situations (e.g., reflection) as ways to advance coach learning (e.g., Erickson, Côté, & Fraser-Thomas, 2007; Jones, Armour, & Potrac, 2003; Werthner & Trudel, 2009). At the same time constructivism has gained popularity within research related to coach development, so too has the investigation of social interactions (e.g., Mallett, 2010; Trudel & Gilbert, 2006). Consequently, Wenger social learning theory (e.g., Lave & Wenger, 1991; Wenger, 1998) has gained notable attention in sport coaching research (e.g., Cassidy & Rossi, 2006; Stoszkowski & Collins, 2012).

Wenger's social learning theory has continuously evolved to meet the practical needs of everchanging learning landscapes. The theory started with the concepts of legitimate peripheral participation and situated learning (Lave & Wenger, 1991). These concepts were developed through the study of various models of apprenticeship, in which apprentices gain experience through their interactions with those who are further advanced in the particular domain. In sport, newcomer coaches at the periphery of a context develop as they engage with other coaches and assistant coaches who are closer to the core of the community (Cassidy & Rossi, 2006). For those studying coach development, this notion was very intuitive, since a body of research has found that coaches cherish the learning acquired during their previous athletic experiences, both

as athletes and as assistant coaches (e.g., Erickson et al., 2007; Rynne, 2014). An early evolution of the theory saw the development of the concept of communities of practice (CoP). Wenger (1998) defined CoPs as a group of people who share interests and interact on an ongoing basis to deepen their knowledge in an area they care about (Wenger, McDermott, & Snyder, 2002).

Within coach development research, some CoPs have been initiated by leading members of a community (e.g., coaches and sport directors; Callary, 2013; Culver, Trudel, & Werthner, 2009) while other CoPs were developed by members outside of the community (e.g., researchers, coach educators) often as pedagogical interventions. These pedagogical interventions included compulsory undergraduate CoPs (e.g., Stoszkowski & Collins, 2017), post-graduate programme CoPs (e.g., Jones, Morgan, & Harris, 2012; Vinson, Cale, Lasota, Huckle, Faulkner, & Jones, 2019), and voluntary participation CoPs (e.g., Bertram, Culver, & Gilbert, 2016; Garner & Hill, 2017). The most notable outcomes reported by these groups of researchers included: increases of intrapersonal knowledge (e.g., Garner & Hill, 2017; Stoszkowski & Collins, 2017), increases of interpersonal knowledge (e.g., Araya, Bennie, & O'Connor, 2015; Garner & Hill, 2017), and convergence of practice and theory (e.g., Jones et al., 2012; Stoszkowski, Collins, & Olsson, 2017). Among the studies that looked retrospectively at cases that resembled CoPs (e.g., Callary, 2013; Culver et al., 2009), researchers found an improvement in the levels of collaboration and trust among participants. However, some studies pointed out the fragility of the CoPs in the absence of ongoing leadership; the collaboration among coach participants ended after the departure of the leaders who initiated and facilitated the meetings (e.g., Culver et al., 2009; Culver & Trudel, 2006).

As Wenger's social learning theory advanced, the theorists (Wenger-Trayner & Wenger-Trayner, 2015) introduced the concept of a landscape of practice, defined as the boundaries and

interconnections of multiple CoPs and networks. With this use of the metaphor of landscapes of practice at least two movements occurred: zooming out and zooming in. When looking at a landscape of practice from above, the CoP became one of the many social learning spaces of a landscape. A social learning space is any configuration of individuals who engage in a learning partnership in relation to a certain domain. The movement of zooming out answered many critiques as some studies got caught in trying to define the occurrence or not of a CoP (e.g., Cassidy & Rossi, 2006; Occhino, Mallett, & Rynne, 2013). The other movement, zooming in, focussed on what makes a social learning space valuable to the individual who is navigating across the landscape. For instance, in this new phase, Wenger-Trayner and Wenger-Trayner (2015) recognized the importance of the role of the systems convener. A systems convener is the person charged with developing learning capabilities within the landscape of practice, harnessing synergies among, and nurturing, social learning spaces. The theorists also developed the value creation framework (VCF; Wenger, Trayner, & De Laat, 2011) as a tool to promote and assess value in social learning spaces.

Table 1: Learning Value Cycles with Descriptors and Dimensions

Value Cycle	Descriptor	Examples of dimensions
Immediate	Your experience of the SLS	Sense of inclusion; Exciting company
Potential	What you get out of the experience	Resources; Social capital
Applied	What do you do with the potential value	Being more assertive; Reuse
Realized	The result of that application	Personal; Collective; and Organizational levels;
Orienting	Interactions with the broader landscape	Participants contexts; Inherited boundaries
Transformative	Broader or deeper effects	New identities; Redefinition of success
Strategic*	Conversations with stakeholders	Strategic contexts; Intentionalities
Enabling*	What makes this all possible	Robust back-channel; Transparency

Note: *This pair of values is addressed in Duarte and colleagues (2020). SLS = Social learning space. Other examples of the value created are presented in the findings section

The coach development literature to date (Bertram et al., 2016, 2017; Vinson et al., 2019) has been limited to using the first generation VCF (Wenger et al., 2011). In its most recent and

expanded version, the VCF (Wenger-Trayner & Wenger-Trayner, in press) includes four pairs of learning value cycles. Wenger-Trayner and Wenger-Trayner (in press) explained that values can take a range of forms, calling these dimensions, examples of which are provided in Table 1. The current paper focusses on three pairs of value cycles (i.e., immediate and potential, applied and realized, and orienting and transformative; Wenger-Trayner & Wenger-Trayner, in press). It is important to understand that these dimensions represent learning value that goes beyond behaviour change. A pivotal contribution of the VCF is that it highlights changes in more nuanced manners, such as changes in a learner's attitude and knowledge, even if the learners have not yet changed practice. This idea aligns well with other important learning theories. For example, for Jarvis (2009), learning is defined as cognitive, emotional, and practical changes in a person. The purpose of this paper is to report the value created throughout a social learning space intervention with Canadian wheelchair curling (WC) coaches. Notwithstanding, our discussion aims to reach beyond the learning value created for the parasport coaches involved to include an in-depth examination of how the VCF can be applied in other coaching contexts. Specifically, we sought to answer the following question: What dimensions of learning values were created for those who participated in the intervention? This paper is the third part of a larger project that aimed to increase the learning capability of the Canadian WC landscape. The first part explored and mapped the landscape to better understand current gaps, learning structures, and important actors (Duarte et al., 2020). The second part described the crucial contribution of the systems convener in leveraging strategic and enabling learning values in the framing the social learning space (Duarte et al., submitted). This paper will build on these studies by reporting the outcomes of the intervention. The data used for this third paper is the same as that for the second paper because both of these papers relate to the social learning space intervention. To avoid repetition

this paper will not address disability literature as the previous two have made the appropriate links.

Methodology

The research is situated within the participatory research paradigm and makes use of collaborative inquiry (Bray, Lee, Smith, & Yorks, 2000; Heron, 1996). In collaborative inquiry, reality is participative and is co-created by the mind and the surrounding environment through cycles of reflection and action that shape the experiences of all the actors within the project (Heron, 1996). In other words, the authors and participants co-construct knowledge every time they engage with each other; therefore, every data generation opportunity is also believed to have a potential impact on the participants' learning (Bray et al., 2000).

Participants

The social learning space intervention involved a peer learning group (PLG) composed of 25 participants. The participants included 16 WC coaches, 6 Curling Canada (CC) technical leaders, and 3 researchers. The WC coaches were recruited employing purposeful and snowball sampling strategies (Sparkes & Smith, 2013). The group of coaches accounted for a majority of the population of active WC coaches in Canada. This group included seven females and nine males ($M = 59.5$ years of age) from seven Canadian provinces and 14 cities. The years of coaching experience varied greatly across able-bodied curling ($R = 1-25$; $M = 19.5$ years) and WC ($R = 1-12$; $M = 6.5$ years) contexts. More details of their collective experiences are provided in the vignettes presented below. Three of the CC technical leaders included the High-Performance Director, the Head Coach, and the Team Manager ($R = 35-65$; $M = 52.5$) who had worked with the WC national team program (NTP) for over a decade. Two of the technical leaders were sport sciences providers. Another technical leader was involved with coach

development. The CC technical leaders interacted with the PLG to provide guidance and support for the coaches' learning endeavors. Further information on this group is presented in the last vignette. Finally, the three researchers (R1, R2, and R3) comprised the last group of participants. All of the researchers have experience with coach development and disability sports ($R = 5-10$ years; $M = 8.3$). R1 acted as the systems convener. R2 was the academic supervisor of R1. At the time of the study, R3 acted as the liaison between the other researchers and CC because of his official involvement as a technical leader, who was responsible for: coordinating all of the sport science providers, the research and innovation programs, and mental performance services for the CC national teams (able-bodied and WC).

Ethics. The university's research ethics board granted ethical approval and all participants signed an informed consent form. Due to a potential power issue between the coaches and the CC technical leader/members, several initiatives were taken. For instance, R1 was the only person to have access to the raw data of the individual interviews. Moreover, during the first online camps, whenever a participant coach had a question, the questions were sent to R1, who posed the questions to facilitators. After a few online camps, the participant coaches perceived the risks as non-existent and decided to re-negotiate confidentiality and anonymity (Williamson & Prosser, 2002) to address the facilitators directly.

Making Meaning and Constructing Knowledge

In collaborative inquiry, data generation and analysis are inseparable due to the intricate nature of meaning-making (Bray et al., 2000). Given the cyclical nature of collaborative inquiry, the framing and assessment overlapped as the cycles of reflection helped shape the next subsequent activities during a 13-month time frame. The following sections detail the learning activities, data generation, online tools, constructing knowledge, and trustworthiness.

Learning activities. Four online group meetings were facilitated by R1 and lasted approximately 91 minutes each. Within these meetings, generally speaking, the online group meetings brought coaches together within a collaborative space for knowledge creation, for example by the coaches raising their concerns and in some cases critiques of the WC community. These meetings were driven by the coaches' learning needs and served to shape the more formally structured online camps (see Duarte et al., submitted). Eight online camps were held, lasting approximately 92 minutes each. Four online camps focussed on sport science topics and were led by sport science providers. The other four were led by PLG coaches (i.e., WC strategy and tactics, statistics, and funding).

Data generation. Aligned with collaborative inquiry (Bray et al., 2000), our experience trail included a multitude of data generation techniques: in-depth interviews, focus groups, observations, and analysis of the online entries on a shared website. First, in-depth semi-structured interviews occurred at three different moments of the inquiry; at the beginning ($N = 15$, $R = 24-119$ min), mid-point ($N = 10$, $R = 15-57$ min), and end of the intervention ($N = 13$, $R = 24-54$ min). While the number of coach participants actually increased over the 13-month intervention, not all of the coaches were available for three interviews. These in-depth interviews utilized semi-structured guides and were conducted in-person or online (see below). The different interview guides were created using the VCF (Wenger et al., 2011) and the vignettes present real questions. The first interview included questions to understand the coaches' pathways (see first questions of each vignette); the second interview explored the coaches' experiences within the intervention (e.g., user friendliness, barriers to participation); and the final interview assessed the value created throughout the intervention (see last questions of each vignette). Second, two focus groups were held and utilized similar interview guides based on the

VCF. The first focus group (60 min) occurred during the second National Championship R1 attended and explored the perspectives of seven coaches concerning the intervention. The second focus group (66 min) included the perspectives of three CC technical leaders (NTP coaches) and was conducted online. Third, observations (Sparkes & Smith, 2013) took place at the three different competitions R1 attended. Despite the hand-written observation notes taken during the 14 days of competitions, the experience of being a participant observer immersed in the WC culture afforded R1, through the constant interactions and informal conversations, a deep understanding of the sports' context. Fourth, the coaches' entries ($N = 1001$) such as posts, comments, and answers to prompts across different online tools were analysed.

Online tools. The intervention used four online tools: GoToMeeting (Pro 25), Basecamp, Survey Monkey, and Doodle (see Duarte et al., submitted). The selection of these tools was based on two criteria; user friendliness and cost. GoToMeeting was the only tool with a paid subscription and it was provided by CC. GoToMeeting served to host the online group meetings, online camps, and interviews due to its capacity to support audio from up to 25 attendants and live video for up to seven attendants at a time. It was also used to record both the audio (all users) and presenter screen during the meetings and interviews. Basecamp is a project management tool used by the PLG participant coaches to stay abreast of the learning activities (e.g., forums, group calendar) and as a resource database (e.g., videos of online camps, presentations). Survey Monkey is a survey tool that was used after the online camps for feedback on the camps and to stimulate reflection on the application of the content presented. Finally, Doodle is a short survey tool that was used to facilitate scheduling.

Constructing knowledge. Braun, Clarke, and Weate's (2016) thematic analysis coupled with an interpretative analysis (Bray et al., 2000) were used to make sense of the 615 single-

space pages of data. The VCF (Wenger-Trayner, Wenger-Trayner, Cameron, Eryigit-Madzwamuse, & Hart, 2017) provided the theoretical scaffold that allowed the researchers to frame and analyze the intervention using a deductive approach. Thus, the learning values were themes and as the process evolved, we made use of the coaches' location within the WC landscape metaphor to explain how value was created by and for the coaches (see Figure 1 for examples of locations). In this way, the two types of analysis, deductive thematic and interpretative, were integrated (see further details below). Nvivo 12 (QSR International, 2018) was the qualitative data analysis software used to organize the many different pieces of data. The field notes, observations, and reflections were scanned and uploaded as PDF files while the interviews, focus groups, and online group meetings were audiotaped and transcribed. Further details on how the intervention was framed can be found elsewhere (Duarte et al., submitted). An example of how the vignettes were crafted and the use of the many data generation techniques is presented in the Appendix.

Composite Vignettes and Trustworthiness

For thousands of years, storytelling and narratives have been used effectively to communicate knowledge. However, only in the last few decades has the credibility of vignettes emerged and been supported as a legitimate way to report qualitative data (Ely, Vinz, Downing, & Anzul, 1997). Vignettes are popular due to their capacity to capture the reader and effectively transmit participants' attitudes, beliefs, and perceptions (Ely et al., 1997). With a relativist approach framing our efforts towards trustworthiness (Burke, 2016), the ability of composite vignettes to improve the accessibility of the research findings was justified. Furthermore, the possibility for coach developers to make naturalistic generalisations (Sparkes & Smith, 2013) through reading the vignettes was a plausible aim given previous research (e.g., Deal & Camiré,

2016; Paquette, Trudel, Duarte, & Cundari, 2019). Among the different vignette formats (i.e., snapshot, portrait, and composite vignettes), we chose the composite vignette as it unifies multiple experiences into a single experience (Ely et al., 1997). Gray, Royall, and Mason (2017) proposed several steps for constructing vignettes; these steps aligned with Braun et al.'s (2016) thematic analysis. The process of writing the composite vignettes involved the act of highlighting the major themes identified during the thematic analysis, as guided by the VCF. The profiles of the coaches below are not based on any single individual, but comprise shared characteristics and life stories related to their WC coaching context (i.e., their location within the landscape). Adding to this, Figure 1 expands the landscape metaphor as it presents the coaches' residencies and possible pathways, represented by the dotted lines of incomer coaches to the WC landscape. Given the varied biographies of the incomer coaches and their different entry points into the WC landscape, the composition of incomer vignette posed the greatest challenge. As it happened, Nancy's story represents all of the recreational coaches in the group as well as all those living with a disability. Quotations from the various data sources were used to contextualize the experiences portrayed in the vignettes (Gray et al., 2017). Finally, at least three coaches inspired the writing process of each vignette.

Findings and Discussion

The vignettes are presented in the form of a dialogue between a fictional coach and R1. The major themes found throughout the meaning making and knowledge construction guided the creation of Figure 1 and these vignettes. Given the importance of the analysis according to the coaches' residency in the landscape (see Figure 1), each vignette is immediately followed by a discussion of how the PLG created value for the coaches in the specific context. Interwoven within each vignette are some additional findings about the major contextual factors of the WC

landscape (see also Duarte et al., 2020). Each of the vignettes discussed separately answers the research question: What dimensions of learning values were created for those who participated in the intervention? The learning values discussed following each vignette are the ones that were most significant for the coaches in the respective context, however some of these values were also experienced by the coaches in the other contexts. Orienting value is only represented collectively, in Table 2. To facilitate the visualization of the value cycles discussed in the vignettes, Table 2 defines the dimensions for each context.

Nancy, the incomer: “I don’t know what I don’t know!”

R1: *Tell me a little bit about your curling experience.*

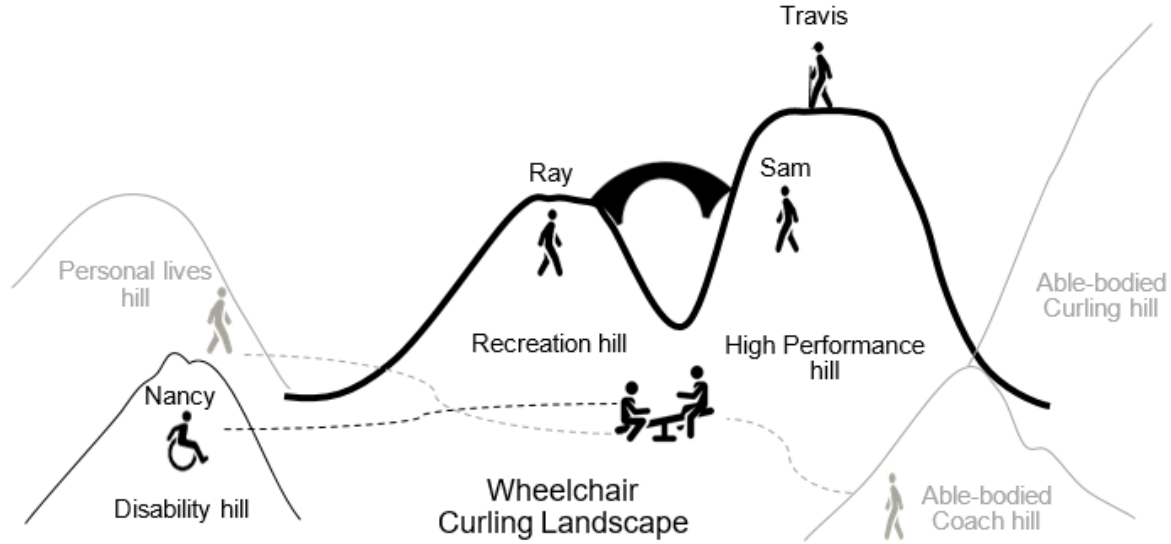
Nancy: I got involved with WC due to my own impairment. I tried many different sports like wheelchair basketball, but at my age (50s), the stamina isn’t there anymore. A “wheelie” friend of mine kept bugging me to join the team because it is always a struggle to find wheelchair users who want to stay seated inside the freezer [laughs], I mean on the ice sheet. So, I showed up and had so much fun! I was hooked by the sense of community! Locally, we always played against able-bodied teams because there aren’t any other local wheelchair teams; well, not even adapted clubs. I travelled to a few tournaments within five hours from home. How bizarre that one week we played against able-bodied teams in our recreational league at the club, and the next we competed against teams that we had seen on TV at the Paralympic Games! And sometimes, we even beat them!

R1: *Yes, that is bizarre! What else about competitions was remarkable?*

Nancy: At the nationals, Curling Canada requires that every team brings a coach. Actually, the difficulty of finding a coach to work with us is what motivated me to become a coach.

R1: *What were your initial thoughts and goals for participating in the intervention?*

Figure 1: Wheelchair Curling Landscape Elements and Residents



Symbol	Landscape Elements	Definition
	Hills at the boundaries	Represent incomer coaches' experiences before entering the WC coaching landscape
	Playground	Competitions and events where coaches meet regardless of the hill they reside
	Bridge	Facilitates the traffic between hills
	WC Landscape	Includes recreational and high performance hills
	Possible pathways	Each incomer will trail paths according to their biographies and goals within the landscape
Symbol	Landscape Residents	Definition
	Incomer	The incomer coaches come from outside the landscape; This category is transient
	Nancy	WC athlete who is new to coaching WC (incomer)
	Ray	Resides at the recreational hill and coach mostly recreational WC athletes
	Sam	Resides at the high performance hill and coach mostly competitive WC athletes
	Travis	Coaches at the top of the high performance hill and often accessed for guidance

Table 2: Dimensions of Value Created for Participants

Value Cycle	Dimensions of Value Created	Elements of learning	Definition of each dimension
Immediate	Sense of inclusion	Emotive	Feeling of companionship with people who value your participation
	Exciting company	Emotive	Delight people feel when involved with those holding state of the art knowledge in an area important to them
	Engagement with other perspectives	Cognitive	Exposure to other contexts and points of view within the landscape
	Generational encounters	Cognitive	Newcomers with fresh perspectives and old-timers with rich experiences
Potential	Resources	Cognitive	Access to artefacts produced or shared by the community such as documents and tools tailored to WC
	Social capital	Cognitive	Ones' capability to increase their personal connections or reputation, as well as understanding the roles people play within a landscape
	Insights	Cognitive and Emotive	Nuanced <i>insights</i> from the group
	Potential collaborators	Cognitive and Emotive	Opportunity to establish common ground and leverage synergies leading to potential opportunities for collaboration
Applied	Being more assertive	Practical and Emotive	Speaking more confidently with stakeholders
	Reuse	Practical	Templates, procedures, and documents repurposed to match another's practice
	Harnessing of synergies	Practical and Cognitive	Alignment of resources to achieve common interests
	Leveraged connections	Practical and Emotive	Collaborating with participants in a joint project
Realized	Personal level	Emotive	Personal satisfaction of being part of the community
	Stakeholders	Practical	People outside of the social learning space who benefit from the value created by a participant
	Collective level	Emotive, Cognitive and Practical	Influence on other group members
	Organizational level	Practical	Contributing to an organization's mission
Orienting	Biographies and identities	Cognitive and Emotive	Leveraging the broader identities and histories that people bring to see things in new ways
	Participants	Cognitive	Exploring the various contexts and implications for learning together
	Personal networks	Cognitive and Emotive	Exploring and leveraging connections that people have across the landscape to enrich the space
	Inherited boundaries	Cognitive and Practical	Recognizing and addressing boundaries that manifest within the social learning space
Transformative	New identities	Emotive	Transforms how individuals experienced the world
	History and culture	Emotive	The effects learning has on mindsets and historical narratives
	Redefinition of success	Emotive and cognitive	Mindset changes that lead participants to rethink their participation in the landscape
	Institutional change	Practical	Changes to the organizational structures and procedures

Note: For all but orienting value, the dimensions listed follow the order of the four vignettes (e.g., Immediate: Sense of inclusion, is for Nancy); exciting company is for Ray, etc.). For orienting value, the dimensions presented are for all the PLG participants.

Nancy: At first, I thought it would be an opportunity to meet other coaches and if there was an open coaching spot on Team Canada, why not? I thought being a wheelchair user, I could be the voice of people with disabilities within the NTP. Of course, that thought did not last. Reading all the topics on Basecamp and online camps was quite overwhelming at times. The amount of information helped me realize that I don't know what I don't know. [laughs] I was in way over my head. The amount of knowledge the NTP coaches have is really impressive and it did bring much more appreciation for what they are doing with the national team.

R1: *On that topic, can you describe your participation in these different learning activities?*

Nancy: I participated in every activity I could. It felt so great to be part of the community; I wanted to experience it fully. I was so impressed with everything I heard and read that at first, I thought twice before commenting or asking. Actually, it was good that during online camps I could send my questions in without asking directly. I didn't want to be viewed as a newbie. In the last few months, I'm way more confident.

R1: *How so? Can you expand on what ways you have benefited from the PLG?*

Nancy: Oh, boy, I benefitted in so many ways. Actually, I have a great story that happened during a major competition. At our competitions, opposing coaches are side-by-side watching the game. So, as an athlete, when I started coaching, I would never sit close to the coaches like a "spy". But after a few PLG meetings, I felt confident to ask if I could sit behind them. The coaches were very welcoming and invited me to sit not behind, but beside them. As the game went on, they shared among themselves some tips on how the teams should be playing, and even, to my surprise, asked my opinion a few times. Being

part of the group made me more confident to join in conversations and to feel that I belong.

Value Created for Incomer Coaches

The incomers were the most diverse group among the participant groups (see Figure 1) with one participant coming from each of the different boundary hills (i.e., disability hill, personal lives hill, able-bodied hill). The incomers' learning values were organized in five dimensions: (a) sense of inclusion (immediate), (b) resources (potential), (c) being more assertive (applied), (d) personal (realized), and (e) new identities (transformative). First, the WC community is small and spread across Canada, thus Nancy's participation in activities related to WC resulted in the dimension *sense of inclusion*. The importance of inclusion is heightened in Parasport by the lack of athletes, teams, and by the geographical challenges to competing (e.g., Kohe & Peters, 2017). Lave and Wenger (1991) mentioned how apprentices felt at ease asking questions to more advanced peers instead to masters. That sense of inclusion, which is an emotional change (Jarvis, 2009) in Nancy, is a precursor to her being able to ask questions, without which she could not have the possibility of changing her behaviour. Second, the *resources* dimension is evident in the documents and tools tailored to WC. The PLG posted 1001 entries on Basecamp, 12 recorded hours of the online camps, and 46 documents produced and shared, which was of particular benefit to the incomers. Third, as Nancy's confidence increased, she became more assertive, especially vocally, and engaged in both online and in-person situations. The assertiveness described in the vignette was observed in other studies in which CoPs expedited the familiarity of newcomers with the community (Bertram et al., 2017). Fourth, Nancy experienced realized value at the personal level as she felt the personal satisfaction of being part of the community. Fifth, Nancy's new identity as a WC coach shaped the way she

engaged with other coaches and allowed her to join conversations that she would not have joined as a WC athlete.

Ray, the recreational coach: “Coaching Wheelchair Curling is so complex!”

R1: How did you start coaching?

Ray: I started coaching because of my two sons; from little rocks until they went to the university. Coaching my kids had a big influence as I was able to see their development from recreational participants to competitive athletes, and now as lifelong participants. I made many lifelong friends and decided to continue coaching. I took the National Coaching Certification Program (NCCP) Level Two certification and the courses for Level Three. Maybe one day I will continue to L3 certification. Now that I am retired, I am at the curling club many nights per week, volunteering in other areas as well. A few years ago, a wheelchair athlete asked me if I would coach his team. I was a bit intimidated at first but decided to give it a try. Our team does not meet very often as two of the athletes live two hours from our club. Team practices are once or twice a month and I am on ice once a week with two of the athletes. So, it took me a while to figure out how to coach them properly. Some of my athletes are working toward the Paralympics and others are playing for fun, requiring adjustments to the teams’ goals.

R1: Really? With such limited time and broad team goals, how did you learn about coaching?

Ray: Coaching WC is so complex. Every athlete is different, the rules are different, many different (dis)abilities. So, I learn from the athletes, talk to other coaches at my club, and at competitions. The athletes are the experts on their disabilities; so, I listen a lot! My club has former able-bodied national champions who are very eager to help. But the fact that WC doesn’t have sweeping makes the game very different. The competitions are a

great source of learning. On one hand, you have very organized teams with assistant coaches taking care of their homemade lunches and some have Paralympic gold medalists retired from other sports. On the other hand, other teams have athletes eating fries and engaging in behaviours that are not at all linked to high-performance. So, at competitions you can learn by observing everything within and between these two streams.

R1: *What were your goals for participating in the intervention?*

Ray: I believe there are many gaps between what we know and what is happening at the HP level. One of the major reasons to participate was to be able to see what other people were doing. Of course, it is nice to see what is happening with Team Canada, but my team is at the level that we need to work on the big pieces versus the small details. We still have to adjust some major gaps like upping the amount of practices, especially for injury prevention. It's hard to prepare athletes to play two games per day for five days in a row when they are only practicing twice a week.

R1: *How do you evaluate your participation in the PLG?*

Ray: I attended many of the learning activities and enjoyed reading other coaches' experiences on Basecamp. For some time, I thought the NTP was a closed club that would not share info with people who are outside the group. So, I was very curious, and I am very pleased with how that sharing part happened. An example of something that I changed was the use of drills from Team Canada. After the online camp with the NTP coaches, we started to be more deliberate in our practices. Instead of having scrimmages or games with able-bodied teams, I would set-up some drills for players to execute.

R1: *How did you benefit from this experience?*

Ray: I believe that what has changed the most is how easily I have my questions answered.

Before, I felt like I was back in the day when, if I had a question, I would send a message in one of those cylindrical pneumatic tubes and it would get lost somewhere; like the provincial organization took a month to reply and say that CC should be answering or something like that. With the PLG, I had access to many coaches, and sometimes after a few hours I get an in-depth answer that I can apply right away. It's the end of the lost message and the middle-man. Also, it was very good to have access to the professional development credits from my home. Continued education costs a lot of money since it means travelling and other logistical expenses which add up pretty quickly, especially when you're a retired, volunteer coach.

Value Created for Recreational Hill Coaches

The coaches on the recreational hill did have many experiences within the WC landscape that allowed them to have greater access to the WC community than the incomers, but they were less engaged than the coaches on the HP hill. The five dimensions of learning values prevalent for these coaches were (see Table 2): (a) exciting company (immediate), (b) social capital (potential), (c) reuse (applied), (d) stakeholders (realized), and (e) history and culture (transformative). First, since Ray did not attend many competitions, being involved with a group of coaches who are passionate about WC was highly satisfying, as well as provided him with access to individuals from the NTP. Immediate value is an excellent indicator of how emotional changes are important aspects of learning. Moon (2001) theorizes that learners who are excited by a learning opportunity show a motivated orientation towards learning. Second, Ray experienced social capital through the PLG providing Ray with online access to many coaches from across the country with expertise in physiotherapy, nursing, sport doping, statistics, etc.

This increased access which facilitated an understanding of who to contact in case of a coaching issue (Occhino et al., 2013; Gilbert & Trudel, 2001). Third, for the reuse dimension Ray adopted the drills presented and shared by the NTP during online camps. While the application of a given artifact into a person's context is never straightforward, and adapting it requires reflection (Moon, 2001; Schön, 1983), the online interactions supported Ray in his application. Fourth, continuing with the drills example, the stakeholders' dimension was illustrated by Ray's application of the NTP drills which provided their athletes (stakeholders) with more deliberate practices based on the drills. Fifth, in relation to the history and culture dimension, Ray initially perceived the NTP as a closed and secretive group (Duarte et al., 2020). Ray's participation in the learning activities led by the NTP changed Ray's perspective of the NTP from secrecy to transparency.

Sam: “At my stage, I need to be looking for nuances in how to coach”

R1: Tell me how you got involved with curling.

Sam: I have curled from a young age and started coaching able-bodied curling since, oh wow, I am getting old [laughs], since the 80s; coaching ladies' teams, men's teams, and junior teams. Some of the teams I work with did well at the provincial level. I really enjoy learning, so I took my NCCP Level Three and what they now call the Advanced Coaching Diploma. With the friendships I established, I got invited to become a learning facilitator for the NCCP. Also, I went a couple times to the Scotties; the highest women's competition in Canada. Funnily enough, last year, the current Olympic gold medallists did not come to the event because they lost the qualifying match at their provincial championships. That shows you how competitive curling is in Canada.

R1: *Wow, only in Canada, Eh? I was going to ask you how you learned to coach curling. It seems that you're very competent at what you do.*

Sam: Let's say, I'm fortunate enough to be surrounded by great people who are great mentors and whom I can call friends. I have been around the NTP coaches for many years. This has provided me with a sound network of sport science providers who I can call upon and use as a sounding board. Outside curling, I have a friend who teaches adaptive physical education at the university, so we get together once in a while to chat. Of course, when you coach NTP athletes you have easier access to the latest intel because they bring a lot of insider knowledge from the competitions they attend. I also got invited to NTP training camps which are the best place to learn the cutting edge in terms of sport sciences!

R1: *Based on your previous comments, many of the learning opportunities provided by the PLG were already available to you. What kinds of new benefits have you experienced if any through the PLG?*

Sam: I've been teaching coach education modules for many years which has allowed me ongoing opportunities to reflect on my role as coach and on the advancements of the sport. The 'aha' moments that some of the less experienced coaches had during the online camps, I had already experienced them at different camps or competitions. While much of the information provided was not new, at my stage, I need to be looking for nuances in how to coach. So, to be specific, during an online camp the NTP coach mentioned a change in how they score shots. That led me to connect with them later and discuss the change. The NTP coach told me it was because of the analytics from the international competitions they attended that year. If I had not been at the online camp, I would have lost the opportunity to reflect on these changes. So, I would say the biggest benefit was to engage

monthly with all of these great people. Can I say that I have changed the way I coach? I don't think so. Have I changed the way I engage with the other coaches? For sure, and that's the biggest benefit.

R1: *Does that have any relation to what we talked about during the mapping interviews regarding coaches keeping secrets close to their hearts?*

Sam: Absolutely! At first, I was skeptical and not very convinced I would share what I have, but I was also very curious to see how some of the other coaches would behave. If they would be willing to let some information out. They surely did. It was quite impressive to see all of the conversations on Basecamp and people sharing their drills, tools, CC sharing coaching manuals, and the NTP coaches coming and speaking openly about their struggles and how to surmount them. I mean, don't get me wrong, people were not sharing how they would play during a given game or what their teams' strengths and weaknesses are, but other than that they were sharing the whole thing. In fact, at the statistics online camp, the presenter shared the team's real performance data. All the synergies being created inspired me to share as well, and that's when I offered to lead that online camp. I felt good sharing my expertise and alleviating the pressures some recreational coaches face at their clubs. Actually, yesterday I got an email from a coach asking to help him out related to the online camp content. So, in that perspective, what I have changed is my view of how competitive coaches, like myself, can collaborate for the good of the sport. Beyond that, there is always that fear that you do not want to miss out: i.e., you don't know what you don't know! Curling is a sport that is in constant evolution, and even more so in wheelchair; I wanted to be in tune with the latest information from the NTP.

Value Created for the Coaches around the Middle of the HP Hill

The coaches around the middle of the HP hill are lifelong learners who have been coaching in both the curling and WC landscapes in different contexts (i.e., recreational and HP) for decades. The five dimensions of learning values for coaches around the middle of the HP hill were (see Table 2): (a) engagement with other perspectives (immediate), (b) insights (potential), (c) the harnessing of synergies (applied), (d) collective (realized), and (e) the redefinition of success (transformative). First, for Sam who coached mainly HP athletes, the engagement with other perspectives dimension refers to the engagement in the PLG increasing Sam's knowledgeability of the recreational context. Second, Sam looked for nuanced insights from the group. More specifically, Sam was attentive to the comments from the NTP experiences at the World Championships and the Paralympic Games, as well as the challenges faced by coaches on the recreational hill. Third, the co-creation of knowledge through leading an online camp is how Sam harnessed synergies and aided in the alignment of resources to achieve common interests. Fourth, Sam created value for the collective by sharing various resources on Basecamp. This increased the knowledgeability of the other coaches in the PLG. While other studies have referred to realized value associated with athlete outcomes (e.g., Bertram et al., 2016; Vinson et al., 2019), it is important to understand that realized value can be a small step on the way to making a difference (Wenger-Trayner & Wenger-Trayner, in press). In this case the other coaches were, subsequent to Sam's sharing, better informed about where in the landscape to go for help. Lastly, Sam experienced the redefinition of success dimension. Initially, Sam was skeptical about collaboration among opponents at the competitive level. This type of shift from a focus on improving one's team to supporting the growth of the sport through collaboration is aligned with the findings of other coaches' CoP studies (e.g., Callary, 2013; Culver et al., 2009).

Travis: “Coaching is coaching! You’ll coach each individual’s abilities”

R1: *Tell me how you got involved with curling.*

Travis: I started throwing rocks a long time ago and the passion for the game led me to experience competitions at different levels. I consider myself a keen student of the sport and performance; every time I saw a book, I had to buy it, every conference and coaching course I had to attend. I guess my passion for learning the game is what led me to coaching. For me it is pretty obvious that coaching is teaching, with the benefit that the best way to learn is to teach. One thing led to another and once you start connecting with other sport lovers, doors open.

R1: *How so?*

Travis: Well, there are so many stories. I have been involved with Team Canada since the first Paralympics. So, when the World Curling Federation announced the creation of WC, we needed to develop the sport in Canada. CC leadership established different strategies. We needed to find athletes and coaches in different provinces. One way was writing the WC manual to share with coaches across the country. Another strategy was to invite coach developers to work with provincial teams because they have sound curling and sport sciences knowledge. In a sense, the only additional knowledge they would need would be the ‘para’ side of the sport. Also, I’ve been traveling across the country to deliver WC training camps for the NTP athletes since 2004! Plus, I went to all of the Paralympics and World Championships. Because WC is still in its infancy, we cannot settle and I’m constantly seeking innovations and connecting with researchers from different parts of the country to design tools and support the NTP.

R1: *That's great. Is there a difference between coaching wheelchair and able-bodied curling?*

Travis: Coaching is coaching. It doesn't matter if it's an able-bodied team or a WC team. In both teams you'll coach each individual's abilities, you understand what their gaps and strengths are, and work to optimize what they do well and minimize the impact of what they are still struggling with. Of course, my mindset evolved over the last 15 years. When I started, I didn't know where to go to answer all of the questions I had, so I tinkered a lot. You also need to dedicate a good amount of time to knowing each athlete and what is happening with them at different levels, from their relationships with family, with colleagues at work, with teammates, and so on. The biggest difference is that when coaching athletes with a disability, you'll add a few other people who might be important to them such as a physio or another care provider, and the most important person to inform your coaching is the athlete.

R1: *Are there any benefits that you have gained from participating in the PLG?*

Travis: Absolutely. I think having access to developmental coaches is a big benefit since they might be the ones identifying the next Paralympians. We understand that their job is lonely in many ways, so if we can continue doing what we have done, which is facilitating training camps, selecting the national team, and so on; and doing it over the Internet, we can reach a larger audience; which is fantastic. One of the biggest challenges of having a selection of players from across the country is that everybody has to be on the same page. Since the NTP athletes are from different provinces, it is important that their home coaches are aware and speaking the same language as the NTP; this way we can be consistent with the delivery of drills and athlete preparation to perform on demand. While we have always had this open-door policy, not many coaches reach out to us. The PLG provided a platform upon which the coaches felt comfortable posing questions and being

assured that we were there to listen to them. And this also keeps us accountable. The coaches are not only ones who benefitted from the PLG, we all did.

Value Created for Coaches at the Top of the Hill

The five dimensions of learning values for coaches at the top of the HP hill encompassed: (a) generational encounters (immediate), (b) potential collaborators (potential), (c) leveraged connections (applied), (d) organizational (realized), and (e) institutional change (transformative). Until now, the coaches depicted by the previous vignettes had mentioned their aspirations to access the NTP coaches and resources provided by the CC. Travis' vignette was inspired by the NTP coaches and some coach developers, who were the influential people for the coach participants. The values created for Travis through his participation in the PLG were related to increasing alignment. Travis reported value in the dimensions of generational encounters and potential collaborators when he made reference to the benefit of interacting with recreational coaches who may find the next athlete to be fast-tracked to the NTP, a relatively common pathway for Paralympians (Bundon, Ashfield, Smith, & Goosey-Tolfrey, 2018). Moreover, the alignment sought by CC technical leaders pointed to the importance of leveraging connections. This dimension was the platform upon which the coaches were able to access the NTP program and come to understand the language used by the NTP along with drills and techniques to develop their athletes in line with the NTP criteria. The coaches' access to knowledge shared by the NTP resulted in value at the organizational level. The Curling Canada's (CC, 2019) mission statement reads: "to encourage and facilitate the development and growth of curling". Finally, the institutional change dimension is apparent through the PLG that allowed Travis to communicate with coaches from across the country without having to wait for the competitions or training camps where he typically would meet only a few of the coaches from

the HP hill. This institutional change led to greater interaction between the recreational and the HP hills, as symbolized by the bridge in Figure 1.

Increasing the Learning Capability

As indicated above, the PLG led to numerous dimensions of value for the participants through the increase of the learning capability. The social learning space intervention identified many gaps within the WC landscape. We made use of the analogy of a bridge to support the idea of increasing the flow of communication between coaches of the different hills. In our earlier work, Duarte et al. (2020) found a “rope bridge” serving the purpose of connecting a very few recreational and middle of the HP hill coaches to the top of the HP hill. An important feature of the WC landscape, as well as other parasport landscapes, is the virtual absence of a developmental hill, which accounts for the necessity to build the capacity and utility of this bridge. By leveraging the access to the HP hill for all coaches regardless of their residency within the landscape, the learning capability of the organization was nurtured. The PLG developed many learning activities to provide all participants with access to knowledgeable people and this arose in a few ways. First, the flow of information from the HP hill allowed a greater alignment between HP coaches and recreational ones concerning athlete performance. Second, the flow from the recreational to the HP hill provided access to different perspectives and potential collaborations. Moreover, the availability of the top of the hill coaches redefined the way recreational coaches viewed the NTP.

The four vignettes presented how the coaches perceived the PLG. First, the incomers and recreational hill coaches greatly benefitted from the resources shared by the coaches in the middle, and at the top HP hill coaches. This increased access to more advanced peers is recognized as a major aspect of CoPs that facilitates newcomers learning of the sub-culture,

language, and shared repertoire of a group (Culver & Trudel, 2006; Wenger, 1998). Furthermore, since the recreational hill affords very few practice and competitive occasions, the learning opportunities are very limited for acquiring knowledge in action (Schön, 1983). The PLG substantially increased the use of the bridge, producing ample examples of immediate and potential values. For coaches on the HP hill, the PLG did not greatly increase their access to peers since they compete often, but the PLG facilitated their access to different perspectives in a convenient way through the use of online tools. The PLG indeed facilitated the work of Travis, as he could reach coaches across the country without traveling. Previous work in coach development found that coaches of various competencies and experiences, all benefited from their participation in a CoP (Culver & Trudel, 2006). Overall, in relation to reflective practice for coach development, coaches' reflective conversation is facilitated by the access to others (Gilbert & Trudel, 2001).

Reflections and Recommendations

Instead of a narrow focus on the value created for parasport coaches through this social learning intervention, an overall discussion of the use of the VCF to consider coach development in this social learning space has been considered. Previous explorations of social learning spaces have reported such outcomes as increased reflection (e.g., Garner & Hill, 2017) and augmented interpersonal and intrapersonal knowledge (e.g., Araya, Bennie, & O'Connor, 2015). The VCF, coupled with learning theories such as Jarvis (2009) and Moon (2001), allow us to understand learning and the process of possible or eventual changes to practice through another lens. The cross analysis of the four vignettes permits us to make several observations about learning. Thus, those who wish to provide coach development opportunities should consider learning as the cognitive, emotive, and practical transformations that change a person as these transformations

are integrated into their cognitive structure/biography (Jarvis, 2009; Moon, 2001; Trudel, Culver, & Werthner, 2013).

For incomers and recreational coaches, immediate value was largely demonstrated emotively (see Table 2). Since these coaches did not attend many competitions, they experienced excitement and a sense of inclusion that resulted directly in personal level realized value. This is an interesting reflection of how learning value can move from one value cycle to another one, skipping the ones in between (immediate to realized). The entanglement of the three elements of learning can be a challenge. For instance, the resources dimension could easily be viewed as cognitive. However, the example of the incomer coach illustrated that despite a lack of material produced for parasport coaches (Tawse, Bloom, Sabiston, & Reid 2012), the large amount of information co-created by the social learning space led the incomer coach to feel, at least initially, overwhelmed emotionally. However, the support of the social learning space over time, including ongoing access to the resources on Basecamp, provided the incomer coach with the time required to move beyond this emotive reaction to a place where she could start to understand (cognitive) and use (practical) the resources.

Conclusion

Readers should bear in mind that this paper is the third in a series of articles using collaborative inquiry. The first article mapped the WC landscape. This led to the second article which delved into the framing of the social learning intervention, guided by the main considerations of the mapping article. That is, together, we created an intervention to provide the participant coaches with meaningful learning activities by making use of the synergies already in the landscape, like training camps and competitions, to increase the interactions between the CC technical leaders and the participant coaches. The present paper illustrated different types of

value created during the intervention that aimed at increasing the learning capability of Canadian WC coaches using the VCF and a landscape of practice perspective. Each of the four vignettes presented five dimensions of learning value, one for each of the immediate, potential, applied, realized, and transformative value cycles. The composite vignettes tell the stories of the learning values created for individual coaches in relation to their location in the landscape. The sixth value cycle, orienting was experienced as the coaches gained a greater understanding of each other's histories and contexts. Collectively, this series of articles provide sport organizations with a blueprint that has the potential to inspire their efforts to maintain an ongoing coach development initiative.

This paper contributes to the literature of sport coaching in a few ways. First, we utilized the VCF (Wenger et al., 2011; Wenger-Trayner & Wenger-Trayner, in press) to assess the value created through the involvement of the coaches in different types of learning activities, including online group meetings, online camps, and forums, over a 13-month period. Second, we analyzed the data based on the context in which coaches were involved with the sport (i.e., recreational and HP). Third, we illustrated the latest advancements of the social learning theory (Wenger-Trayner & Wenger-Trayner, in press) making use of vignettes to provide naturalistic generalizations (Sparkes & Smith, 2013) for both coaches and coach developers willing to transfer theory to practice. While immediate, potential, and applied values were the prevalent values found in previous studies who made use of the VCF to investigate coaches' CoPs (e.g., Bertram et al., 2016, 2017) and landscapes of practice (Vinson et al., 2019), the four vignettes additionally presented examples of realized and transformative values. It is likely that the longitudinal nature of the intervention contributed to this as these latter learning values take time to arise (Wenger et al., 2011). Similar to earlier studies that indicated timing is important for

actual changes in practice to occur (Bertram et al., 2017; Leduc, Culver, & Werthner, 2013), the first online group meeting and online camps occurred from May to September, when the majority of the coaches were not coaching because of the sport season (summer in Canada). Thus, the coaches were exposed to content but did not have the opportunity to apply the new knowledge right away, and then report back to the PLG.

The social learning space participants, the coaches, the CC technical leaders, and the researchers, were highly involved in the intervention. Such ideal conditions may be rare. Therefore, future social learning interventions will need to emphasize the importance of the systems convener working diligently and deliberately to lay the ground, through strategic conversations (see Duarte et al., submitted). Finally, these findings should provide naturalistic generalizations to guide the exploration of other unique landscapes. Future research could implement a social learning intervention including other stakeholders within landscapes such as athletes. Also, studies could look at the longitudinal value of nurturing social learning spaces, in particular if participation in a social learning space might facilitate coaches moving from one hill in a sport landscape to another.

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Appendix – Vignette Construction

We wrote the vignettes based on various pieces of data. For instance, Nancy's vignette was crafted by 23 references from different data generation techniques. We deliberately selected excerpts from all participants and all data techniques. Below we only provide the first couple of paragraphs, however, all the references for this entire vignette are included below.

Nancy, the incomer: “I don’t know what I don’t know!”

R1: *Tell me a little bit about your curling experience*¹.

Nancy: I got involved with wheelchair curling due to my own impairment. I tried many different sports like wheelchair basketball,² but at my age (50s), the stamina isn't there anymore³. A “wheelie” friend of mine kept bugging me to join the team because it is always a struggle to find wheelchair users who want to stay seated inside the freezer [laughs], I mean on the ice sheet.⁴ So, I showed up and had so much fun! I was hooked by the sense of community!⁵ Locally, we always played against AB teams because there aren’t any other local wheelchair teams; well, not even adapted clubs.⁶ Since they needed a fourth player to compete regionally, although I was Nancy the newbie curler, I travelled to a few tournaments within five hours from home. How bizarre that one week we played against

AB teams in our recreational league at the club, and the next we competed against nations that were at the Paralympic Games! And sometimes, we even beat them!⁷

R1: *Yes, that is bizarre! What else about competitions was remarkable?*⁸

Nancy: Well, at the provincial championships we only played one team.⁹ At the nationals,

Curling Canada requires that every team brings a coach, which means that a few provinces only work with coaches for a week over the year.¹⁰ Actually, the difficulty of finding a coach to work with us is what motivated me to become a coach.¹¹

¹ The mapping interviews included the question above. The first author paraphrased it during the many interviews.

² Quote slightly edited from the mapping interview.

³ The age of the WC athletes was observed at many competitions.

⁴ The quote was paraphrased from the notebook with observations from the event.

⁵ Quote from mapping interview.

⁶ The similar quotes from many coaches referred to the lack of competition.

⁷ After attending three different competitions and observing the disparity of teams competing, from recreational teams to Paralympic teams, I would informally discuss the topic with many of the coaches. Many of their perspectives helped me build the quote above.

⁸ Fictional question included to provide segue to other particularities of the landscape.

⁹ Quote provided during an online meeting.

¹⁰ Observations at the third competition informally discussed with coaches.

¹¹ Quote from a mapping interview.

¹² Quote from the follow-up interview.

¹³ Quote slightly paraphrased from a mapping interview.

¹⁴ Quote paraphrased from the final interview.

¹⁵ Fictional quote added to provide segue and add flow to the reader.

¹⁶ Quote paraphrased from the final interview.

¹⁷ Quote from the follow-up and final interviews.

¹⁸ Quote from focus group.

¹⁹ Quote slightly changed from the final interview.

²¹ Quote from a final interview.

²² Probing question from final interview.

²³ This anecdote started at the second competition I attended when a coach-athlete mentioned not approaching other coaches for being afraid of be judged as a spy. The next competition after a few months I noticed the coach sitting with other coaches. After, the game was over, I engaged in an informal conversation about the episode which resulted in the excerpt above. The story was slightly paraphrased.

Chapter 6: Discussion

General Discussion

The discussion is presented in two parts. The first part is a summary of the thesis and how the articles fit with the other chapters. Moreover, it includes the eight value creation cycles together, discussed separately in articles 3 and 4, with some additional reflections on orienting value, which was only recently introduced by the Wenger-Trayners (in press). The second section makes links between the Trudel and Gilbert's (2013) model of how coaches learn to coach and findings of the dissertation as it relates to parasport coaches.

Thesis Summary

The overall purpose of this doctoral research programme was to enhance the learning capability of the Canadian wheelchair curling coaches' landscape. The study was divided into three phases. The pre-intervention phase included Article 1 and Article 2; the framing phase was the focus of Article 3; and, the assessment phase was presented in Article 4.

Article 1 set the tone for the project as it contrasted the worldwide visibility of the highest form of disability sports, represented by the Paralympics, with the lack of grass roots programmes for Canadians living with disabilities. The scarcity of local disability sport opportunities comes in spite of the commitment assumed in 1982 by the government of Canada to provide equal opportunities for all its citizens (Valentine & Vickers, 1996). Article 1 clearly identified that participation in disability sports was being inhibited by the lack of knowledgeable coaches. Additionally, Article 1 presented a literature review of the disability sport coaching research in Canada and contextualized this with a synthesis of an influential model of the coach development. As a result, a few emergent barriers from the Canadian context were identified. Finally, Article 1 illuminated some suggestions from coaching scholars such as the creation of social learning interventions and the exploration of online tools to remediate these barriers. To

increase the understanding of the sport context in which the research occurred, we delved into the history of the sport of curling globally and in Canada. Moreover, the curling context section in the findings demonstrated with real examples how the Canadian Olympic and Paralympic successes stem from different approaches. The AB curling context could be viewed as the traditional pyramid in which the base represents the recreational participants, and it narrows as it moves up from regional, provincial, national, and international levels of participation. The pinnacle of this pyramid represents the athletes who compete at the World Championships and the Olympic Games. The WC context lacked a visual representation of how sport participation was composed. It was clear that it was not a pyramid due to the lack of a large base, and the almost inexistence of local, regional, and provincial competitive levels, which led us to the exploration of the landscape.

Article 2 utilized Wenger-Trayner and Wenger-Trayner (2015) landscape of practice framework and metaphor to make sense of the Canadian WC coaches' landscape. The findings of Article 2 made use of the visual representation of a map to describe the main features found in the landscape. In the middle of the map, the WC landscape is formed by two hills (recreational and high performance) and surrounding the hills are the landscapes of origins that represent the coaches' pathways until they started coaching WC. Moreover, the landscape features included: the people who are key members of the landscape (e.g., travellers), the types of learning structures (e.g., camps) that facilitate these coaches' journeys, and the barriers these coaches face to learn. Moreover, the pre-intervention phase suggested an intervention for these coaches should be designed to: (a) prioritize meaningful learning opportunities, (b) incorporate the influential people noted by coaches, and (c) leverage opportunities at training camps and competitions in order to mitigate the barriers identified. While the findings suggest that the bridge between the

recreational and HP hills exists as the sharing of information occurs at training camps and competitions where coaches have access to the NTP staff, the bridge appears fragile and cannot support coaches from across the country. Additionally, conflicting perspectives emerged as some coaches revealed the NTP coaches to be available and other coaches voiced concerns of secrets being kept by the NTP coaches. Nonetheless, Article 2 provided a few indications that the communication and trust should be a central aspect of the framing and therefore, learning activities with less structure such as social gatherings should be included to allow people to connect.

The framing phase occurred concurrently with the assessment phase. Common to both phases, the social learning space intervention included many learning activities such as the OGMs and online camps that were supported by four online tools. In total, R1 spent 14 days attending two national competitions and one regional competition. A number of data generation techniques such as in-depth interviews, focus groups, and observations were employed during a 13-month period. Thematic and interpretative analysis were used to make sense of 615 single-space pages of data.

Article 3 presented the framing phase and included the process in which the researchers made use of collaborative inquiry to co-construct the intervention with the participant coaches and CC technical leaders. Furthermore, Article 3 took advantage of the considerations from the pre-intervention phase. For the first consideration, to manage the limitations of the landscape such as the lack of social interactions due to the geographical distance, we sought out technological options to hold different types of learning activities that promoted social interactions. For the second consideration, to prioritize the meaningful learning of the participants, a process for framing each learning activity followed a series of steps that started

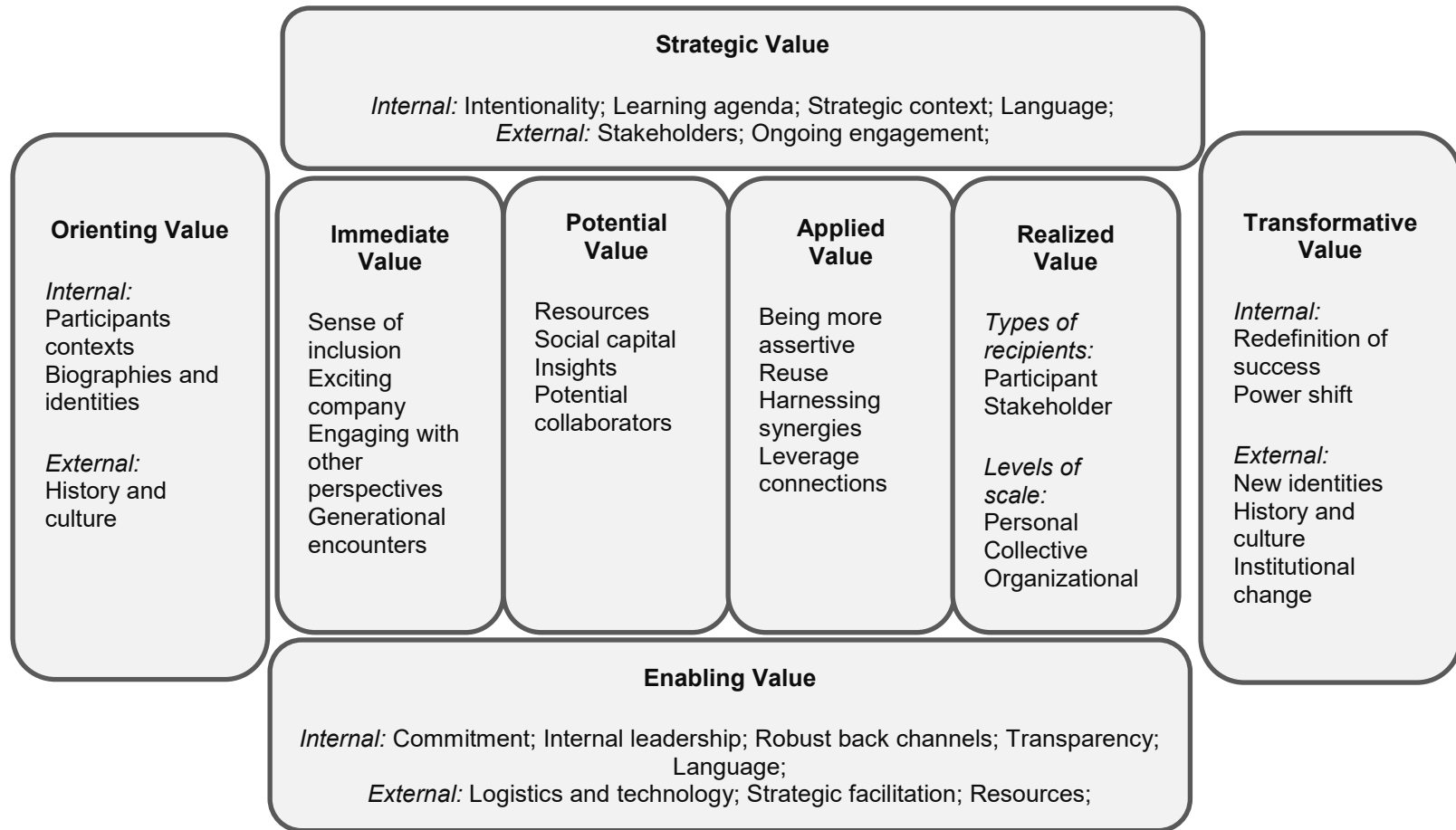
with the creation of a collective learning map that was then presented and edited by the participants to co-create sub-themes that were further explored. From each sub-theme (e.g., sport psychology), the participants filtered the three most relevant topics to be discussed at the next meetings, which leads us to the next consideration. The third consideration refers to the incorporation of influential people mentioned by the coaches. CC provided both strategic and enabling conditions for the third consideration to occur since the PLG participants mentioned the influential people being members of the NTP. These conditions were further discussed based on Wenger-Trayner and Wenger-Trayner (in press) newest advances in their social learning theory. Finally, the lack of these strategic and enabling conditions was scrutinized to provide both positive examples of what can be created and further reflections of what should be avoided when leveraging social learning during a competition.

Article 4 added detail to the landscape metaphor by presenting how the location of coaches' practice on the map related to the range of values created for them. Four composite vignettes depicted coaches with varied experiences that influenced their previous access to the learning structures of the landscape. All four vignettes presented the five values being created but to different degrees. The first vignette presented Nancy, a WC athlete without WC coaching experience, as an example of coaches who come from boundaries of the landscape. Nancy's vignette suggested the incomers' experiences as being rewarding at the personal level, even if, at times, a bit overwhelming due the amount of information they were exposed to. Since the incomer is a transient category of coaches, their participation and engagement will lead them to navigate to other locations of the landscape; whether to the recreational hill or the HP hill, their goals and biographies will influence their destination. The second vignette, portrayed Ray, the recreational hill coach. Ray coaches mostly recreational athletes; however, because of the lack of

teams in Ray's province, Ray participates at the national championship and sometimes at other major competitions since there are not many event options available. Ray's access to the NTP increased substantially which led to the creation of values in a wide range of dimensions. The third vignette depicted Sam, the middle of the HP hill coach. Sam coaches mostly competitive athletes and because of that, Sam attends most competitions at the national level and has been invited to a few NTP training camps. Finally, Travis, the top of the hill coach, was the centre of the fourth vignette. Travis works with competitive athletes and attends the major competitions worldwide. His name was often mentioned by his peers as a source of knowledge, which led him to be called a "Travel guide" in Article 2. While many coaches in the PLG benefitted from the resources and perspectives shared through the many learning activities, Travis was a key person who provided these insights. Nonetheless, he also benefitted due to the potential collaborators with whom he connected, and also to the changes in perspectives from the other coaches in the landscape.

The overall purpose of this research programme was to increase the learning capability of the WC landscape. There is a compelling body evidence in Article 2 that indicates the scarcity of social interactions across the WC landscape. Moreover, the findings in Article 3 highlighted an increase in strategic alignment across the landscape as the flow of information was reaching coaches across the landscape with minimal delay. CC was instrumental in providing strategic and enabling conditions that resulted in values across the full range of coaches. Article 4 suggested incomer and recreational hill coaches as the ones with the least amount of access to peers, resulting in few social interactions specifically designed for WC. While a few of the middle of the HP hill coaches are constantly engaging with the top of the HP hill coaches, the intervention

Figure 9: Value Creation Dimensions as Presented in Articles 3 and 4



provided a wider range of perspectives in terms of social interactions. Therefore, the increased learning capability was illustrated by a more robust bridge in Article 4 than the one depicted in Article 2. Metaphorically, a stronger bridge supports a higher traffic load, specifically of knowledge being co-created and shared bi-directionally between the recreational and the HP hills.

Pairs of Learning Values

Wenger-Trayner and Wenger-Trayner (in press) suggested different types of values been more relevant to different actors. The theorists went on to suggest: (a) Immediate value and potential value as the focal point of facilitators. (b) Applied value and its capacity to solve possible issues are possibly more appealing to participants. (c) Realized value or strategic value and the links between performance and strategy are likely to be sought by managers. (d) Enabling value and its capacity to facilitate learning may be the focus of consultants. (e) Transformative value may be the interest of political activists striving for broad changes in society. Within this dissertation, Figure 9 shows the value created from the intervention and due to the fact that participants have different roles within the WC landscape, they were found to perceive all the values but at different ranges. The values represented horizontally (immediate, potential, applied, realized, transformative, and orienting) include the values cited in Article 3. Closer to the top of each cycle, the dimensions start with the experiences of incomers and go down to the experiences of the top of the HP hill coaches. Each of them is discussed further below.

Immediate and potential pair. The immediate value goes from the sense of inclusion to generational encounters. The sense of inclusion was prevalent with incomer coaches and also mentioned by the coaches on the recreational hill. Coaches at the top of the HP hill were more likely to experience the benefit of generational encounters instead of a sense of inclusion, mainly

because they have been core members of the WC community for many years. The dimensions of exciting company and engaging with other perspectives could be found from all the coaches. The potential value cited resources (top of the cycle Figure 9) to potential collaborators (bottom of the cycle). Although the access to the resources (e.g., Basecamp comments, online camps) was the same for all the participant coaches, the proportion of new information that incomers received was mentioned as overwhelming. However, it is important to differentiate that not all incomers had the same needs. Through their interactions with the coaches on the HP hill, the coaches on the recreational hill were making use of tools and manuals to which they did not previously have access. This potential value was mirrored for the coaches on the HP hill since it increased their networks and built potential new collaborators.

Applied and realized pair. The applied value dimensions of being more assertive and reuse have close connections with the personal level of the realized value. These two dimensions influenced the way coaches behave in a more assertive way and suggesting changes to their practices by reusing drills. While Nancy's vignette depicted a personal level example and Ray's illustrated a stakeholder one, the HP hill coaches also mentioned gaining personal level value and value that influenced their athletes (stakeholders). Harnessing synergies and leveraging connections are aligned with both collective and organizational levels of scale. The main difference between the two dimensions is how the learner approached the application of the knowledge or insight gained. Since the WC landscape is so small (Article 2 and 3) and the athlete development pathway (from novice to international competitor) could happen in a matter of months, harnessing synergies and leveraging connections are of the utmost importance. A not so rare example from parasport is utilized in at the beginning of the Chapter 5. The gold and bronze medalist Mark Ideson entered the recreational hill and after a few years was representing Canada at the Paralympic Games.

Strategic and enabling pair. Article 3 presented many quotes that shed light on the strategic and enabling value CC provided to create the conditions for the coaches to experience value. However, such value was not separated by the location of these coaches in the landscape. For instance, the strategic conversations between R3 and R1 resulted in the format of the online camps with SSSM providers and were catalysts to immediate value (hosting an online meeting) for every coach who did not have access to these professionals. Moreover, the provision of professional development credits shown to be both strategic and enabling would impact coaches differently depending on their re-certification needs. Thus, we understand that not all activities will create the same value for the different coaches, but potentially they now could, because all of them have wider access due to the increased learning capability of the landscape.

Orienting and transformative pair. While Article 3 provided many examples of strategic conversations between R1 and R3, it is important to highlight that R3 conducted his doctorate degree examining a coach education initiative using learner centred principles. Additionally, related to different research project, R1 and R3 co-authored a paper that utilized vignettes to illustrate learner centredness (Paquette, et al., 2019), and therefore invested many hours in discussion about the relevance of framing the PLG learning activities based on these principles. While learner centredness is a change in paradigms concerning how education was traditionally perceived, the application to Wenger's (1998) social learning theory is seamless in many ways that reach beyond the scope of this dissertation. Nonetheless, one learner centred recommendation was followed regarding the selection of content based on the coaches' interests (Paquette et al., 2019; Article 3). Another recommendation of Paquette and colleagues (2019) relates to the selection and preparation, by R1 and R3, of the online camp leaders. These leaders were carefully prepped concerning the use of learner centred approaches such as engaging the coach participants and leaving plenty of time for questions rather than just presenting content. In

this sense, the biographies of R1 and R3 framed the social learning intervention. They brought to the PLG their history related to learner centred approaches, which is the internal dimension of orienting value definition (Wenger-Trayner & Wenger-Trayner, in press). The external dimension of orienting value is about keeping astride of what is happening in the broader world. An example of this external dimension of orienting value in the PLG is the coach who had one athlete who attended the World Championships and returned with new knowledge about what the rest of the HP WC context was using in terms of best practices. The transformative value dimensions ranged from new identities to institutional changes. The creation of a collaborative environment highlighted in Nancy's vignette only occurred because more experienced coaches, who invited her to join them, also changed the way they perceived the landscape. Moreover, the shift from a culture of secrecy environment to a transparent one was noted by almost all the coaches; the only exception being the incomers who were not aware that things were different to what had existed prior to the creation of the PLG.

How Canadian Wheelchair Curling Coaches Learn

Trudel and Gilbert (2013) proposed a model (see Figure 10) of how coaches in sport for the able-bodied, learn to coach. Since its first appearance, the model continues to evolve and currently contains three parts: coaching contexts, learning situations, and the evolution of a coach's identity (Trudel, Gilbert, & Rodrigue, 2016). We will first present this model, and then introduce an attempted adaptation of it for disability sport coaches.

Coaching contexts. The coaching contexts encompassed in the model are recreational, developmental, and high-performance sport; the assumption is that the goals of each context will differ (Trudel et al., 2017). For instance, while recreational coaches should adopt an inclusive approach to engage as many participants possible, the same goal is not expected from a high-performance coach (Côté & Gilbert, 2009).

Figure 10: How Coaches Learn to Coach?

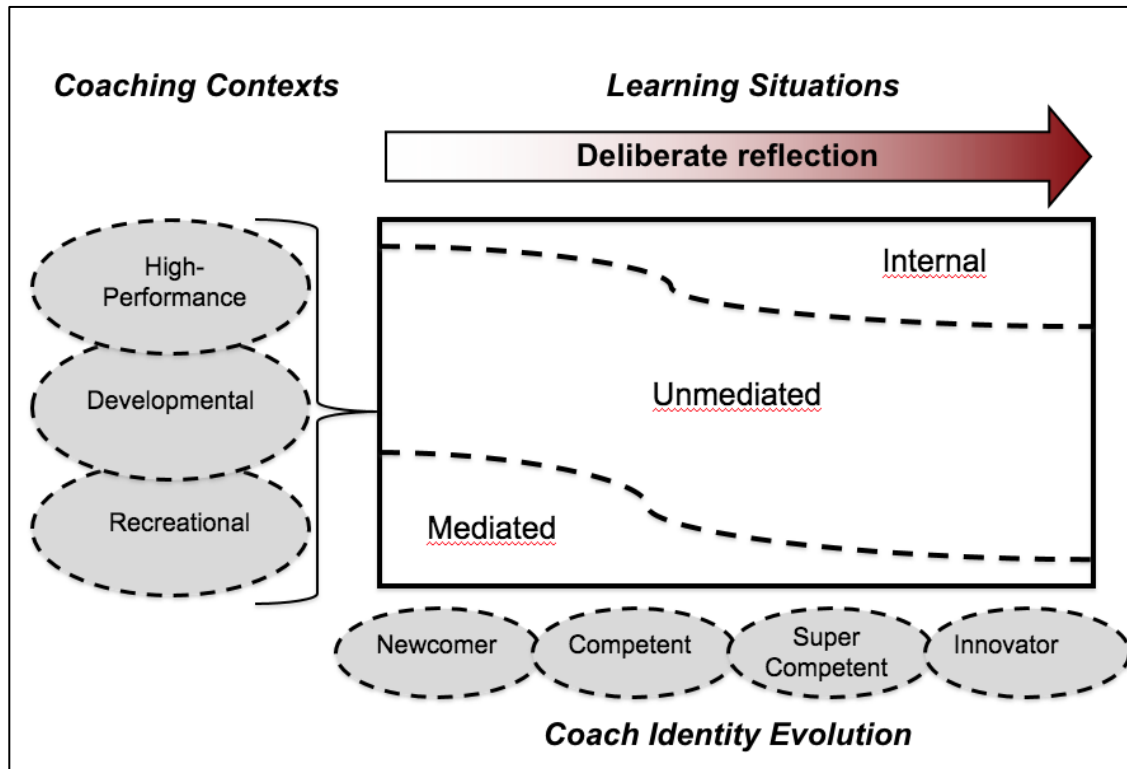


Figure adapted from Trudel, P., Rodrigue, F., & Gilbert, W. (2016). The Journey from Competent to Innovator: Using Appreciative Inquiry to Enhance High Performance Coaching.

Learning situations. Three learning situations are depicted on Trudel and colleagues' (2017) model: mediated, unmediated, and internal. In mediated learning situations (e.g., coaching courses for recreational coaches), learning is predominantly directed by another person who delivers previously designed content to achieve various learning outcomes (Werthner & Trudel, 2009). In unmediated learning situations, such as conversations with others or searching the Internet, the learning activities are self-directed (Werthner & Trudel, 2009). Internal learning situations consist of allocating time to reflect (Moon, 2001).

Coach identity evolution. The evolution of a coach's identity is represented on the model from newcomer to innovator, where a newcomer could be any person who enters the sport or even a coach coming from another context. As the individual develops their craft, their identity evolves to competent, super competent, and only rarely to innovator (Trudel et al.,

2017). A key difference in these many identities is the fact that the less experienced a coach is, the more dependent they are. Namely, coaches may be categorized as newcomers despite being super competent within a different context (e.g., competitive able-bodied curling); what differentiates the coach's identity here is their experience within that new context or environment. Thus, within the new context, a coach is deemed a newcomer as they require support from others to navigate this new landscape. Competent coaches are able to independently execute what is expected as a result of coaching norms (Trudel & Gilbert, 2013). Super competent coaches develop their coaching styles by adapting their skills and knowledge in a situational manner. Finally, innovator coaches define conventions and challenge the status quo (Trudel et al., 2016). To do so, these innovators are constantly reflecting deliberately to maximize learning opportunities, whether it is by associating ideas, questioning standards, experimenting, and/or looking for experts to network with interdependently.

Based on the parasport coaching literature and more specifically on coaching curlers in wheelchairs, some modifications to Trudel and Gilbert's (2013) model are suggested.

WC coaching contexts. The dissertation findings presented only two contexts (i.e., the recreational and HP hills) without the presence of a developmental context in WC (Articles 2, 3, and 4). The coaches who are classified as newcomers as defined within Trudel and colleagues' (2016) model represent very well the incomer coaches (Article 4) because they come from a different context (e.g., able-bodied curling) and have not yet taken up residency on one of the hills. This dissertation supports other parasport literature that found parasport coaches working with athletes from different contexts in the same session (Sawicki, 2008). The adapted model (Figure 11) shows the overlap between recreational and HP contexts due the mixing of recreational and HP wheelchair curlers at some events (see Nancy's vignette in Article 4). In general, there is a lack of athletes and coaches of parasport in Canada (McMaster et al., 2012;

Taylor et al., 2015). Nancy's vignette illustrated the existing practice of, sometimes, rapidly promoting recreational athletes in order to completely fill a team to compete at the national level; providing further evidence of the inexistence of a development context.

Figure 11: How Parasport Coaches Learn to Coach?

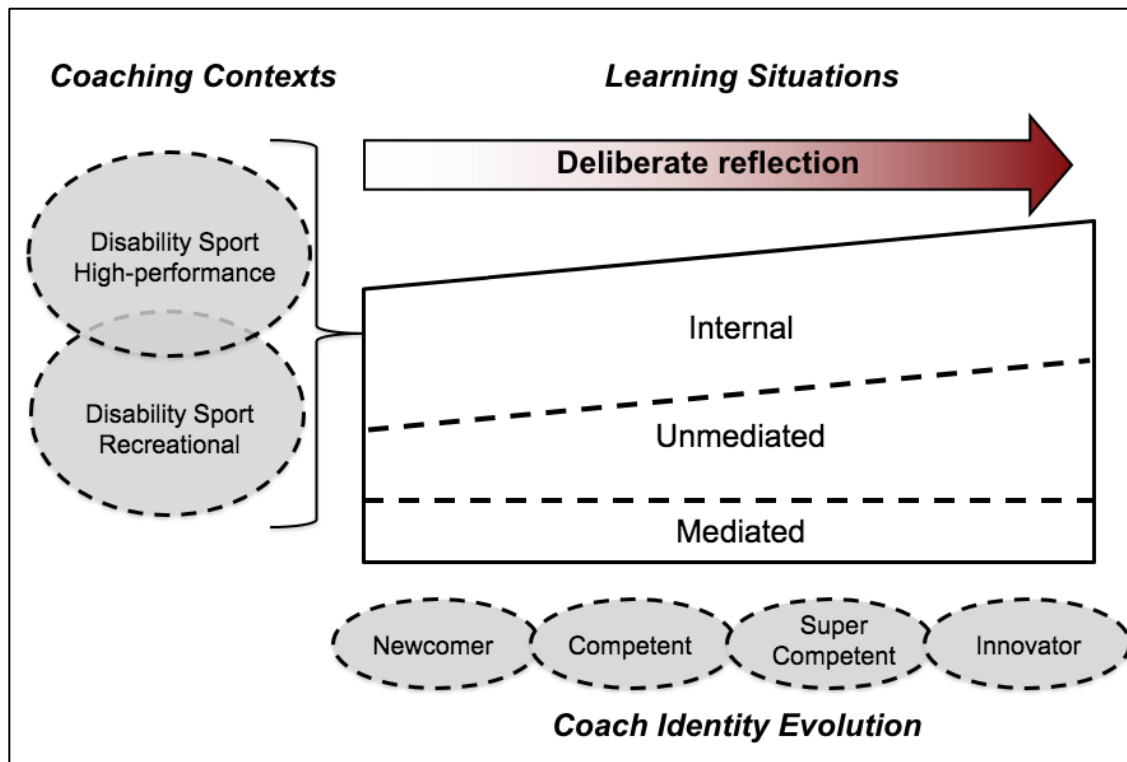


Figure adapted from Trudel, Rodrigue, & Gilbert (2016).

WC learning situations. In the original model (Trudel et al., 2016), internal learning situations grow in importance as the coach identity evolves towards innovator, as mediated learning situations decrease. Our research found that both internal and mediated were somewhat constant but for different reasons. The unmediated learning situations are the ones that appeared to grow the most because the coaches enhanced their networks and knowledgeability. The present intervention built the learning capability by increasing the coaches' access to others within the landscape.

Mediated learning situations (e.g., coaching courses) focusing on athletes with a disability were previously found to be scarce (Taylor et al., 2014) and often considered too

generic (Duarte & Culver, 2014). The online camps most resembled mediated learning situations due to the delivery format that privileged the facilitation by a few CC technical leaders. A caveat is that the online camps were framed by learner-centred principles (Paquette et al., 2018). Some of the learner-centred principles were more relevant than others, like the balance of power principle (Paquette et al., 2018) in which the systems convener shared the responsibility to determine the camp content and scheduling with the participant coaches to increase the participants' interest (see Article 3).

Unmediated learning situations have been highlighted by many studies as a preferred way in which parasport coaches learn. These findings include interactions with athletes (Cregan et al., 2007), mentors (e.g., Duarte & Culver, 2014), other coaches (McMaster et al., 2012), and their integrated support teams (Dehghansai et al., 2019; Tawse, et al., 2012). Within the intervention, the online meetings were the space for coaches to share ideas, raise issues about the landscape, and address contextual challenges. Moreover, during the first meetings the learner-centred principle of taking responsibility for learning (Paquette et al., 2018) occurred as R1 addressed learning-to-learn skills and make sure that everyone was comfortable with the use of the online tools.

Internal learning situations have been highlighted as an important way through which parasport coaches learn. This has been particularly documented as they reflect on many aspects of adapting able-bodied coaching knowledge to apply in parasport (Douglas et al., 2016; Cassidy et al., 2016) and to building equipment to fit the needs of their athletes (Taylor et al., 2015). This dissertation's findings support the central aspect of reflecting to make slight changes to how the sport is played in comparison to the able-bodied version (see Article 2). Moon (2001) called this process of deliberately reflecting with others, or experimenting with different tools, cognitive housekeeping; that is, a re-organization of a person's cognitive structure. Crisp (2019) suggested

that student-coaches utilized meta-cognition and deep reflection to learn how to coach a disability sport community program. Trudel and Gilbert's (2013) model shows deliberate reflection as the pathway to identity evolution. While our findings also found deep reflection, since that was not the goal of the intervention, we refrain from making claims for all coaches, but strongly recommend future research look specifically at this topic. The disability sport literature has suggested adaptation and flexibility are important characteristics for coaches of both developmental (Duarte & Culver, 2014) and HP parasport (Taylor et al., 2015). Notwithstanding, we feel innovation and adaptability might be qualities that parasport coaches need even when they are newcomers, which accounts for the greater amount of internal learning situations for newcomers. This leads us to the next part on the proposed adapted model (Figure 11).

WC identity evolution. The social learning space intervention created a place where coaches of all identity groups developed the capability of being interdependent. Trudel and colleagues (2017) suggested deliberate reflection as a crucial aspect which supports coaches moving from newcomer towards innovator. Moreover, coaches of disability sport are interdependent as they share some of the decision making with their athletes (Cregan et al., 2007; McMaster et al., 2012) and sport scientists (Dehghansai et al., 2019). Trudel and Gilbert's (2013) model proposed newcomer coaches as dependent and therefore in need of others to shape their learning pathways. Our findings suggested that coaches will connect and utilize peers as sounding boards if the environment is conducive to learning and sharing. Gilbert and Trudel (2001) proposed that access to peers is an important condition for reflection, which could lead these coaches to greater interdependency. The increased interdependence of the PLG participants is an indicator of increased learning capability. A social learning intervention that leverages the knowledge of the landscape and provides access to people who are experienced/experts in their own field(s), allows practitioners (in the social learning space) to reflect and discuss ideas that

are at the boundaries of these fields. Finally, an important clarification is that innovators can be found on each hill. While the top of the HP hill coaches have shown many characteristics resembling those defined within Trudel and colleagues' model (2017), such as being reflective practitioners and lifelong learners, we are not proposing that competent coaches work on the recreational hill, and that the middle of the HP hill coaches are super competent. In order to fully understand the applicability of such a model, future research should look at coaches' lifelong and life-wide learning journeys (see Nash et al., 2018).

Chapter 7: Conclusion

Conclusion

This chapter summarizes the theoretical and methodological contributions, then it provides practical implications for coach developers. Finally, it points out limitations and future directions.

Contributions

The contributions made by the present dissertation are considerable. The most obvious contribution is an entire Ph.D. research programme dedicated to deeply understanding a disability sport landscape. Considering the size of the WC coaches' population, the impact of the intervention that accounted for more than half of the total active WC coaches is quite remarkable. From many perspectives this research is novel and unique including: the pre-intervention phase with in-depth interviews to understand both participants' biographies and the landscape learning structures, the subsequent building on these findings to design and deliver the intervention phase collaboratively with participant coaches and the sport organization, the assessment of the intervention using a multitude of techniques to generate data and a framework tool specifically for social learning initiatives, and finally the reporting of the findings in a series of innovative qualitative writing approaches including visual representations and narratives. All the above were specially conceived to contribute theoretically, methodologically, and practically. From a theoretical perspective, this is the first study to date to make use of the landscapes of practice and the VCF to increase the learning capability of the disability sport landscape. From a methodological perspective, the articles above made use of multiple longitudinal data generation and reporting techniques to provide a better perspective of the values created. From a practical perspective, this dissertation provided implications for coach developers in at least three ways:

(a) coach developers as systems conveners, (b) the use of the map figure to help understand the context, and (c) how the landscape and the VCF can be used in tandem.

Coach developers as systems conveners. The International Council for Coaching Excellence (ICCE, 2014) released a framework to guide NSOs from across the globe in improving their effectiveness of developing their sport coaches. The International Coach Developer Framework (ICCE, 2014) shed light on what they called the coach of coaches, or the coach developer. Coach developer's roles, competencies, standards, and developmental pathways were highlighted in the document (ICCE, 2014). The ICCE (2014) acknowledged that coach developer is a broad term to include "all those who have undergone training to fulfill one or more of the following roles: coach educators, learning facilitators, presenters, mentors and assessors" (p. 6). The impact of ICCE model is visible as coach development researchers are publishing studies of coach development pathways from countries like Brazil that were until recently very rare (e.g., Brasil, Ramos, Milistetd, Culver, & do Nascimento, 2018; Ciampolini, Tozetto, Milan, Camiré, & Milistetd, 2020) According to Wenger-Trayner and Wenger-Trayner (2015) a systems convener is concerned with developing learning capabilities, harnessing synergies, and nurturing social learning spaces in a landscape of practice. The systems convener accomplishes this by having a high degree of knowledgeability; that is, who knows what in the landscape (Wenger-Trayner & Wenger-Trayner, 2015). Therefore, just like the coach developer, a systems convener is not required to be an expert on any given sport, but have a very good understanding of social learning and how to lead in social learning spaces.

The role of a systems convener was explored in Article 3 and included building relationships, opening new learning opportunities, balancing power relations, facilitating learning activities, and brokering strategic conversations. All of these roles could have been filled by a coach developer trained in social learning leadership. In reference to the ICCE Coach Developer

Framework (2014), the systems convener role will be better suited to master coach developers and trainers. The program designer/ evaluator skills required of these individuals, will serve them well in supporting complex social learning spaces.

Map figure implications. The creation of the WC landscape map (Duarte et al., 2020) utilized interview data from all the coaches to graphically represent the sport. Graphical representations are a very popular way to communicate a message (Sparkes & Smith, 2013). A graphical representation that has been used in many sports across Canada is the long-term athlete development model (LTAD, Balyi, Way, & Higgs, 2013). The LTAD model provided a blueprint for NSOs to understand the maturational stages of the athletes' development. The same way the LTAD can be used as a planning tool to better understand the athletes' pathway, the map of the landscape is a blueprint to support NSOs to understand coach development. To create a map, NSO leaders must reflect and think strategically about their coaches' biographies, the sport learning opportunities/crossroads (i.e., competitions and camps), their athletes and participants (i.e., recreational and HP hills). For instance, the WC landscape comprised two major hills and it was populated by athletes who are wheelchair users, and their coaches. The able-bodied curling landscape would be composed of a very high hill fed by provincial, regional, and local clubs. The para cycling landscape could be represented by many hills such as for tandem cycling, road cycling, and hand cycling. This way the map is used as orienting value to illustrate the major characteristics of the landscape as portrayed in Article 2. The identified gaps and leveraging points are then presented by the systems convener to the major stakeholders through strategic conversations. This way the VCF is used to frame the creation of a social learning space from understanding the map (orienting value), starting strategic conversations (enabling and strategic values) that aim to leverage learning values within the landscape, and assessing these values created for the participants.

Landscape of practice and value creation framework implications. The VCF and go hand in hand as these concepts are complementary. Based on the concept of the LoP, the VCF provides a tool to frame and assess social learning interventions. For instance, the definition of orienting value is the influence of outside perspectives such as theoretical advances that could be used to shape the learning process (Wenger-Trayner & Wenger-Trayner, in press). Mapping the landscape provides leaders with a blueprint to implement social learning spaces where they do not exist (Culver, Kraft, & Duarte, 2020). As stated in Article 3, framing of a social learning space encompasses more than planning and designing. It is a central piece of the process of social learning (Wenger-Trayner & Wenger-Trayner, in press). For example, the VCF can guide the strategic conversations which the systems convener would have with the NSO to help illuminate coaches' aspirations. From these conversations, the NSO and the systems convener would have a clear understanding of the enabling and strategic conditions needed to support coach and ultimately, athlete development. The VCF also provides ideas of indicators which systems conveners can use to evaluate the benefits of social learning spaces. As noted in Article 4, the VCF allows for the recognition of learning that goes beyond behavioural changes (realized), as it permits us to assess how people might: be changing emotionally (had fun; immediate), learn new knowledge (social capital; potential), try a new skill (experimented; applied), and/or change their perspectives (meaning and beliefs; transformative). Another group of sport coaching researchers from the UK have used the VCF and recommended longitudinal studies to better assess realized value (Vinson, Cade, & Huckle, 2020). Furthermore, coach developers should also be aware that the impact of such interventions on practice can take time. Therefore, for social learning interventions, which provide ongoing learning support, assessment of learning must also be ongoing.

Challenges and Future Research Directions

The challenges and future directions are connected as this intervention provided many learning opportunities and the emergence of many more unanswered questions. These questions arose as we tackled problems and faced challenges to bettering the framing and assessment of the intervention. As Schon (1983) proposed reflective practitioners will enter the muddiness and will have to think on their feet to solve issues that are not explained in theory books. Of note, the collaboration presented in this research might be considered the perfect storm because of really engaged coaches and supportive CC leaders. While this is not a limitation but rather a strength of this collaborative inquiry, such a perfect storm might limit the application of the findings. Thus, future scholars or practitioners should use the lessons learned in this intervention as guidelines because the precise conditions found would be unlikely to be exactly replicated. To expand on the reasons for this, I will present a few peculiar characteristics of the landscape studied.

First, participants were mature lifelong learners. While many previous CoPs looked at student coaches, with ages ranging the 20s (see Chapter 2 and Appendix A), who arguably are highly motivated to enter the professional pathway of sport coaching, the participant coaches were mainly volunteers (Article 2), without the hopes of building a career as sport coaches. Furthermore, they were highly engaged with coaching certification. The majority of the coaches had level 3, a few, level 4, and many of them were coach developers (Article 2), suggesting their preference for formalized professional development. Recently, Wenger-Trayner and Wenger-Trayner (in press) suggested that CoP meetings should avoid formal presentations; however, the scarcity of material specific for WC made the group eager for input from WC experts. In order to respect our collaborative approach, we shaped the intervention according to the participant coaches' interests (Article 3). Considering this, coach educators should always remember the best learning activity cannot do much for coaches who are not interested in the topic. Given that

the focus of all social learning spaces is to create learning opportunities collaboratively with the participants, it is important to recognize the tension between the social learning theory framework and the coaches' aspirations to have more access to influential people, which included formal presentations. Second, the CC leaders were highly motivated to support the development of their coaches. It is uncertain how many other contexts might have the strategic interest in creating bridges to promote ongoing interactions that bring together their HP coaches and SSSM providers with recreational coaches to develop the landscape as exposed on Articles 3 and 4. This highlights the importance of having a dedicated systems convener.

Future directions might include a better assessment of how online tools are used by participants. The concept of lurking or reading comments on the Internet is not novel and has been proposed by coach development scholars (Wright et al., 2007) as a way of learning. Although there are currently a few tools to measure how long participants spent logged in or visiting a website, such as Google Analytics, the present study only accounted for post entries on Basecamp. Future studies could utilize these analytical tools to complement the qualitative assessment with a quantitative measurement of participants' involvement. Tabsrract

his recommendation is aligned with a mixed methods approach to assess the value created in social learning spaces (Wenger-Trayner et al., 2017). So far, within coach development, it seems that only the studies conducted by Stoszkowski and colleagues (Stoszkowski & Collins, 2014, Stoszkowski et al., 2017) utilized indicators that considered both the quantity and content of blog entries to evaluate the engagement of CoP participants, thus the use of mixed methods is warranted.

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Statement of Contribution

The findings of this dissertation are presented in four articles. I, Tiago Duarte, am responsible for the conceptualization, review of literature, participant recruitment, data generation and making meaning of all data, and writing, and am the first author on all four articles. I managed the learning activities of the intervention. The collaborative inquiry methodology started to take shape following my dissertation proposal defense, thanks to the valuable feedback provided by Dr. Bettina Callary, Dr. Penny Werthner, and Dr. Pierre Trudel. My supervisor, Dr. Diane M. Culver, reviewed, edited, and helped to organize every part of this dissertation, including the four articles. Dr. Culver is the second author on all articles. In the first article, a review of literature, Dr. Pierre Trudel provided important feedback on the contextualization of the research papers. Dr. Michel Milistetd reviewed, edited, and provided support for the publication of the Portuguese version of the article. Dr. Kyle Paquette, was a co-participant at the intervention and third author of articles 2, 3, and 4. Dr. Paquette as a member of Curling Canada, provided invaluable ongoing support through the whole intervention as described on Article 2.

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Appendices

Appendix A

Coaches Communities of Practice Empirical Studies – Complete table

Authors, year	Objectives	Sample of participants	Methods and analysis	Overview	Outcomes/Impact
Culver et al., 2009	Explore a sport leader attempt to nurture a CCoP	Performance coaches and sport leaders (M = 7); same sport and league	Interviews and participant observation; TA	Organic CoP with ongoing activities over many years	The CCoP was not sustained after the leader departure
Jones, Morgan, & Harris, 2012	Implement and evaluate a pedagogical framework based on CoPs and action research	Student coaches (N = 8); many sports; same pos-graduate programme	Focus groups, observations; Inductive analysis	Compulsory bi-weekly meetings over a session of the programme	Convergence of practice and theory; DI
Callary, 2013	Explore how a CCoP was created and sustained	Sport leaders (F = 2); same sport and club	Interviews; TA	Organic CoP with ongoing activities over many years	Sustained by: collaboration, communication, and trust; DI
Stoszkowski & Collins, 2014	Explore the impact of individual blogging on creating a CCoP	Student coaches (F = 6, M = 20); many sports; same undergraduate institution	Blog entries; Category analysis	Compulsory activities over a semester; did not follow CoP recommendations	Intervention did not result in a CCoP; not DI
Driska & Gould, 2014	Implement and evaluate a pedagogical framework based on CoPs and problem-based learning	Student coaches (F = 6, M = 16); many sports; same pos-graduate programme online learning setting	Assignment graded and discussion board; Analysis not stated	Three compulsory group activities over the semester; did not follow CoP recommendations	It was not clear the outcomes as it relates to CoPs; not DI
Araya, Bennie, & O'Connor, 2015	Explore coaches' perceptions of the types of knowledge developed	Performance coaches (M = 17); many sports; same pos-graduate coach blended learning setting	Interviews; TA	Organic CoP with ongoing activities over two years	Increased interpersonal, intrapersonal and professional knowledge
Bertram et al., 2016	Design and implement CCoP and explore the value created	Performance coaches (F = 2, M = 3); same sport and club	Interviews, recordings and observations; TA	Cultivated CoP with bi-weekly meetings over four-months	Created value in all five cycles of the VCF; DI
Bertram et al., 2017	Assess the value created of an existing CCoP using the VCF	Performance coaches (F = 4); many sports; same sport programme	Interviews; TA	Organic CoP with ongoing activities over 12-months	Created value in all five cycles of the VCF; DI

Authors, year	Objectives	Sample of participants	Methods and analysis	Overview	Outcomes/Impact
Garner & Hill, 2017	Assess CCoP impact on coach development	Instructional coaches (F = 1, M = 7); same sport and club	Recordings and reflective journal; TA	Cultivated CoP weekly meetings over six-weeks	Increased interpersonal and intrapersonal knowledge; DI
Stoszkowski & Collins, 2017	Assess impact of group blogging on CCoP	Student coaches (F = 5, M = 19); many sports; same undergraduate institution	Blog entries; Content analysis	Cultivated CoP with compulsory activities over a semester	Emergence of CoPs and increased reflection; DI
Stoszkowski, Collins, & Olsson, 2017	Assess coaches' perceptions of group blog to professional development	Student coaches (F = 5, M = 18); many sports; same undergraduate institution	Focus groups and interviews; Inductive analysis	Cultivated CoP with compulsory activities over a semester	Increased reflection, knowledge acquisition and coaching practice; DI
Culver et al., 2019	Design and implement equitable opportunities across the LoP	Sport leaders (F = 11, M = 1) and mentors (F = 5, M = 1); many sports; same province	Mixed methods, interviews, surveys, and observations; TA	Cultivated CoP with monthly online and four face-to-face meetings over 18-months	Creation of smaller CoPs implemented by mentored leaders; DI
Vinson et al., 2019	Assess the value created using the LoP and VCF	Performance coaches (F = 7, M = 7); many sports; same graduate coach programme	Interviews at the end of the programme; TA	Cultivated CoP with quarterly workshops over 18-months	LoP created value in all five cycles of the VCF; DI

Note: CCoP = coaches' community of practice, DI = deemed impactful, F = female, LoP = landscape of practice, M = male, TA = thematic analysis, VCF = value creation framework

Appendix B

Brief Survey Monkey

1. Name (optional):
2. How would you rate the Online camp on the following aspects? Strongly Disagree; Disagree; Agree; Strongly Agree; N/A (not applicable)
 - The topic was relevant
 - The information presented was directly applicable to my context
 - The level of detail was appropriate
 - The facilitation style was conducive to learning
 - The start time was convenient
3. Did the online camp was useful for your coaching practice in any way? If yes, please answer questions 4 and 5:
4. Provide an example of something you learned from the online camp that you can apply right away.
5. Provide an example of a ROADBLOCK to apply what you learned from the online camp.
6. What is the most important question that you still have on the topic?
7. Do you have any additional comments?
8. How comfortable are you in contacting the presenter if you have any questions?

Not comfortable at all -

Very comfortable

Appendix C

Mapping Interview Guide

1. Can you please provide a brief overview of your biography?
2. Tell me about your experience as a coach.
 - a. How many years? Which level? Other sports?
3. What circumstances led you to coach Athletes with a Disability?

From now on, the answers will be written in the concept map.

4. In your opinion and your knowledge, what should coaches know and do in order to be effective?
 - a. And in parasport?
 - b. Out of the competencies mentioned, which ones do you believe are your strengths?
 - c. And which ones do you believe you would benefit on developing further?
5. Who are the people and the organizations that are important for you to build your knowledge and to be effective in your coaching practice?
6. How do you describe the resources you use to learn how to coach?
 - a. Any books? Seminars? And workshops? NCCP?
 - b. Have you participated in any training on the job?
 - c. Any mentorships or peers you have learned from?
7. Does your national sport organization played a role on that?
8. What are your aspirations as a coach?
9. How these concepts relate to the others?
10. Looking at the concept map, is there any other concept you want to add?

Appendix D

Follow-up Interview Guide

The aim is to understand how we can improve our group collaboration.

1. **Immediate Value.** At the beginning of this process what were your objectives for the participation in this community?
2. **Potential Value.** What potentially useful things did you want the community to produce? Have you contacted any coach by email or phone? How often have you contacted she/he? Have you contacted any IST member? Kyle, Wendy or Wayne? Have you downloaded any resources? Which ones? What for? Did you have any insight or idea?
3. **Applied Value.** Have you applied any concepts (or tools) to your practice? Elaborate on this... Have you faced any challenges in implementing the ideas or suggestions? Elaborate on this...
4. **Realized Value.** Have you noticed any outcomes positive or negative ones? Elaborate. What would be the specific outcomes if the PLG worked to its potential?
5. **Transformative Value.** How has the PLG has influenced the way you think about your goals and practices? Has it stimulated deep debates?
6. **Strategic Value.** What is your perception of the relationship with Curling Canada, NTP, and your work? What is your perception of the involvement of IST members from Curling Canada? Your participation has stimulated strategic thinking in the community?
7. **Enabling.** Did you find it easy to access the Basecamp and GoToMeeting? Have you found any barriers for your participation? (hours, technology, frequency of emails and meetings...). Is there anything that Curling Canada could do to improve your experience within the PLG? What would you like to see more often? Your participation on the PLG has changed the way you perceive Wheelchair Curling in Canada? Under what conditions would this support be more likely to become available?

Appendix E

Final Interview and Focus Groups Interview Guide

1. At the beginning of this process what were your objectives for the participation in this community?
2. What potentially useful things did you want the community to produce?
3. Do you believe that your participation in the community led to changes in your coaching practice?
 - a. If no, Why?
 - b. If yes, please elaborate?
4. Under what conditions was the community able to help produce these things?
5. What indicators suggest that the community was producing what you hoped it would?
6. Under what conditions was it possible for you to apply what the community has produced?
7. What would make it difficult to apply the learning? Were there risks to pay attention to?
8. Is there something the community could have done about creating such conditions?
9. Was the community successful? If not, what should have been different? For members? For their teams? For the field? For students? For the world?
10. What are the conditions you think must be in place for these outcomes to be likely? Are there factors that would prevent the community having an effect on relevant outcomes?
11. By definition, transformative effects are difficult to plan. But where do you expect there was the greatest potential for surprising outcomes that can transform the practice, members' identities, or the sport organization strategy?
12. What were conditions that could make transformative effects more likely? What risk was the community willing to take in order to innovate?
13. How can the community be directly connected to strategic imperative? Should the community be part of strategic conversations?
14. What were conditions for these strategic conversations to take place?
15. What kind of support did you need ideally? What enabling factors could be secured?
16. Or would it be better to keep things low-key?
17. Under what conditions would this support be more likely to become available?

Appendix F

Ethics Approval Notice

File Number: H06-15-21B

Date (mm/dd/yyyy): 12/14/2015



Université d'Ottawa
Service de subventions de recherche et déontologie

University of Ottawa
Research Grants and Ethics Services

Ethics Approval Notice

Health Sciences and Science REB

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Role</u>
Diane	Culver	Health Sciences / Human Kinetics	Supervisor
Tiago	Duarte	Health Sciences / Human Kinetics	Student Researcher

File Number: H06-15-21B

Type of Project: PhD Thesis

Title: Promoting and assessing social learning in disability sport

Approval Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
12/14/2015	12/13/2016	Ia

(Ia: Approval, Ib: Approval for initial stage only)

Special Conditions / Comments:
N/A

Appendix G

Ethics Renewal Notice

File Number: h06-15-21b

Date (mm/dd/yyyy): 03/09/2017



Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

Ethics Approval Notice

Health Sciences and Science REB

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Role</u>
Diane	Culver	Health Sciences / Human Kinetics	Supervisor
Tiago	Duarte	Health Sciences / Human Kinetics	Student Researcher

File Number: h06-15-21b

Type of Project: PhD Thesis

Title: Promoting and assessing social learning in disability sport

Renewal Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
12/14/2016	12/13/2017	Renewal

Special Conditions / Comments:
N/A

Appendix H

Vignette Creation

Nancy's vignette from Article 4 is presented below with footnotes to shed light on how data analysis was integrated into the creative writing process in an effort to enhance the internal coherence, credibility, and resonance of the data representations and, more broadly, the research project.

Nancy, the incomer: "I don't know what I don't know!"

R1: *Tell me a little bit about your curling experience*¹.

Nancy: I got involved with wheelchair curling due to my own impairment. I tried many different sports like wheelchair basketball,² but at my age (50s), the stamina isn't there anymore³. A "wheelie" friend of mine kept bugging me to join the team because it is always a struggle to find wheelchair users who want to stay seated inside the freezer [laughs], I mean on the ice sheet.⁴ So, I showed up and had so much fun! I was hooked by the sense of community!⁵ Locally, we always played against AB teams because there aren't any other local wheelchair teams; well, not even adapted clubs.⁶ Since they needed a fourth player to compete regionally, although I was Nancy the newbie curler, I travelled to a few tournaments within five hours from home. How bizarre that one week we played against

¹ The mapping interviews (Appendix E) included the question above. Tiago paraphrased it during the many interviews.

² Quote slightly edited from the mapping interview.

³ The age of the WC athletes was observed at many competitions.

⁴ The quote was paraphrased from the notebook with observations from the event.

⁵ Quote from mapping interview.

⁶ The similar quotes from many coaches referred to the lack of competition.

AB teams in our recreational league at the club, and the next we competed against nations that were at the Paralympic Games! And sometimes, we even beat them!⁷

R1: *Yes, that is bizarre! What else about competitions was remarkable?*⁸

Nancy: Well, at the provincial championships we only played one team.⁹ At the nationals,

Curling Canada requires that every team brings a coach, which means that a few provinces only work with coaches for a week over the year.¹⁰ Actually, the difficulty of finding a coach to work with us is what motivated me to become a coach.¹¹

R1: *What were your initial thoughts and goals for participating in the intervention?*¹²

Nancy: At the first, I thought it would be an opportunity to meet other coaches and if there was an open coaching spot on Team Canada, why not? I thought being a wheelchair user, I could be the voice of people with disabilities within the NTP.¹³ Of course, that thought did not last. Reading all the topics on Basecamp and online camps was quite overwhelming at times.¹⁴ The amount of information helped me realize that I don't know what I don't know. [laughs] I was in way over my head.¹⁵ The amount of knowledge the NTP coaches have is really impressive and it did bring much more appreciation for what they are doing with the national team.¹⁶

R1: *On that topic, can you describe your participation in these different learning activities?*¹⁷

⁷ After attending three different competitions and observing the disparity of teams competing, from recreational teams to Paralympic teams, I would informally discuss the topic with many of the coaches. Many of their perspectives helped me build the quote above.

⁸ Fictional question included to provide segue to other particularities of the landscape.

⁹ Quote provided during an OGM.

¹⁰ Observations at the third competition informally discussed with coaches.

¹¹ Quote from a mapping interview.

¹² Quote from the follow-up interview.

¹³ Quote slightly paraphrased from a mapping interview.

¹⁴ Quote paraphrased from the final interview.

¹⁵ Fictional quote added to provide segue and add flow to the reader.

¹⁶ Quote paraphrased from the final interview.

¹⁷ Quote from the follow-up and final interviews.

Nancy: I participated in every activity I could.¹⁸ It felt so great to be part of the community; I wanted to experience it fully. I was so impressed with everything I heard and read that at first I thought twice before commenting or asking.¹⁹ Actually, it was good that during online camps I could send my questions in without asking directly. I didn't want to be viewed as a newbie. In the last few months I'm way more confident.²⁰

R1: *How so? Can you expand on what ways have you benefitted from the PLG?*²¹

Nancy: Oh, boy, I benefitted in so many ways. Actually, I have a great story that happened during a major competition. At our competitions, opposing coaches are side-by-side watching the game. So, as an athlete, when I started coaching, I would never sit close to the coaches like a "spy". But after a few PLG meetings, I felt confident to ask if I could sit behind them. The coaches were very welcoming and invited me to sit not behind, but beside them. As the game went on, they shared among themselves some tips on how the teams should be playing, and even asked my opinion a few times. I never expected to experience something like that. So, being part of the group made me more confident to join conversations and feel that I belong in that new role.²²

¹⁸ Quote from focus group.

¹⁹ Quote slightly changed from the final interview.

²⁰ Quote from a final interview.

²¹ Probing question from final interview.

²² This anecdote started at the second competition I attended when a coach-athlete mentioned not approaching other coaches for being afraid of being judged as a spy. The next competition after a few months I noticed the coach sitting with other coaches. After, the game was over, I engaged in an informal conversation about the episode which resulted in the excerpt above. The story was slightly paraphrased.

Appendix I

Coach Invitation Email

Hello!

You are invited to participate in a collaborative research that aims to create wheelchair curling Peer Learning Groups (i.e., coaches, integrated support team members, etc).

Research

The research will follow three phases.

- 1- You will be asked to participate in an interview to (a) understand how you started coaching and (b) to create a graphic map of key people in your wheelchair curling world (Mind Map).
- 2- The Peer Learning Group composed of coaches like you and also some of the key people named by you and other coaches will meet on a regular basis (maximum two times a month), depending on the group's availability. The meetings are expected to last from 60 to 90 minutes and will take place online. The first few meetings will be to establish the learning goals of the group and themes of online camps. These meetings and online camps will occur during a span of twelve months.
- 3- You will be asked to (a) write a short reflection of the activities that you engaged using a template which it might take from 20 minutes to 60 minutes to fill it and (b) participate in a focus group to evaluate the learning that you gained during the time we were conducting the study (approximately 90 minutes).

Benefits

- 1- The meetings and online camps will count as Professional Development Credits towards your certified status.
- 2- You might benefit from the reflection on your coaching practice and by the access to other members of the disability sport community.
- 3- Given the goal of the learning group is create knowledge about the practice of disability sport, you will benefit from this knowledge construction, as will the disability sport community.

Participants

The study is looking for people involved in wheelchair curling willing to connect with other members of the community. The only inclusion criterion is that you are eager to share your disability sport experience and expertise and to learn with others. Coaches will be selected on a first-come, first-served basis. The study will be conducted solely in English.

The project is being conducted independently from Canadian Paralympic Committee and Curling Canada. Therefore, if you are willing to participate in the project, please contact Tiago Duarte or Dr. Diane Culver (emails below) to express your interest, or if you have any questions.

Thank you in advance!

Tiago Duarte, PhD Candidate
Dr. Diane M. Culver
School of Human Kinetics

Appendix J

Curling Canada Invitation Email

Dear Mr.,

My name is Tiago Duarte, and I am a PhD candidate at the University of Ottawa interested in all things related to coach learning, more specifically social learning as a tool to develop and enhance the competencies of disability sport coaches. My proposed research aims to create learning groups of people involved with disability sport (i.e., coaches, integrated support team members, etc), and I believe this research can be mutually beneficial in adding value to the learning culture that already exists within the national wheelchair curling program.

Primary Objectives:

- Contribute to gaps in disability coach development knowledge, resources, and services
- Knowledge translation related to adult/social learning theories into disability sport

Research Activities:

- Interviews with National and Development Coaches (mapping personal biographies; 90 minutes)
- Learning Group Meeting (1-3 online meetings per month for 3-6 months; 90 minutes)
- Focus Group (in-person or online; 2 hours)

Benefits to Participants and NSO:

- Guided adult/social learning activities (based on coaches' needs and interests)
- Creation of a social learning platform for coaching and support staff
- Strengthen the overall culture of learning

The study is looking for people involved in disability sports willing to connect with other members of disability sport community. The only inclusion criterion is that you are eager to share your disability sport experience and expertise, and willing to learn with others. The project is being conducted independently from Canadian Paralympic Committee and any other organizations. Therefore, if you are interested in participating in the project, please contact me at your convenience to discuss the details.

Kind regards,

Tiago Duarte, PhD Candidate
Dr. Diane M. Culver
School of Human Kinetics

Appendix K

Information and Consent Form



Université d'Ottawa
Faculté des sciences de la santé
École des sciences de l'activité
physique

University of Ottawa
Faculty of Health Sciences
School of Human Kinetics

Coach Consent Form

Promoting and Assessing Social Learning in Disability Sports

Principal Investigator: Tiago Duarte, PhD student

School of Human Kinetics, University of Ottawa

Ottawa, ON (613) 562-5800 ext. 4276

Thesis Supervisor: Dr. Diane M. Culver

Associate Professor

School of Human Kinetics, University of Ottawa

Ottawa, ON (613) 562-5800 ext. 4283

I am invited to participate in the abovementioned study conducted as part of Tiago Duarte's PhD thesis, under the supervision of Professor Culver.

The purpose of the study is to understand how coaches of parasport learn from others. In order to achieve that purpose, the researchers will first map how I am currently interacting with others. Second, the researchers will create a collaborative social learning group. Finally, they will assess the benefits to me through participating in the group meetings.

My participation will be divided in three phases. Phase One consists of an individual interview with the main investigator. I will be asked to create a graphic representation called a concept map which consists of the main knowledge areas of my coaching, and identifying the people with whom I interact in order to fulfill my coaching responsibilities. The concept mapping interview will range from 45 to 90 minutes. This interview will be scheduled at a time and in a place of my convenience. The interview will be audio-recorded. Phase Two will consist of attending meetings and webinars with other coaches and integrated sport team members that will range from 60 to 90 minutes. The meetings will discuss varied topics including learning goals of the learning group as well as challenges participants are currently facing. The meetings will be audio and video-recorded at the researchers' discretion. The webinars will be presented by subject experts (e.g., nutrition, sport psychology, etc.) who will address questions previously put forward by the participants and will be facilitated by the researchers. In order to allow other participants who could not attend certain webinars, the audio and video recordings will be shared on Basecamp (see below for more information).

125 Université / University
Ottawa ON K1N 6N5 Canada
www.uottawa.ca

The scheduling and location of the meetings and webinars will be established collectively with all the members. It is anticipated that no more than two meetings per month will be conducted. The participants will join the meetings and webinars mainly through Go2meeting software.

Phase Three will consist of: (a) an individual reflection using a one-page template to detail the learning created throughout the learning groups, and (b) a focus group to further evaluate the learning resulting from the group meeting activities. The focus group will range from 60 to 90 minutes and it will be audio and video-recorded at the researchers' discretion. Some participants might participate in the focus group through Go2meeting.

I might benefit from the reflection on my coaching practice and by the access to other members of the disability sport community. Given the goal of the learning group is to create knowledge about the practice of disability coaching, I will benefit from this knowledge construction, as will the disability sport community. Professional Development credits might be given by my National sport Organization based on my participation in meetings and webinars.

I have received assurance from the researchers that the transcriptions of my individual interview (Phase One) will remain confidential. The only people who will have access to the transcriptions are the two researchers listed above. The data created, including my concept map and answers to open-ended questions may be used verbatim in presentations and publications but neither I (nor my organization) will be identified. I will have the opportunity to review my interview transcripts and edit as I feel necessary. The researchers will provide me with a pseudonym and if necessary change my personal details (name of province, gender, etc.) to maintain my anonymity.

I understand that the researchers will maintain confidentiality in the publication of the data. However, given the nature of learning groups I am aware that the other group members are uninhibited from sharing the information discussed within the groups. I understand that the meetings (Phase Two) and focus group (Phase Three) will be audio-recorded and video-recorded. I understand that audio and video-recordings will be used only to identify the ownership of quotes and that these recordings will be used only for analytical purposes. The only people who will have access to the recordings are the two researchers listed above. I understand that the webinars' audio and video of the slides will be shared on Basecamp. I do understand that if I want to ask a question to the presenter and remain anonymous I can send it privately to the facilitator who will pose the question for me. I understand that if I chose to speak directly to the presenter I could be identified by someone who watches the recording in the future.

Given the goal of collaborative inquiry is to create knowledge, sharing the transcripts of meetings (with anonymized identifiers) as well as the audio and video of webinars is imperative to stimulate further reflection about the meetings and webinars. For this purpose, a virtual space of knowledge sharing and construction, such as Basecamp, will be used to enhance the learning experience and maximize the exchange of information and the creation of shared knowledge. Included on this space will be items such as the transcriptions of the meetings, audio and video of webinars and papers discussed, but not the audios and video-recordings of the meetings. Each participant will create their own account upon being invited to this online space. Only invited individuals will be able to access this site.

Because the study will use an internet based account (e.g., wiki space or another sharing tool) to which I will have a login, to minimize the risk of security breaches and to help ensure confidentiality, it is recommend that I use standard safety measures such as signing out of my account, closing the browser and locking the screen or device when I am no longer using them. Given that many of these collaborative spaces are hosted on American servers, the data uploaded to these sites will be subject to the Patriot Act of the United States of America, which allows American authorities access it.

The data collected (e.g., interview transcripts, concept maps, etc.) will be kept on a password protected computer in Diane Culver's laboratory at the University of Ottawa. The paper copies of the data will also be kept in Diane Culver's laboratory at the University of Ottawa, in a locked file cabinet. The data (electronic and paper) will be conserved for a period of 5 years from the start of data collection after which time they will be destroyed.

My participation in this study does not entail risks. However, I may refuse to answer any questions that I do not want to answer and I am not obligated to participate in every meeting. Because collaborative inquiry is the result of the collaboration of many members, if I choose to withdraw, all data gathered within the group meetings until the time of withdrawal will be kept for analysis. However, if I wish my interview and concept map will be destroyed and not be included in the overall findings.

I, _____, agree to participate in the above research study conducted by Tiago Duarte of the School of Human Kinetics, Faculty of Health Sciences, University of Ottawa, under the supervision of Dr. Diane Culver.

If I have any questions about the study, I may contact Tiago or Diane via email or at the numbers mentioned herein.

If I have any questions regarding the ethical conduct of this study, I may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5
Tel.: (613) 562-5387
Email: ethics@uottawa.ca

There are two copies of the consent form, one of which is mine to keep.

Yes please email me the results of this portion of the study

☐

Participant's signature: *(Signature)* Date: *(Date)*

Researcher's signature: *(Signature)* Date: *(Date)*

Appendix L

Snapshots Discussed at the Focus Groups

