

Older Adults' Use of Online Personal Learning Networks to Construct Communities of Learning

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Abstract

This study investigated how retired older adults (age 55+) use the Internet and social media tools to facilitate their informal, self-directed learning by creating and maintaining online personal learning networks (oPLNs). The research examined what information and communication technologies (ICT) participants included in their oPLNs and how they used these oPLNs to activate and self-direct their informal learning. Employing the web-conferencing tool WebEx, four online focus groups and four one-to-one audio interviews were conducted allowing for a total of 15 voluntary, geographically-dispersed participants from across Canada to synchronously interact and exchange their experiences and insights regarding their oPLNs. Using a thematic analysis method, the discussion transcripts generated were analyzed to examine learning contexts, strategies to manage learning, motivation to learn and achievement of learning goals, as well as to discover emergent themes. It was clear from our findings that oPLNs provided a virtual "learning community" that supported informal, self-directed learning via learner participation and interaction opportunities fostered by ICT-based tools and processes.

Keywords: online personal learning networks; online learning communities; older adults; informal, self-directed learning

1. Introduction

Within developed countries, the relative percentage of older adults (65+) is growing and predicted to reach 29% of the population by 2030 (World Economic Forum, 2012). Given this trend, it is important to understand, among other considerations, the extent this demographic is adopting and adapting technologies to enhance their learning. In addition to this challenge, some researchers provide legitimate “push-back” (Helsper & Eynon, 2009) to the now generally discredited “digital native *versus* digital immigrant” (Prensky, 2001a) conceptual framework; initially attempting to illuminate any differences between generation-based demographics regarding competence and comfort in using information and communication technologies (ICTs), this framework inadvertently added to the already pervasive stereotype of older adults as inept and uninterested in using digital technologies. Freed from naive, inaccurate, and even harmful perceptions of older adults as “digital immigrants,” it is important to deepen and extend our investigations into the what, why, how, and with whom this demographic is using ICT-based resources and processes to enrich their informal, self-directed learning. The research presented below contributes to an extended and expanded understanding of how older adults are currently adopting and adapting ICTs to support and facilitate their online informal, self-directed learning efforts. Specifically, this research provided many new insights into the above imperative. For example, as a focus of their informal, self-directed learning efforts, the range of interests or hobbies identified by the older adult participants was diverse and extensive. Especially interesting is that participants clearly emphasized the importance of exploring and participating in their oPLNs to learn new things; in fact, learning from others was seen as a *primary* motivation to engage in their oPLNs. This research discovered how these participants selected, experienced, and proactively promoted digital activities and relationships conducive to their learning, supporting our view that the oPLN represents an individually-constructed, dynamic, digital learning community (Blayone, van Oostveen, DiGiuseppe, & Child, 2017).

2. Literature Review

One can imagine informally polling friends and relatives, asking them to estimate how important Internet-based activities are to older adults they know; a likely response might be “they don’t go online, they don’t even know how to use the Internet!” The pervasive stereotype of older adults’ disregard of and/or ineptness with “all things Internet,” remains, sadly, unchallenged, and is even perpetuated within academic circles (e.g., the digital “natives” vs. digital “immigrants” perspective; Prensky, 2001a) despite current critique calling this ‘false binary’ into question (Bennet, Maton, & Kervin, 2006). On the contrary, our research provides evidence that the reality of some older adults’ use of the Internet is quite different from these commonly held perceptions. According to a PEW Research Center Report examining social media usage from 2005 to 2017, 65% of adults now use the Internet and social media sites, a *tenfold* increase to the previous decade; 35% of those 65 and older use social media, up from just 2% in 2005 (Anderson & Perrin, 2017). It is clear that technology adoption is climbing among older adults (Hunsaker & Hargittai, 2018), with nearly 60% of those aged 65 and older going online: within the 65-69 age group, 82% are reported using the Internet and 59% owning smartphones. It is clear that outdated stereotypes

of older adults as 'digital immigrants' needs to be "retired" from the lexicon of investigations of this population.

2.1 Informal Learning: Theoretical Perspectives

One area that has seen a shift away from such stereotypes is informal learning, specifically within the conceptual domains of andragogy, self-directed learning, and heutagogy. Cercone (2008) provided an overview of andragogy as a core theory underpinning informal learning and explicated three additional elements, namely: experiential, transformative, and self-directed learning. While there is logically a blending of these outcomes, it is the latter which is of most interest here. For example, self-directed learning, a central concept in adult learning (Merriam, 2001), implies that the “locus of control” for learning lies within the adult learner, “who may initiate learning with or without assistance from others” (Lowry, 1989, p. 148). Robertson and Merriam (2005) examined self-directed learning processes of older rural adults (ages 75-87) and found that "self-directed learning begins with an incentive to learn, plus any interest, leading to accessing resources" (p. 269). While of background relevance, these early studies did not include any consideration of ICT for learning. A review of the literature underscored a paucity of research specifically focused on older adults' use of ICT to actualize and facilitate their informal, self-directed learning.

Given the advent and ubiquity of ICTs and their potential to empower processes of informal, self-directed learning (de Souza, Filho, Rodrigues, & Gomes, 2017), we postulated that, with the integration of these technologies, these consolidate the purposes and methods of informal, self-directed learning among some older adults. This study, then, provides a needed *extension* of the well-established principles of andragogy (Smith, 2002) and self-directed learning (Caffarella, 1993). Our research drew on the principles of heutagogy (Hase & Kenyon, 2000) to focus attention on these new and innovative adoptions of now-ubiquitous ICTs to actuate and engage older adults' informal, self-directed learning.

The conceptual framework of heutagogy (Hase & Kenyon, 2000; Blaschke, 2012; Blaschke & Hase, 2016) considers the affordances and implications of using ICTs for 21st Century learning. This framework succinctly captures a form of self-directed learning orientations that highlight the processes of learning independently but includes learning *with* technology; we speculate that this qualifier promotes increased 'learner agency' and a more autonomous, self-directed way of learning (Blaschke, 2012; Blaschke & Hase, 2016). Heutagogy, then, is a learner-centered approach where the learner has total control over the learning process *and* utilization of ICT-based tools and resources to do so. Citing McLoughlin and Lee (2007), Blaschke (2012) suggests that, in particular, social media as applied to learning is an example of one of the new tools of heutagogy, providing connectivity with others, information discovery and sharing, as well as personal curation and adaptation of information as required; these concrete affordances can support informal, self-directed learning activities of older adults. Heutagogy, then, is well-suited to provide both an interpretive conceptual framework *and* a learning strategy to examine and understand older adults' ICT-supported pursuits of informal, self-directed learning goals. This perspective underpinned our exploration of how these older adults used a variety of ICTs to create and maintain oPLNs in service of

actualizing their informal, self-determined informal learning. Within an online community of learning perspective (Brown, 2000; Richardson, 2002), we found that the use of oPLNs furnished remarkable opportunities to connect, collaborate and co-create knowledge with other older adult learners (Sharma, Palvia & Kumar, 2017).

The development and maintenance of effective learning communities (McMillan & Chavis, 1986; Brower & Dettinger, 1998) is a core concept used to understand and interpret the results of this exploratory study. In a nutshell, participants in a learning community are likely to feel a sense of loyalty and belonging to the group (i.e., membership factors) that drive their desire to engage with and help others in the community; given that what participants actually do affects what happens in the community, they are active and not just reactive agents (i.e., are active influencers). Also, to be designated as a learning community, members must have particular learning needs met (i.e., fulfillment of learning goals); they can do this by expressing personal opinions, asking questions to get specific information and also, feel free to share stories of relevant learning events with the affective domain of these made explicit, thereby making emotional connections with other learners (McMillan & Chavis, 1986). While the theory of situated cognition and the concept of legitimate peripheral participation (Lave & Wenger, 1991), is a significant conceptual framework, this research takes a broader, more “fluid” examination of learning communities, one that includes examinations of the phenomenon of oPLNs from a broader perspective.

In summary, this research explored how older adults use the Internet and social media tools to create and maintain *online personal learning networks* (oPLNs) for informal, lifelong learning purposes. An objective of the study was to develop an initial understanding of how these older adults are creating oPLNs, for what purposes they are used, what characteristics describe them and to document the extent to which oPLNs facilitated (or not) their informal, self-directed learning goals. The theoretical and conceptual frameworks through which our findings are interpreted include andragogy (self-directed learning), heutagogy and communities of learning.

3. Methodology

As part of the requirement to engage in the study, participants needed a collection of individuals or groups with whom they regularly communicate with online to exchange information, engage in discussion, and share resources to informally learn more about a hobby or general interest; this collection of individuals and/or groups constituted their unique oPLN. It is important to point out that oPLNs in this study were focused on participants' *informal*, self-directed learning, and not formal or non-formal learning activities (Schwier, Morrison, & Daniel, 2009); non-formal here includes structured by non-credentialed educational events or learning programs sponsored by community, civic, and voluntary organizations, while formal learning refers to any structured course or educational program, for which official credential is received upon successful completion and usually include traditional role-differentiation (i.e., student/teacher, where the "expert" is the teacher). Finally, informal learning here includes that which occurs in one's day-to-day living (i.e., incidental learning and/or serendipitous learning). However, this study is aligned with Merriam and Kee

(2014), focusing on informal learning as a more *systematic* and *goal-directed* set of self-directed learning activities (i.e., a person's "designs" and executes her learning project with personal goals and outcomes in mind). For example, these older adults methodically pursued a wide range of learning goals (e.g., health and wellness, leisure, personal interests, computer, and media literacy, etc.) via informal and self-directed processes; it is assumed that the participants' approach for engaging in their identified hobbies and/or interests, via online activities, were indicative of informal learning, as defined by the researchers.

Using a mixed methodology approach, Phase I of the research utilized a 52-item survey, distributed to 385 participants from across Canada. An online survey, entitled: How older adults use personal learning networks to support informal, self-directed learning goals, was developed by the primary author and staff at the University of Saskatchewan's Social Sciences and Research Laboratory (SSRL), using Qualtrics. Participants were recruited using EKOS, a Canadian database company, that provided a representative sample across Canada (based on relative populations of various Provinces and Territories); EKOS maintains a massive database of potential respondents (e.g., retired, 55+ year of age, etc.). In total, 1,082 survey invitations were sent out, with 385 participants agreeing to be surveyed on this topic, with a return rate of 35.6%. Of the 385 participants, there were more males than females ($n = 218$ males, $n = 165$ females). Participants were asked 52 questions, covering a total of 10 discrete categories, the majority of which focused on discovering the nature of participants' use of the oPLNs to support informal, self-directed learning goals. Age quotas were set to ensure a mix of respondents across three age groups (i.e., 55-64, 65-74, 75+); this was done to obviate the error of assuming homogeneity of sample characteristics and online behaviors by collapsing the older adults across the range of 55+. Age quotas were set to ensure a mix of respondents across three age groups (i.e., 55-64, 65-74, 75+); this was done to obviate the error of assuming homogeneity of sample characteristics and online behaviors by collapsing the older adults across the range of 55+. The purpose of this investigation was to gather quantitative data regarding participants' use of ICT and social media tools to build and activate their oPLNs for their informal, self-directed learning goals. Descriptive data was gathered that articulated a range of hobbies and/or interests that were the focus of their motivation to learn online. Using a qualitative methodology, drawing voluntary participants from the survey pool (survey participants were asked a question at the end as to whether they would be willing to participate in the online focus groups; self-selected participants were then contact, via email, confirming their engagement). The purpose of Phase II was to examine participants' motivations, processes and valuing of their oPLNs to enrich their informal, self-directed learning activities in more detail; using the web-conferencing tool WebEx™, four synchronous *online* focus groups and four individual interviews were conducted. This methodological innovation (Morrison, Lichtenwald, & Tang, 2019) allowed for a total of 15 voluntary, geographically-dispersed participants from across Canada to exchange their experiences and insights, in real-time, during the 60-90 minute sessions.

This paper reviews the results of a thematic analysis (Braun & Clarke, 2006) of the oPLN focus groups and one-on-one interview transcript data; in collaboration with the University of Saskatchewan's Social Sciences Research Laboratories (SSRL), the analysis first consisted of

a descriptive phase, based on a codebook of *a priori* categories established by the research team. Under the guidance of the Principal Investigator (PI), four individual coders (two research assistants and two members of the SSRL) then worked with a subset of the data to establish reliability through intercoder agreement. The analytical and interpretative processes (though defining and redefining categories), from which themes emerged, were iterative and collective. Using NVivo Pro qualitative analysis software to assist in the coding process, differences in selected subset data of coded text segments were assessed in a variety of ways (i.e., coding stripes by user, a matrix coding query, and coding comparison queries). According to interpretations of Kappa coefficients, coding comparison queries revealed that we had established ‘good’ reliability (i.e., 0.4 or above). Based on the team’s discussion of the initial kappa results, some codes were collapsed into broader themes (e.g., “informal learning” now included its sub-nodes of “incidental learning,” “informal learning,” and “self-directed learning”), while others delineated into sub-themes in preparation for re-coding (e.g., Learning Community broken down into oPLN Learning Community vs. Learning Outcome – Sense of Community).

The resultant qualitative analysis was exploratory in nature and provided a broad view of the data. The predefined coding framework, derived from the initial codebook guided the descriptive coding which focused the analysis based on the research study objectives and categorical impressions derived from the interviews. The qualitative analysis approach utilized was a contextual thematic analysis; inductively acknowledging participants' experiences but also considered the wider social context in a deductive or theoretical view. This is demonstrated in part by the variation of excerpts or variability in considering unit of analysis involving multiple coding of text across relevant themes non-exclusively. Overall, the thematic analysis approach occurred in an iterative process (Braun & Clarke, 2006) until relative saturation of themes was achieved in two stages: 1) descriptive coding which focused on semantic meanings presented by participants, followed by 2) analytic coding which focused on organizing higher themes.

4. Findings

Results from the thematic analysis revealed four major themes and 12 sub-themes. Presented in Figure 1 below, the core thematic analysis revealed multiple sub-thematic categories: 1) learning contexts, 2) learning management, 3) motivations for learning and 4) learning goals. These results provide strong evidence of a dynamic and complex set of self-directed learning activities, collaborative networking, and emergent informal online learning communities.

4.1 Learning Context

This theme describes participants’ responses related to their learning *context*, or the circumstances describing *what* they use to construct their oPLNs and *how* a participant is involved with them. Included within this theme are participants' descriptions of the contextual boundaries of their oPLNs, such as how they define their oPLNs, perceive their agency role and the role of others, and the various resources used within these online learning communities. See Figure 1 below for themes and subthemes associated with this category.

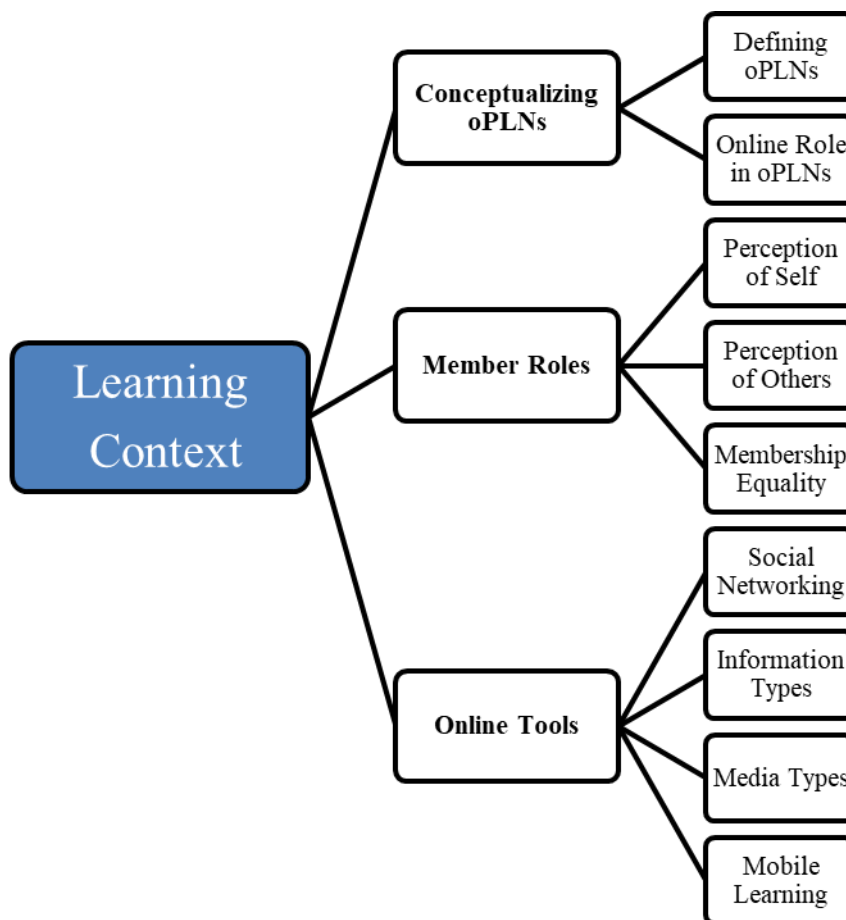


Figure 1. Themes of Learning Context of oPLNs.

4.1.1 Conceptualizing oPLNs

Participants' conceptualization of their oPLNs was discussed in two ways: through *defining* their informal personal learning networks, and by highlighting the *online role* within their networks. While the concept of oPLNs, per se, was foreign to participants, they did commonly and implicitly refer to their learning network as an "online learning group":

It's hard to call it an online network, but we're in touch constantly. [...] we call them 'interest groups'. (Interview #3)

Interestingly, the majority of participants described their oPLNs as including a *combination* of online and offline activities. This influenced how they joined and interacted with their informal online learning group and how they facilitated their learning activities. For a few participants, they joined local (i.e., face-to-face, nearby geographically) and interacted in-person but brought forward into these learning spaces online resources and insights gleaned from their activity in their oPLNs:

[W]ith the music group we do play-listen and what we do when we get together we explore the music together, and the music we're exploring we're in a meeting room in the public library. [...] there is a very real advantage in coming together as a group and exploring ideas that increasingly interface with the internet and stuff that's out on the internet. (Interview #3)

So, for a majority of participants, they both interacted online via their oPLNs *and* in-person, while using resources to "feed-forward" to their larger learning contexts (reciprocal exchange both ways). This finding alludes to the flexibility of constructing, understanding, and interacting with these ever-developing communities of learning; a shifting dynamic is present in how participants define and engage with their oPLNs concerning their learning needs, such as seeking out a tutorial or for relational discourse about a mutual interest. How participants choose to draw on various resources and whether or not such resources reside in the online environment, in person, or a combination, then, depended on their current learning requirements and desires. These participants realized a 'synergy' between overlapping learning contexts (i.e., distributed, online and local, face-to-face). In other words, this phenomenon conceives the oPLN learning community as "dynamically expanding" to also incorporate face-to-face learning contexts and processes.

4.1.2 Member roles

Participants discussed their perception of the role of both *self* and *others* within their oPLNs and how this relates to the idea of *membership equality*. All participants described themselves as "learners" first and foremost, while some also described themselves as having a specialized role in their oPLNs. The majority of participants described that others in their oPLNs held unique roles that contributed to their learning; one participant described this as it relates to leadership within their oPLN:

I am president of the group, I've been with that group for about 30 years, so I've started to consider myself the leader there. There are some areas where I consider myself more than a follower... I do have some expertise [... but for some] I'm very much not in the lead on those. So, yeah it varies from topic to topic as whether I'd consider myself to be a leader or a follower. (Focus Group #1, Participant #1)

This example also points to how participants commonly perceived their roles in their learning network activities as dynamically dependent on the topic focus. In other words, participant membership role descriptions appeared to illustrate a *fluid* identity regarding membership roles within their oPLNs. Interestingly, they could take on an expert *or* novice role within the same group dependent on possessing relevant knowledge amongst themselves and the group's perceived expertise—a clear contrast to assigned hierarchies found in informal learning contexts (e.g., students/teachers). Expressing recognition for differing levels of authority and competencies, signaling a lack of hierarchy among members, this participant claimed:

I think it's important that in your group you have knowledgeable people and people who are there to learn as I am usually. Because the people who are not experts they will ask questions or make comments that help to bring along the conversation and to introduce new knowledge to you that you hadn't thought about before. Sometimes they are of more importance to the conversation than the experts. Although we need those as well. (Focus Group #2, Participant #2)

Membership equality, therefore, appears to represent a paradoxical finding where most participants expressed that their oPLNs were *not* hierarchical, yet they recognized that other

members held more knowledge authority or skills competency than others (i.e., a kind of hierarchy based on perceived merit). Also, depending on the learning topic, participants referred to themselves as potentially and/or dynamically taking on the following variety of member roles in their oPLNs:

- Problem-solvers
- Collaborators
- Information sharers
- Critics
- Experts
- Networkers
- Contributors
- Editors
- Leaders
- Receivers

When reflecting on *Member Roles*, participants' perceptions of their roles were *varied* and *dynamic* depending on the content focus, their perceived expertise, and the flow of the interactions within their oPLN-based learning communities.

i. Online learning tools

Participants used of number of online tools and resources to support and contribute to their oPLNs, encompassing a variety of information and media types, social networking sites, and mobile learning devices. Specifically, participants mentioned utilizing the following information types and sources to support their online informal learning goals and activities:

- Forums
- Blogs
- Mailing Lists
- Newsletters
- Google
- Wikipedia
- Instructional Websites
- Editors

It is important to note that all participants referred to accessing *text* media, sources ranging from emails, forums, or posted articles. For some, they referred to learning online *only* through text information, while others opted to use video media (e.g., YouTube), podcasts, and mp3s (as audio media types). Finally, a few participants referred to using *multiple* media types, in combination, for their online learning:

I would say that [I use] the combination of reading and video and all the different media and approaches. I particularly like that, as some appeal more than others, and I – sometimes I feel like reading and sometimes I don't [...] So the variety makes it more interesting. And visually too. (Focus Group #2, Participant #1)

Regarding the type of *social networking* tools used in support of their oPLNs, a variety were identified, such as Facebook, Skype, Twitter, and LinkedIn. However, it is important to note that the most significant conduit of online use participants referred to as *e-mail*, appearing to serve primarily as the preferred method of communicating with others and distributing resources (e.g., PDF attachments). Nevertheless, most participants referred to using at least more than one information type and modality for their online learning activities:

[F]or me it's mostly email, as well, although we do things using a Twitter account and so we can do some real-time stuff and there's some blogging kind of things we do.

(Focus Group #4, Participant #3)

Clearly, the range of ICT tools and types used by participants does not support a “one-size-fits-all” approach; rather, this demonstrates a willingness to incorporate, into their constellation of communication methods, any ICT tools and resources that made sense in their competency framework and within their unique learning community, supported via their oPNLs.

4.2 Managing Online Learning

Participants described multiple elements related to how they managed their learning. For example, participants described how they employ strategies to seek out and judge the integrity of resources, along with how they navigate communal interactions, sharing resources and information. See *Figure 2* below for themes and subthemes associated with this category.

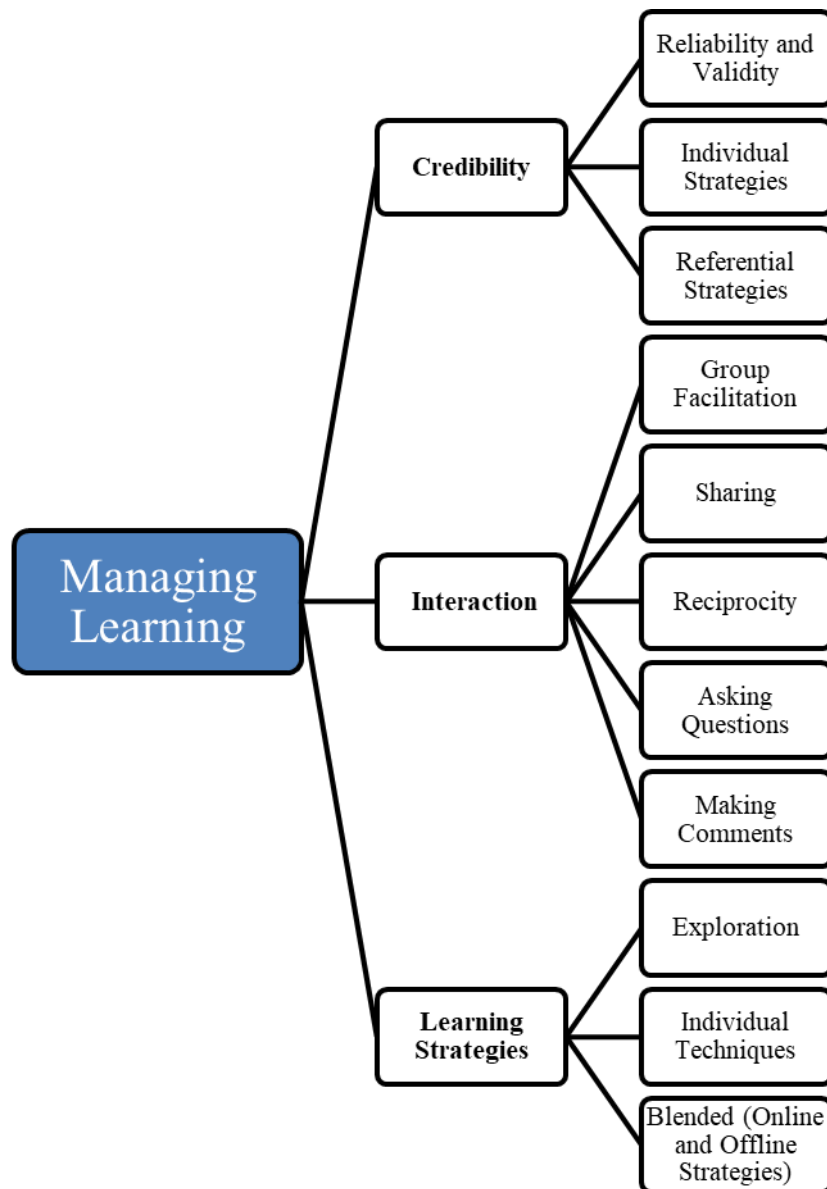


Figure 2. Themes of Managing learning in participants’ oPLNs

4.2.1 Credibility

Participants’ comments on defining a credible source as valid, per se, was not explicitly discussed; however, nearly all participant data appeared to infer the term “reliable” with source and content credibility. Specifically, participants often referred to their desire to get information from “a reliable source”—one which could be confirmed via consistency across responses or answers, and from trusted, familiar others in their oPLN, thereby directing them to more credible and trustworthy sources. A few participants acknowledged that determining credibility in their informal learning experiences did guarantee certainty:

[O]f course, you have to check to make darn sure that the information you’re getting is from a reliable source [and] therein lies a problem in some cases.

(Focus Group #2, Participant #2)

Often considered "guesswork," sometimes participants could not always, for example, decipher any "agenda" or motives of another person providing a resource, a key determinate in establishing credibility. As a solution, some participants referred to using *individual strategies*, such as intuition. Some participants described becoming more experienced with this cognitive strategy therein relying on this experience to inform their assessment when analyzing the credibility of information or online resources. Also, some participants described evaluating the quality and trustworthiness of information through analyzing the writing and determining if it is "sloppy or vague"; poorly-written information, then, is a type of "metric" that raises suspicion or supports skepticism regarding the credibility of such information. At a more sophisticated level, some participants identified using *referential strategies* to verify the credibility of information, such as checking the sources linked to the information and cross-referencing with other sources. Finally, many also referred to accessing *multiple methods and/or sources*, thereby using different means of searching for and evaluating information—a surprising analog process to formal "triangulation" processes used in formal research.

Interestingly, participants stated that checking sources *alone* was not enough to determine credibility. Specifically, participants pointed to the importance of building *relationships* in their oPLNs and then determining who is *personally* trustworthy in terms of getting advice regarding the credibility of information. The use of intuition and the perceived expertise of others to determine trustworthiness of information is captured in the following excerpt:

The more experience they had and the more I read their comments and the more they would write about different things, the more I would sense their knowledge, experience, [and] education. That's how. It was a sixth sense. (Interview #4)

Extending the idea of reliance on others' acquired reputation in their oPLNs to verify the credibility of information was a recurrent theme and important finding reflecting a very human tendency to cultivate interdependence within groups. Together, this manifests a dynamic and multi-faceted form of shared trustworthy information within their oPLNs:

[A]ctually I did write to a couple of people that I narrowed it down to and I said, 'How do I know who to trust?' They're the ones that told me if you get two or three answers very similar you can work from those. They're the ones that know. Because everyone has an opinion. (Interview #4)

[Y]ou get to know the people that are participating, and you get to know whether they have trustworthy information or not. (Focus Group #1, Participant #1)

4.2.2 Interaction

The informal nature of participants' oPLNs enabled members to ask questions, and/or initiate conversations. Often, this was an effort to build on knowledge they already had or to confirm existing knowledge. Seeking and sharing knowledge with others by asking questions *and* making comments was a crucial aspect of managing their learning. Moreover, participants talked about referring to comments and conversations *between* others as well as comments and contributions *from* others:

[T]he fact that we're doing it open-ended on the internet I think helps people or has helped people to just open up and say, 'Well that's interesting. Can we try something? Can we do this? Can you follow that up?' It made it less performance-based and the point of view of the group member. They don't have to sound smart you know? They can just ask a question. (Interview #3)

[O]ther people chime in and once I've heard from say one person, and then somebody else would chime in but a little bit of a different slant on it or give me a bit of a different idea or weblink or another resource that'll give me more of an in-depth information. (Focus Group #1, Participant #1)

We see this ability to readily access different and various opinions regarding a topic dynamically and reciprocally as a necessary component of a thriving, cognitively-engaged online learning community.

Sharing and reciprocity themes were also extensive and significant findings. *Sharing* refers to the practice of “feeding off” each other, exchanging “tips and tricks”, or learning from others’ disclosed experiences:

[A]nytime anybody has issues with anything or they want additional knowledge they can post questions and other people can chime in and say, 'Oh yeah I've got a solution for that or I have some more information about that, or some web links. There's some further information.' And so people can sort of feed off of each other. (Focus Group #1, Participant #1)

Reciprocity was identified as practicing in-group equality regarding the relative balance of sharing *and* receiving from others; reciprocity, then, can be interpreted as a synergistic combination of getting or giving information, or, being mentored:

In that group, I am both learning new things every meeting, but also teaching women who know less than I do on a topic at a given moment. (Interview #2)

We see reciprocity within online learning groups as fundamentally contributing to the establishment of a vibrant and healthy online learning community; a corollary would be that *without* reciprocity (i.e., only “consumption” of learning resources) as a shared norm and expectation, the relative “health” of the learning community would deteriorate to the point of inactivity and eventual collapse. Our positive finding regarding the embedded norm/value of reciprocity in their oPLNs, therefore, infers an effective, sustainable, and flourishing online learning community.

4.2.3 Learning strategies

How participants used their oPLNs to execute their learning goals by searching for relevant information and to gain knowledge through strategies and techniques, was another focus of this exploratory research. Various information curation methods were utilized; for example, *individual techniques* using processes such as bookmarking, persistent or systematic searching, and general or specific searching were identified and explicated:

It'll be often I'll be going in looking for very specific information, or just general information about a specific topic. (Focus Group #1, Participant #1)

It doesn't always come up first try or even third try. So you just keep going until you have the information that you're after and you are satisfied with. (Focus Group #2, Participant #2)

Participants often engaged in *exploration* where they were “roaming” online, or used ad hoc searching approaches, for their learning strategy; the “serendipitous” nature of exploration was identified as a key affordance of the Internet, given general search strategies employed:

It's an exploration, and the exploration is being done on the internet. [...] We're exploring it and whatever happens, happens. It's more diffuse. It's not focused.

(Interview #3)

Finally, using a combination of online and offline strategies (e.g., “fact-checking” information derived from TV), participants implied that one can get differing information from distinct sources while online strategies better provides learner control and tools to allow one to be “more selective” regarding information one is then able to examine more deeply, as presented below:

If one wants to watch a news broadcast on television, you have to watch the whole thing to get to the thing that you're interested in. Whereas with the internet you can do a search and – or you can go onto a news [...] and just look up the items in which you're interested. So it does allow you to be a lot more selective and cover a much wider field in getting information on the topics that are of interest to you.

(Focus Group #1, Participant #2)

4.3 Motivations to Learn

Participants described what we interpret as their *intrinsic* motivations for participating in informal learning via their oPLNs. An emerging difference between personal and community-oriented motivations was apparent along with a noticeable distinction between intentional and incidental motivations. Figure 3 outlines the motivational themes, or *why* participants engage and learn in their oPLNs.

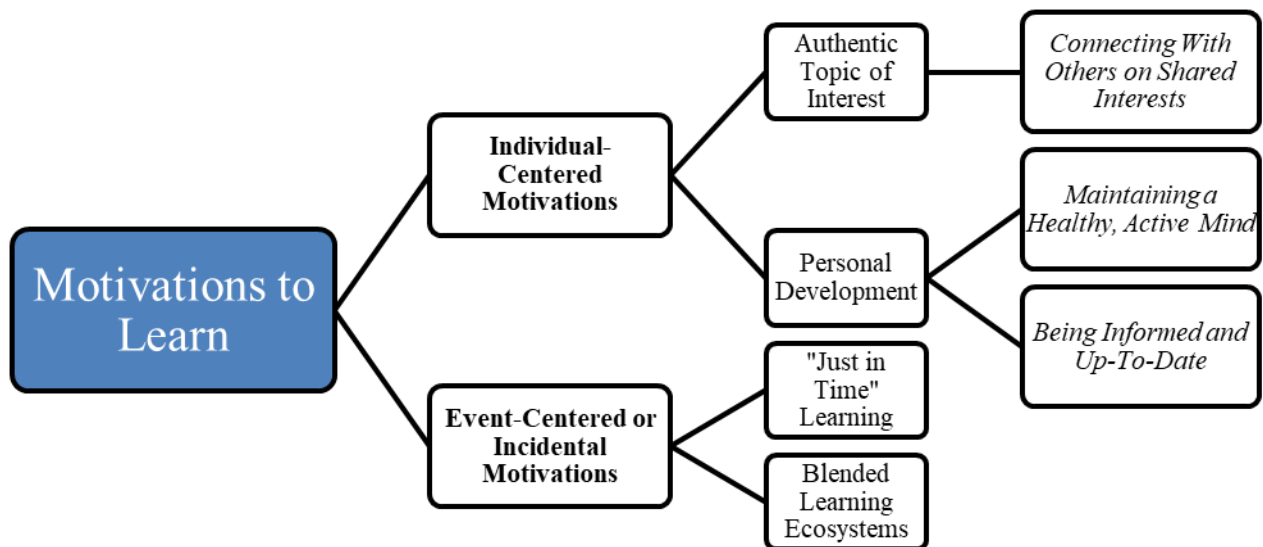


Figure 3. Themes of Motivations to learn with participants' oPLNs.

4.3.1 Individual-centered motivations

Participants' motivations for learning in their oPLNs included descriptions of personal interests and/or personal development motivations. In one way, the participants' demographic stage coupled "freedom to learn" opportunities with informal learning to pursue their interests:

[N]ow, it is wonderful to have time to learn about anything that takes our interest.

(Focus Group #2, Participant #2)

Participants' *authentic topic of interest* describes activities that they have a personal, genuine interest in learning. Commonly, participants commented they were *extending* their previous interests:

There is a sense of liberation when you come out of semi-retirement into retirement and you can follow those things which seem to deserve your attention more. (Focus Group #4, Participant #3)

[P]art of the feeling that you're in your 80s, is impacted by the sense that there's still a lot to learn. And I think the learning by the Internet can fill in some of those gaps very nicely.

(Focus Group #3, Participant #1)

Moreover, *connecting with others* who have shared but specific interests or learning needs was an expected and recurring theme:

I chose the Internet, just for the vast array of information and also, to find people that were interested in research[ing] what I'm researching because my contacts are all over the world. (Focus Group #4, Participant #2)

Many participants expressed a desire to constantly be learning something new. Similarly, participants' reasons to participate in their oPLNs impressed an intrinsic nature where the most common were "being open to new things," "pushing the envelope of awareness", a desire for a "more informed debate", and other aspects of personal growth and development motivations. For example, "maintaining an active mind" was one purpose that regularly emerged:

I think all of us are motivated from that we're trying to push the envelope of our awareness, our area of – not our area of expertise but our growth and knowledge of particular content area. (Focus Group #4, Participant #1)

[T]he point of being kept alive at these conversations I think are very important. If nothing else it's a destination for people in our age group. Something to do doesn't quite capture it. [...] It's not like you have a clear direction. It's that you are keeping your mind open. (Interview #3)

Finally, some participants described the value of their activity within their oPLNs as keeping a "healthy brain," "staying sharp," or just "maintaining regular mental stimulation" by "being informed and up-to-date." For example, one participant's comment illustrates the sentiment of "keeping up with the times":

Part of my incremental learning is of the 'keeping up with new developments' kind. There are new attitudes, new social conditions, etc. to keep up with.

(Interview #3)

Overall, these inferred intrinsic motivations to learn provide an important difference from instrumental motivations (e.g., learn about specific health issues); intrinsic, value-driven purposes, fueled by curiosity and the continuous engagement with others in their learning community results in a "value-rich" oPLN, whereby learners dynamically add to their constellation of people and resources, all in the service of their learning goals. Also, it is noteworthy how informal learning meets these intrinsic motivation needs in contrast to formal learning, as compared by two participants:

Ultimately I was quite disgusted with [the formal course] because it wasn't giving me what I needed and I was coming home and getting the real knowledge online. (Interview #4)

I am aware of the many available online courses, but they do not interest me. They seem too structured for my needs. (Interview #3)

These comments reflect their self-selected preferred mode for learning and the activation of autonomous, self-directed learning strategies and preferences afforded by the flexibility of their online, informal learning, via their oPLNs.

Event-centered or incidental motivations. Participants' motivations also related to unplanned and "event"-related or incidental learning (i.e., spontaneously-occurring learning) they encountered during their browsing of online sources and their oPLNs. As noted by one participant:

[I] find it interesting because often I'll go online, not necessarily to learn but something specific or whatever, but once I get there all of a sudden I'll stumble across something that just otherwise wouldn't have. And so I'll pick up an awful lot of stuff and I wasn't actually seeking it out but I just happened across it. (Focus Group #1, Participant #1)

Another participant discussed the "surprise element" in maintaining their motivation to learn more and explore:

I think it's something where now and again you get surprised and it's possibly the surprise element that keeps up the frequency of going back to it. (Focus Group #3, Participant #1)

In sum, both features of individual and event-centered motivations contribute to our emerging understanding of informal communities of learning' perspective: as learners pursue their own personal, authentic interests, they establish themselves as productive and contributing members of a dynamic online learning community.

4.4 Learning Goals

Participants learning goals were described concerning their motivations, as outlined in *Figure 4*.

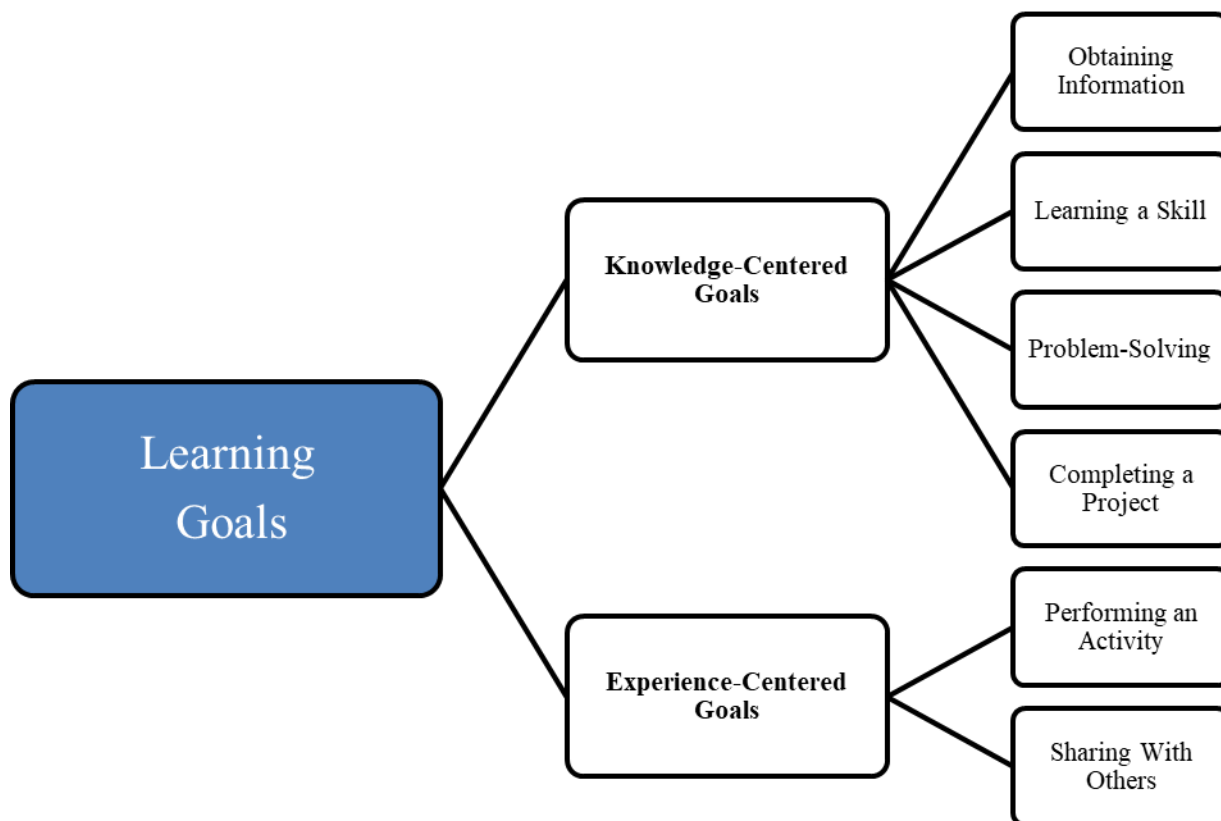


Figure 4. Themes of learning goals with participants' oPLNs.

Knowledge-centered goals. Participants identified the objectives of their learning activities and gathered resources and information relating to the processes of enhancing their content knowledge domain. For example, when using their oPLNs to obtain new information, participants were looking to fill an "information gap" or receive a direct answer to a question. In other cases, their learning project was general and curiosity-driven. They also identified learning goals whereby they sought to enrich their current skills or to learn a new one (e.g., language, cooking). Participants also discussed various learning projects they were attempting to complete via engagement with their oPLNs; these learning projects had as clear and concrete end-goals:

I was asked to research and write a paper for a group that wanted to write the history of the Quaker religion in Atlantic Canada and they wanted a representative from each province, and I ended up writing one for Newfoundland. (Interview #3)

This book that I'm writing is about all these different stories that I've collected over the years. (Interview #4)

Similarly, solving a tangible and specific problem was described as individuals coming to the group with a "defined problem to learn how to solve" (e.g., technological difficulties):

People always come to these meetings, 'I can't do this. My email doesn't work anymore, whatever the problem is.' We sit down and learn. 'Well let's see what we can find out on the Apple support site. Let's see what we can find out here, there, or there.' So they're not only learning the answer to the problem. They're also learning that you can fix your problem by Googling. So it's certainly two-level learning. (Interview #3)

These learning goals, resulting from their motivations for learning, as previously described, together with interactions with others, clearly enriches the learning community of their oPLNs. As mentioned, earlier information gathered from a specific individual or group within their oPLNs was often “fed-forward” either to other corners of an expanding learning community (which may also include face-to-face contexts), where sharing and information “synergy” (i.e., adding to, correcting, adapting, reciprocating, etc.) can be realized; importantly, information curated from outside a focused domain of any particular oPLN could be brought back to the online group, and is “re-purposed” for consumption by members of that subset of a complex oPLN. In this sense, then, the oPLN mirrors a “healthy” learning community in that they are dynamic, adaptive, and the boundaries “permeable.”

4.4.1 Experience-centered goals

The majority of participants made regular references to learning activities related to the *experiencing* substance of their online learning activities. As one participant noted:

I've looked at actually getting a group of people from several countries performing a song online all at once, and have us all participate in doing it. I know we've had Free the World from back 20 years ago but I'd like to see that happen [.] (Focus Group #4, Participant #3)

Similarly, valuing the experience of sharing solutions or learning challenges was illustrated by the following participant:

[T]he point for me in terms of researching music online is to share experiences and learning about what are the best ways to tackle some of these kinds of compositions that we play. (Focus Group #4, Participant #3)

These experience-centered goals and outcomes were nuanced activities, interwoven within their more structured knowledge-centered goals. Moreover, it is reasonable to assume these experiences (e.g., of sharing resources, assisting) may have influenced participants' motivations to persist in their informal learning and actively engage with their oPLNs. Especially noteworthy is the sense of goodwill and generosity impressed by the participants' oPLN experiences, suggesting an altruistic orientation, one intrinsic to and necessary for the ongoing maintenance of healthy, evolving online learning communities.

5. Extending the Discussion

This research has shown informal, self-directed online learning has the affordance of connecting learners with other individuals who share similar interests, while also offering to provide a “network of learning convenience” (i.e., curating individuals and/or other resources relevant to one’s interest or hobby); this, in turn, enables older adult learners to expand their

local informal learning ‘niche’ beyond the local confines of geographical proximity. The topics below are representative of the most salient “take-aways” from this research effort.

5.1 More on learning contexts

While the concept of an oPLN, per se, was foreign to the participants, when they had an opportunity to describe the various online networks and the technological tools they were using to access these networks of like-minded users, it was clear that they had, in fact, developed and maintained online personal learning networks (disregarding nomenclature). In other words, they clearly articulated that these online groups were used for informal learning, specifically more about their hobby or interest. This is an example of competence without comprehension (Dennet, 2018), where the functional benefits of these online networks were obvious and tangible, regardless of perceived labels (i.e., identifying such as an oPLN, per se). Some oriented to their oPLNs exclusively while many others also used these to *supplement* their local, face-to-face interest/hobby groups (and vice versa); there was, then, a synergy and mutual, reciprocal transfer of knowledge between these two domains of informal learning activity. This process of sharing knowledge from their oPLNs into the face-to-face context, and vice versa, demonstrates important facilitation of a “cross-fertilization” or dynamic exchange of information and knowledge reflective of an expanded learning community or “ecology of learning” (Brown, 2000), within a concrete community of practice (Wenger, 1998).

5.2 More on membership roles

Theoretical support for oPLNs, with retained membership and longevity, is dependent on the authenticity of the topic of interest, personal attachment, and commitment of people from the online group setting. It is our view that level of comfort, technical skills, and the perceived learning value of the oPLN, taken together, plays a role in member retention; this is significant in that attrition within a self-directed, informal learning context would be based, especially on the perceived value of the activity in relation to the quality of learning encountered. Also, participants emphasized *experiences* in their informal online learning rather than in terms of their concrete contributions regarding their perceived roles. In this context, informal online learning experiences were defined and demonstrated by self-directedness, flexibility, customization, exploration, and even incidental learning. For these participants, their roles and activities often focused on assisting others within their oPLNs.

At the same time, participants' primary role identification was clearly “as a learner.” However, when further probed, participants were able to articulate various levels of expertise they brought to the oPLN, as described in their use of verbs such as “troubleshooters,” “problem-solvers,” “collaborators,” “contributors/editors,” “leaders” and “networkers.” Notably, all saw themselves, regardless of relative levels of content expertise, as “receivers” or “consumers” of information but, importantly, also as providing valuable information to the larger group. Again, this points to a group norm of reciprocity and a core characteristic we see for a healthy and thriving online learning community (Schwier, 2001). As well, the dissolution of traditional group hierarchies, based on perceived expertise and social status

(e.g., teachers-students) within their informal oPLNs affected a "flattened" organization of learners, whereby merit and recognition was centered on the quality of information one could provide and/or the social support one was willing to exercise. This furnishes an exemplary context of a networked learning community that emphasizes reciprocity and equality among its members (Faraj & Johnson, 2011). Also, the articulation of the emergent and dynamic "role shifting" (i.e., novice to expert) within this environment points to concepts related to the dynamic development of "communities of practice" (Wenger, 1998; Lampel, & Bhalla, 2007).

5.3 More on motivations to learn

While not often explicitly described as learning "goals," per se, participants' articulation of their reasons, purposes, and activities regarding the pursuit of knowledge curation within their oPLNs indicated goal-driven orientations. Furthermore, when one considers informal learning, it is likely common to generally associate it with 'intrinsic motivation' and not extrinsic purposes. However, the idea of knowledge-centered goals also referred to aspects of 'instrumental motivation,' while experience-centered goals, discussed earlier, more closely resemble 'intrinsic motivation' (Ryan & Deci, 2017). Focused on their hobbies and interests, both the knowledge and experience-centered goals were predictably manifest in both abstract and concrete terms; while obtaining information was a core driver of their online learning goals, so was learning or enhancing skills, solving a problem encountered, or completing a project underway. These pragmatic aspects of increasing knowledge domain performance through active learning goals within the context of informal, self-directed learning is significant. Speculations regarding situating learning goals in the applied, experiential domain, include: the nature of the learning activity (a hobby); the intrinsic motivations of independent, self-directed learners whose outcome expectations are applied and pragmatic; and, the immediate benefit in moving their knowledge and skills forward, increasing competencies and confidence; these orientations and associated learning processes are in line with conceptualizations of greater self-efficacy (Cherry, 2019).

In reviewing participants' reported motivations to learn as conjoined with learning that is pragmatic and applicable, the concept of an "authentic" topic of interest has special import to our discussion. We discovered motivations to not only extend their previous or current interests but also to realize this through connecting with others within the domain of these mutual interest areas. In some sense, these can be seen as extrinsic motivations, ones that have immediate and applied value in propelling and developing increased knowledge or skills in the hobby or interest area. However, a powerful motivation, one that is often neglected in formal learning domains, is that of a "desire" to learn and engage in personal development for its own sake. For example, many reported that their active engagement with their oPLNs not only kept them current in their knowledge domain but that this activity was critical to maintaining an active, and therefore, healthy brain/mind; the fact that these participants were able to articulate an understanding of the cognitive and social benefits of learning with others is a significant contribution to our understanding of the potential benefits for older adults to be involved in informal, self-directed online learning communities.

5.4 More on valuing information and interaction

Establishing the *credibility* of information received was an individual objective of many participants; cross-checking or extending the discussion were two strategies identified being used for this purpose. This reflects a healthy and vital skepticism regarding information received from both within and outside the oPLNs. In other words, the online and informal processes that participants engage in and/or observe debates, in a discourse manner helped to inform credibility and trustworthiness of information and, by extension, determined relative utility for their learning purposes. While informal, self-directed learning experiences can present more issues regarding the credibility of information than formal learning experiences, professional background within-expertise of certain members of the oPLNs, and trust established over time and with experience can have a powerful role in managing credibility within informal learning environments.

Finally, it is noteworthy that the nature of *interaction* within the oPLNs could "make or break" the perceived and real value of such learning communities. For example, the fact that information sharing was identified as an essential feature of the oPLNs is important to consider. A critical value underlying this orientation to share within the group is that of *reciprocity*. More specifically, it is our stance that without true reciprocity, a healthy online, asynchronous learning environment cannot thrive; the "half-life" of an environment that is primarily driven by access to or "consumption" of information, without mutual and concrete reciprocity is, at its core, doomed to extinguish itself due to the needed effect on maintaining "ties" (Ikkink & van Tillburg, 1999). This valuing of reciprocity is the nucleus of most successful human endeavors and is arguably a "hard-wired" element in human interactions (Pinker, 2011), social or otherwise (i.e., cooperative/collaborative projects). A conduit for expressing this reciprocity, in thriving oPLNs, is provided in how asking questions or adding comments, and then receiving feedback from experts (or novices) within the learning environment was a key descriptor and primary benefit of the learning community represented by their oPLNs. The fact that question-asking is a core knowledge-seeking behavior is also indicative of a robust and inquiry-driven learning community (Faraj & Johnson, 2011).

This research has provided a concrete example and context whereby retired older adults were interacting with others in an oPLN-driven context, allowing for individualized learning where the learner adopts appropriate information and communication technologies as well as designs, creates, and curates, with others, learning resources to advance learning to all group members, all of which are the earmarks of a thriving informal, self-directed online learning community.

6. Limitations

Several limitations of the thematic analysis presented should be considered. Firstly, participants may have responded to the interview questions differently because of the nature of focus group versus individual interviews. For example, participants who completed individual interviews tended to provide more responses regarding their impact with online learning, while participants who were part of a focus group tended to provide more responses regarding how they managed their learning. Secondly, the thematic analysis represents the

data as a whole and does not necessarily consider themes on an individual basis (i.e., within-case of each participant). Moreover, the analysis may present themes influenced by the discussion of certain individuals contributing more complex experiences than as themes weighted in proportion to experiences out of all the participants.

7. Conclusions and Further Research

While participants did not necessarily articulate complex learning goals or the use of online learning tools or types, the majority perceived their online interactions to be beneficial and also perceived other members of their oPLNs to have a key role in their learning experiences. For example, in managing their learning, participants perceived credibility as important but were relatively uncertain of how to be confident of credible information and prominently relied on their interaction with others in their oPLNs to verify credibility, as well as to facilitate their learning processes. The contribution of online resources and connections to others to facilitate their learning showed inferred value to their informal learning processes, clearly identifying the affordance of the Internet to provide customizability and flexibility to participants' learning interests. At the same time, the Internet also presented challenges such as learning to navigate online resources as well as to find and sort appropriate, relevant information for their learning interests. Moreover, participants presented the important structural caveat whereby memberships in their online learning groups were non-hierarchical but, simultaneously, could also have differing levels of reputation-based authority and competencies to contribute to the group's online learning community.

Overall, the findings and analysis presented here demonstrates a meaningful account of participants' informal online learning experiences where participants were often impacted beyond their explicit (or implicit) learning goals. Furthermore, activities associated with their oPLNs demonstrates support for a "community of learning" approach to lifespan learning; informal learning, by definition, is meaningful to learners as individuals, through intrinsic motivations for pursuing authentic interests and the desire for personal development, through reciprocal contributions to others' interests and well-being. Importantly, four key factors that define a learning community, as articulated by Tinto (2003), namely: membership, influence, fulfillment of individuals needs and shared events, and emotional connections contributed to the sense of a learning community present in participants' oPLNs.

Further research could explore and expand our knowledge of the processes and products of informal online learning, especially those as a result of the creation of oPLNs. Given the finding that some participants were crossing contextual learning community boundaries (i.e., oPLNs and f-2-f groups), this integration of informal learning community spaces with traditional, classroom-based formal learning contexts is an area ripe for further research. Also, as this research focused more on questions about their use of the Internet generally as well as their preferred learning orientations, and attitudes about their learning networks, future studies could deliberately explore why participants like or dislike certain Internet sources and/or tools for managing their informal online learning activities. Finally, this research indicates that a major implication for informal, self-directed learning here is that learning that takes place within an informal, self-directed online learning context (McLoughlin & Lee,

2010) should *not* be assumed to lack utility for learners' contexts outside this environment (e.g., formal learning contexts); for example, implications for application to and continued research informal education settings (e.g., higher education) may include: integrating the oPLN approach and learning community framework into students' curriculum-based e-learning (Dewanti, 2016), moving formal learning contexts toward an increased learner-centric set of interactive communication processes (Johnson, & Cooke, 2016).

References

- Anderson, M., & Perrin, A. (2017). Tech adoption climbs among older adults. Pew Research Center: Internet, Science & Technology. Retrieved from: <http://www.pewinternet.org/2017/05/17/tech-adoption-climbs-among-older-adults/>
- Bennet, S., Maton, K., & Kervin, L. (2006). The 'digital natives' debate: A critical review of the evidence. *British Journal of Educational Technology*, 39(5), 775-786. <https://doi.org/10.1111/j.1467-8535.2007.00793.x>
- Blaschke, L. M. (2012). Heutagogy and lifelong learning: A review of heutagogical practice and self-determined learning. *International Review of Research in Open and Distance Learning*, pp. 57-71. <https://doi.org/10.19173/irrodl.v13i1.1076>
- Blaschke, L., & Hase, S. (2016). Heutagogy: A Holistic Framework for Creating Twenty-First-Century Self-determined Learners. In M. M. Begoña Gros, Kinshuk (Ed.), *The Future of Ubiquitous Learning* (pp. 25–40). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-662-47724-3_2
- Blayone, T., vanOostveen, R., Barber, W., DiGiuseppe, M. & Child, E. (2017). Democratizing digital learning: Theorizing the fully online learning community model. *International Journal of Educational Technology in Higher Education*, 14, 1-16. <https://doi.org/10.1186/s41239-017-0051-4>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Brown, J.S. (2000). Growing up digital: How the web changes work, education, and the ways people learn. *Change Magazine*, March/April, pp. 11-20. <https://doi.org/10.1080/00091380009601719>
- Caffarella, R. S. (1993). Self-directed learning. In: *New Directions for Adult & Continuing Education*, Wiley. <https://doi.org/10.1002/ace.36719935705>
- Cherry, K. (2019). Self-efficacy and why believing in yourself matters. VeryWellMind, Retrieved October, 2019: <https://www.verywellmind.com/what-is-self-efficacy-2795954>
- De Souza, H. V. L., Rodrigues, R. L., de Melo Fiho, J., & Gomes, A. S. (2017). Towards the process of identifying the strategies of self-directed learners in ubiquitous environments. Conference Proceedings of the 12 Iberian Conference on Information Systems and Technologies (CISTI), Lisbon, Portugal. <https://doi.org/10.23919/CISTI.2017.7975791>
- Dennet, D. (2018). *From Bacteria to Bach and Back*.

- Dewanti, P. (2016). "Linking national standards of distance education with e-learning ecosystems. *Journal of Theoretical and Applied Information Technology*, 86(3), 382-93.
- Faraj, S. & Johnson, S. L. (2011). Network exchange patterns in online communities. *Organization Science*, 22(6), 1464-1480. <https://doi.org/10.1287/orsc.1100.0600>
- Helsper, E. J. & Enyon, R. (2013) Digital natives: Where is the evidence? *British Educational Research Journal*, 36(3), 503-520. <https://doi.org/10.1080/01411920902989227>
- Hase, S., & Kenyon, C. (2000). From Andragogy to Heutagogy. *ultiBASE*. Retrieved from <http://ultibase.rmit.edu.au/Articles/dec00/hase2.htm>
- Hunsaker, A., & Hargittai, E. (2018). A review of Internet use among older adults. *New Media & Society*, 20(10), 397-3954. <https://doi.org/10.1177/1461444818787348>
- Ikinink, K. K. & van Tilburg, T. (1999). Broken ties: reciprocity and other factors in the termination of older adults' relationships. *Social Networks*, 21(2), 131-146. [https://doi.org/10.1016/S0378-8733\(99\)00005-2](https://doi.org/10.1016/S0378-8733(99)00005-2)
- Lampel, J. & Bhalla, A. (2007). The role of status seeking in online communities: Giving the gift of expertise. *Journal of Computer-Mediated Communication*, 12, 434-455. <https://doi.org/10.1111/j.1083-6101.2007.00332.x>
- Lave, J., & Wenger, E. (1991). *Situated cognition: Legitimate peripheral participation*. Cambridge University Press.
- Lowry, C.M. (1989). Supporting and facilitating self-directed learning. (ERIC Document Reproduction Service No. ED312 457). Retrieved March 21, 2018, from <http://www.ntlf.com/html/lib/bib/89dig.htm>
- McLoughlin, C., & Lee, M. J. W. (2010). Personalised and self regulated learning in the Web 2.0 era: International exemplars of innovative pedagogy using social software. *Australasian Journal of Educational Technology*, 26(1), 28-43. <https://doi.org/10.14742/ajet.1100>
- McMillan, D. W. & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, 14(14), 6-23. [https://doi.org/10.1002/1520-6629\(198601\)14:1<6::AID-JCOP2290140103>3.0.CO;2-I](https://doi.org/10.1002/1520-6629(198601)14:1<6::AID-JCOP2290140103>3.0.CO;2-I)
- Merriam, S. B. (2001). Andragogy and self-directed learning: Pillars of adult learning theory. *New Directions for Adult and Continuing Education*, #89, San Francisco, CA: Jossey-Bass. <https://doi.org/10.1002/ace.3>
- Morrison, D., Kristenwald, K. & Tang, R. (2019). Extending the online focus group method using web-based conferencing to explore older adults' online learning. *International Journal of Research and Method in Education*, 1-15. <https://doi.org/10.1080/1743727X.2019.1594183>
- Perrin, K. (2010). Internet use and social networking among middle aged and older adults. *Educational Gerontology*, 36(2), 93-111. <https://doi.org/10.1080/03601270903058507>
- Pinker, S. (2011). *The better angels of our nature: Why violence has declined*. Viking Books.

Prensky, M. (2001a). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1-6. <https://doi.org/10.1108/10748120110424816>

Ryan, R. M. & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York: Guilford Publishing.

Schwier, R.A. (2001). Catalysts, emphases and elements of virtual learning communities: Implications for research and practice. *The Quarterly Review of Distance Education*, 2(1), 5-18.

Schwier, R.A., Morrison, D., & Daniel, B.K. (2009). *A preliminary investigation of self-directed learning activities in a non-formal blended learning environment*. [Proceedings of the] American Educational Research Association, San Diego, CA, April.

Sharma, S. K. Palvia, S.C.J & Kumar, K. (2017). Changing the landscape of higher education: From standardized learning to customized learning, *Journal of Information Technology Case and Application Research*, 19(2), 75-80, <https://doi.org/10.1080/15228053.2017.1345214>

Smith, M. K. (2002). Malcolm Knowles, informal adult education, self-direction and andragogy. *The Encyclopedia of Informal Education*, www.infed.org/thinkers/et-knowl.htm.

Roberston, D. N., & Merriam, S. B. (2005). The self-directed learning process of older, rural adults. *Adult Education Quarterly*, 55(4), 269-287. <https://doi.org/10.1177/0741713605277372>

Tinto, V. (2003). Learning Better Together: The Impact of Learning Communities on Student Success. In *Promoting Student Success in College, Higher Education Monograph Series* (pp. 1-8). Syracuse, NY: Syracuse University. Retrieved September 22, 2019, from <http://faculty.soe.syr.edu/vtinto/Files/Learning%20Better%20Together.pdf>

World Economic Forum. (2012). Global population ageing: Peril or promise? Retrieved November 28, 2014, from: http://www.who.int/ageing/publications/exploding_myths/en/index.html

Wenger, E. (1998). *Communities of practice: learning, meaning, and identity*. Cambridge, UK: Cambridge University Press. <https://doi.org/10.1017/CBO9780511803932>