Learning from wildfire: co-creating knowledge using an intersectional feminist standpoint methodology

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Due to climate change, rural Canadian communities living in boreal regions can expect more intense and frequent wildfires. People's experiences of wildfire hazards are differentiated by intersecting social factors such as age, gender, culture, and socio-economic status, as well as by social structures that enable or limit adaptation. This study engaged two Northern Saskatchewan communities in a process of co-developing a post-disaster learning framework and companion guidebook to support ongoing adaptation to climate hazards, enabled by the use of an intersectional feminist standpoint methodology. This methodology influenced both the process and outcomes of the research, which involved 18 interviews conducted with study community members and a workshop with a subset of the interview cohort. The intersectional feminist standpoint methodology facilitated insight into how intersecting social identity factors (e.g., gender, age, socio-economic status, and geography) shaped experiences of wildfire, as well as the need for and potential of post-disaster learning at the community level. In this paper, we focus on methodological insights for researchers and communities who seek to co-create knowledge and learning opportunities. In particular, we note the methodological impacts on research design choices, learning through the research process, and lessons learned through conducting community-engaged research during the early days of another kind of crisis: the COVID-19 pandemic.

1 Introduction

As the climate changes, rural Canadian communities living in boreal regions, sometimes considered as part of the wildland-urban interface[1], can expect more intense and frequent wildfires (Wang et al., 2017; Gaur et al., 2021). Researchers anticipate a range of social impacts that will be experienced differentially within and between communities, prompting

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1 The term wildland-urban interface (WUI) is defined as an "area where various structures, usually private homes, and other human developments meet or are intermingled with wildland (vegetative) fuels or can be impacted by the heat transfer mechanisms of a wildfire, including ember transport" (Bénichou et al., 2021). Despite the use of the word "urban," affected structures need not be part of an urban (i.e., highly populated) area.

a need for locally relevant approaches to build disaster resilience at the community level (Graham et al., 2018; Leap and Thompson, 2018). However, existing disaster resilience-building and management tools or guides available to rural Canadian communities tend to focus on physical and environmental aspects of wildfire management, largely ignoring important social dimensions (Elliott, 2022a).

Emerging research about the social dimensions of wildfire reveals that risk and resilience are shaped by intersecting social identity factors such as age, gender, culture, and socio-economic status, as well as by social structures that enable or limit adaptation (Scharbach and Waldram, 2016; Walker, 2022). The lived effects of such social identity factors and social structures can be understood through feminist research, which supports positive change attuned to issues of power, equity, knowledge creation, and adaptation. Two such feminist approaches are feminist standpoint theory and intersectionality. While these are not new feminist theories, and they have informed a variety of important feminist analyses, intersectionality and standpoint feminism are less often applied explicitly as methodologies for empirical data collection, and as such, there is a need for practical methodological guidance for researchers using these approaches empirically (Walker et al., 2019). Intersectionality, in particular, has been promoted as a potentially helpful framework for climate change research (Djoudi et al., 2016; Garcia and Tschakert, 2022). This research sought to operationalize these theories to demonstrate their *methodological* value particularly when seeking to enhance community resilience. The value of, and need for, adaptation research grounded in such critical theories is increasingly recognized as communities leverage their experiences into practical knowledge and strategies to improve disaster management at the community level (Atallah et al., 2019).

Informed by these critical feminist theories, this paper reports on how a community-engaged methodology, shaped by intersectional and feminist standpoint theories, was used to support two rural communities with lived experience of wildfire to engage in post-disaster learning. The methodology identified key social identity factors that shaped community members' experiences of wildfires in 2015 and supported the co-design of a community-based framework to guide future wildfire management plans at the local level. In this paper, we first present the research design, including an introduction to the study communities, a description of how the research was initiated, and a description of the methodology and methods. We have deliberately opted *not* to review academic literature until later in the paper. The results of the original research are shared next, limited to 1) a brief overview of the post-disaster learning framework co-developed by the community members and first author, and 2) results related to the social identity factors and structures that were influential on the participants' experiences. Our discussion follows and at this point, we weave academic literature in with the insights from our research participants. This ordering of information, which has been applied in other contexts (e.g., Brock et al., 2023), forefronts the community members' contributions to the co-creation of knowledge about adaptation and learning, and adheres to feminist methodological commitment to power-sharing among academic and community researchers.

2 Research design

2.1 Study communities

Two communities were engaged in this study: Wadin Bay and Napatak (see Figure 1). These communities are located in Northern Saskatchewan (SK), Canada, each approximately 25 km from the northern town of La Ronge, SK in Treaty 6 Territory. These rural communities have relatively small populations which include a mix of full-time and seasonal residents (Northern Municipal Services, 2023). Both study communities are regionally connected to the "Tri-community area" which includes three larger communities clustered within a 10-km area: La Ronge, SK, Air Ronge, SK, and the Lac La Ronge Indian Band, all of which are primarily Indigenous (Statistics Canada, 2023a; Statistics Canada, 2023b; Statistics Canada, 2023c). More broadly, Northern Saskatchewan itself is comprised of approximately 85% Indigenous people, compared to 15% Indigenous peoples across all of Saskatchewan (Statistics Canada, 2017). Many of the residents of Napatak and Wadin Bay work in and are otherwise closely connected to the Tri-community area. While this region of the province has many Indigenous communities, Wadin Bay and Napatak are not First Nations or primarily Indigenous communities; they are officially designated as resort and recreational subdivisions (Price and Harris, 2014; Northern Municipal Services, 2023). These communities therefore have distinct demographic characteristics relative to the surrounding areas including the inclusion of numerous part-time residents.

Napatak, Wadin Bay, and much of Northern Saskatchewan experienced an unprecedented wildfire season in 2015. More than 720 wildfires burned 1.8 million hectares, prompting the evacuation of Wadin Bay and more than 13,000 people from 54 communities, the largest in Saskatchewan's history (Public Safety Canada, 2013). Some Wadin Bay residents remained in their community to defend against wildfire; the community lost several structures despite their efforts. Napatak was not evacuated, but community members experienced effects such as smoke, stress, and restricted travel. The wildfires overwhelmed local capacity to manage the fires, requiring the Canadian Armed Forces to assist local firefighters in La Ronge and nearby areas. As such, the wildfires in 2015 were classified as an official disaster (Public Safety Canada, 2013).

Wadin Bay and Napatak were identified as potential study communities because of their lived experience with wildfire as well as their involvement with FireSmart, a national program that aims to support communities to enhance mitigation and prevention efforts through education, training, and other supports (FireSmart Canada, 2018). Participation in FireSmart demonstrated that these communities were primed for thinking about and engaging in wildfire management at the community level.

2.2 Positionality, relationship-building, and initiation of this study

All three authors are feminist, White-settler women researchers with prior research connections in the region. The first author and primary researcher came to this research with a background in feminist studies and the goal of exploring how multiple social

FIGURE 1
Study communities: Wadin Bay, SK and Napatak, SK.
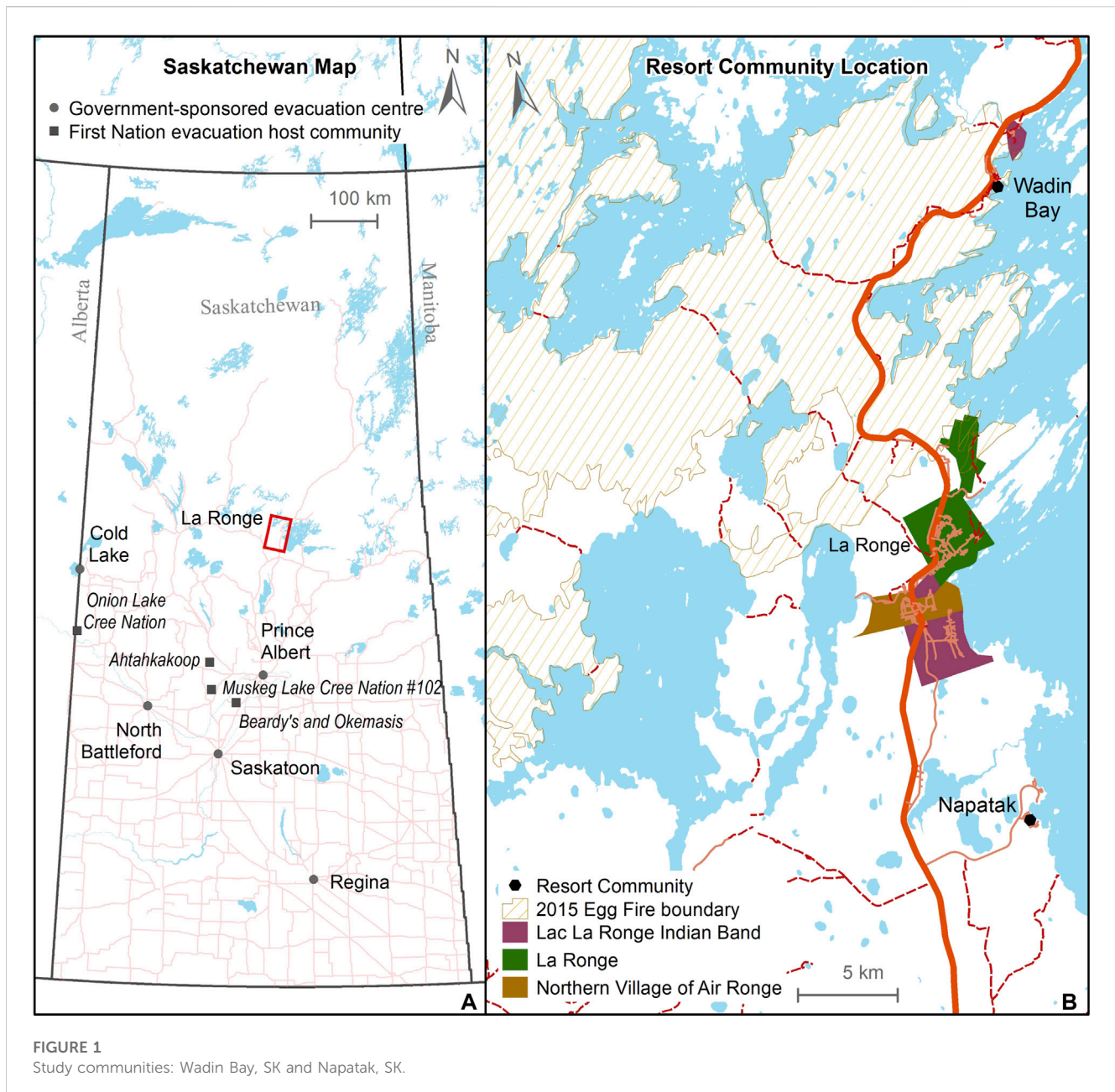
identity factors interact to influence experiences of wildfire. In her home province of Saskatchewan, the North is both more affected by wildfire and has a greater proportion of Indigenous Peoples relative to the Central and Southern regions. As such, research about the social dimensions of wildfire grounded in Indigenous research approaches and ways of knowing are important and necessary.

However, specific tools, skills, and knowledge are required to conduct Indigenous research in an authentic, supportive, and reconciliatory manner. Out of respect for the preparation required to do such research, her own positionality, and a refusal to "dabble" in Indigenous research, the primary researcher intentionally and respectfully abstained from conducting research with Indigenous communities and from using Indigenous research approaches. Where possible and appropriate, the researcher sought to highlight and elevate Indigenous perspectives and experiences,

careful to not make claims outside what the research design, especially its methodology, could support. The results of the research indeed support the need for greater attention to the social dimensions of wildfire and other climate disasters, in particular, studies that employ Indigenous research approaches and ways of knowing.

In early 2019, through some existing relationships, the first author initiated contact with a few key members of each community, made several visits to gauge interest, and discussed the suitability and desirability of the research project and processes. The first author stayed in the communities, attended community events, shared meals, and volunteered in the communities. The community members, aware that the first author had a young family at home, invited her family to join as well, stay, share food, and participate in community activities. These interactions

helped to build meaningful and authentic relationships and ensure the research was in fact welcomed in the communities. In these early conversations, community members expressed enthusiastic interest in the study, and some offered to act as local leaders for the research project.

Not unexpectedly, people in the study communities identified themselves in diverse ways (e.g., as Northerners, Indigenous); they also had specific, pertinent lived experience, such as firsthand experiences with wildfire. The first author, an outsider of these small communities who did not necessarily share all such identities and experiences, was explicit about her role in the research relationship, her social position, and the ways she sought to share power and decision-making with the participants. Specifically, the first author was forthcoming about specific identities of her own: where she was from, her student status, her cultural background, and her lack of lived experience with wildfire. She positioned herself as a co-learner and co-developer of knowledge, often seeking out input from community members and research participants. There were multiple conversations about the purpose, processes, and utility of the research, especially noting the preferred methods of knowledge mobilization expressed by community members.

These early relationship-building efforts were especially meaningful since, just prior to data collection, the COVID-19 pandemic stopped in-person gatherings. This project took place during an especially turbulent time. Not only did the pandemic impact the research process, but it was also a time of many significant developments in social justice arenas, including increased awareness of the Black Lives Matter and Indigenous Lives Matter movements, and the discovery of thousands of unmarked graves of Indigenous children at residential school sites in Canada. Altogether, these societal influences highlighted numerous pre-existing social issues and inequities for the researchers and participants alike. They also impacted the research in both large-scale ways (e.g., selection of data collection methods) and more nuanced ways (e.g., the ways participants weaved together ideas of resilience, adaptation, and learning from a wide variety of experiences, including but not limited to disaster).

As the pandemic prevented in-person connections, the first author was invited to join each community's private Facebook group and continues to be an active member within them, several years later. Email, phone calls, and video calls were common and plentiful between the first author and the core group of people engaged in the research. After the completion of the research project, the first author also took steps toward reciprocity and knowledge sharing to the community members through multiple offers to visit, present, and otherwise deliver the results and outcomes of the research. A plain language research summary and a 32-page practical guidebook for post-disaster learning was created and shared with the community members through numerous methods.

This research was approved by the University of Regina Behavioural Ethics Review Board in October 2019. Consent forms were used for both the interviews and the virtual workshop. Transcript release forms were also used after the interviews. Given the nature of the communities (close-knit with small populations), the first author was especially cautious about using identifying information through the data collection, analysis, storage and writing stages of the research.

2.3 Methodology

This study addressed the research objectives by drawing on feminist standpoint theory and intersectionality to provide methodological guidance, resulting in what we call an intersectional feminist standpoint methodology. Feminist standpoint is a well-established *theory,* although it has less often been used as a methodological framework for empirical data collection. Its methodological value in this study stems from three especially useful epistemological concepts: situated knowledge, subjugated knowledge, and strong objectivity (Harding, 1993).

Situated knowledge is knowledge created from specific social positions or *standpoints.* As no one can create knowledge from outside ourselves and our own specific social positions, all knowledge is therefore partial and any claims of total objectivity (i.e., seeing all perspectives simultaneously) is a kind of "god trick" (Haraway, 1988, p. 581). Further, feminist standpoint theory asserts that some knowledge is *subjugated* knowledge and is "suppressed, repressed and oppressed by white patriarchal knowledge production" (Moreton-Robinson, 2014, p. 333). From this stems the last conceptual tool, strong objectivity, which asserts that marginalized groups have more robust knowledge-creation capacity as they can see from their own standpoint as well as from the perspective of the dominant group (Harding, 2016). Together, these three conceptual tools about knowledge creation and positioning are especially useful in resilience and adaptation research that seeks to equitably co-create knowledge, elevating perspectives of marginalized groups who are often the most impacted by climate disasters yet have valuable knowledge to contribute to climate adaptation.

Intersectionality originally emerged to account for the "double jeopardy" experienced by Black women experiencing the interconnected impacts of both racism and sexism (Crenshaw, 1989). It has since expanded to analyze complex intersections of many other systems of power, privilege, and marginalization (e.g., classism, ageism, homophobia, ableism), that influence people's life experiences at individual and group levels (Vickery, 2018; Versey, 2021). Methodologically, a challenge has been to operationalize intersectional theory to support empirical feminist research (Bowleg, 2008; Zhang et al., 2021). To navigate this challenge, this study looked to Walker et al. (2019) intersectionality framework for understanding the social dimensions of climate hazards in the rural global North. Their framework draws attention to five principles: 1) multiscale analysis, 2) intersecting social identity factors, 3) the relational nature of power, 4) learning processes for social action and change, and 5) reflexivity. These principles heavily guided the research design and practices; they informed data collection and analysis, relationship-building and engagement with community members, knowledge mobilization output and more. Together, this framework, coupled with broader insights from feminist standpoint theory and intersectionality provided theoretical and, importantly, practical guidance that shaped the choice and application of research methods and other research design decisions.

2.4 Methods

We used a multi-method design, integrating multiple qualitative methods to address the research objectives. For this segment of the

TABLE 1 Demographic information of interview participants.

Total interviews		18
Community	Napatak	10
	Wadin Bay	8
Gender	Men	7
	Women	11
Age	20–39	2
	40–59	8
	60+	8
Cultural Background[a]	Euro-Canadian	10
	Indigenous	4
	Canadian	3
	Unknown	3
Type of Residency	Full-time resident	9
	Part-time resident	9
Length of Residency	0–10 years	1
	11–20 years	3
	20+ years	8
	Unknown	6

[a]The total number under cultural background exceeds the total number of interviews because some participants identified as belonging to more than one cultural group.

FIGURE 2
Word clouds of possible self-descriptions to prompt interviewees.
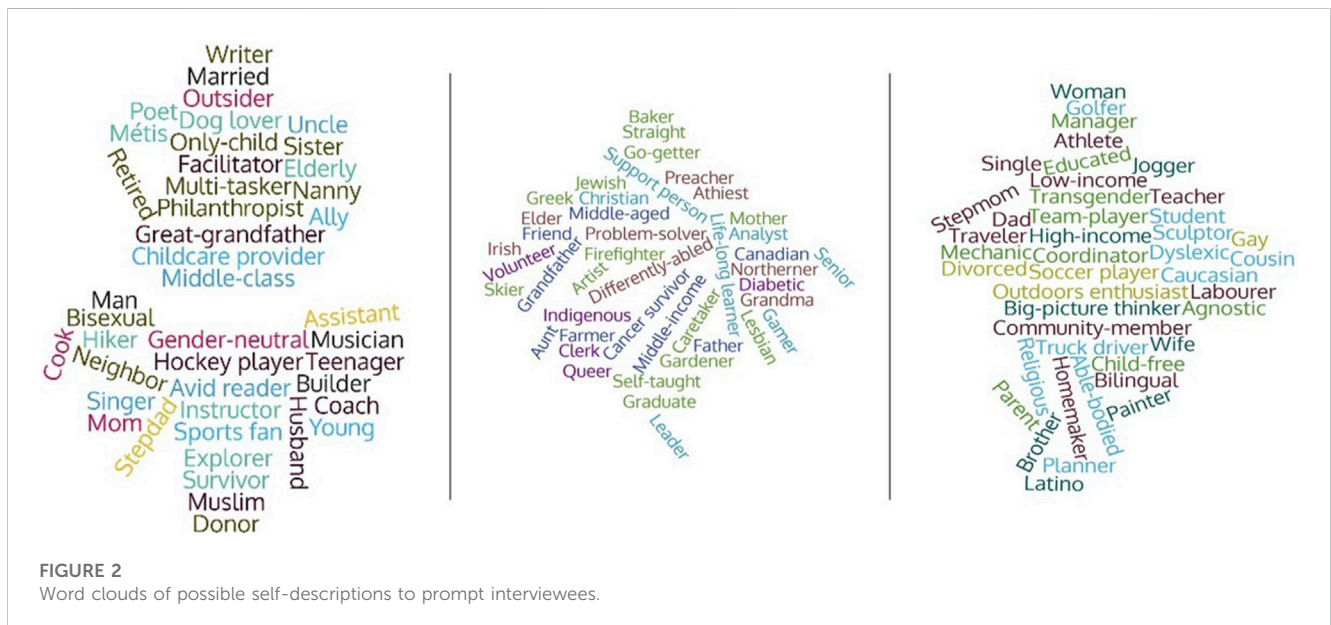
research, we employed semi-structured interviews and a virtual workshop.

2.4.1 Semi-structured interviews

Data collection began with 18 semi-structured, qualitative interviews conducted with study community members from Napatak and Wadin Bay (see Table 1 for demographic information of participants). Participants were recruited using maximum variation sampling to include diverse perspectives. Given the sensitive nature of the subject matter, participants were provided with the interview guide in advance and a list of locally relevant support resources. The interview began by asking participants about themselves with an open-ended question. Then, to encourage participants to think about their positionality holistically while avoiding leading questions,

TABLE 2 Participant ranking of 15 key themes.

Key theme from 18 interviews	Workshop participants					
	A	B	C	D	E	F
Communicate	1	1	1	1	1	1
Inclusivity and Belonging	1	1	1	1	2	2
Interdependence	1	2	1	1	2	1
Lead and Govern	1	1	1	3	1	2
Collaborate	1	2	2	1	3	1
Buy-in (later termed "Engage')	2	2	1	3	2	1
Connection to the Land	1	2	3	2	1	2
Context	1	3	3	2	1	1
Educate	2	2	2	3	1	1
Capacity	3	1	3	1	3	2
Commitment	2	3	2	3	2	1
Self-sufficiency	3	2	3	2	2	1
Understanding Risk	2	2	2	2	3	2
Understanding Vulnerability	2	2	2	2	3	3
External Support & Coordination	3	3	3	3	3	2

Note: 1) a lower score indicates a higher priority. 2) Participant names are replaced by letters to protect confidentiality.

participants were shown word clouds of descriptors people might use about themselves (Figure 2). They were not asked to choose from the words, but rather to use the word clouds as a point of departure to think holistically about themselves, the roles they filled, and their social identity factors; they were then asked if they wanted to add to their description of themselves. This approach helped to avoid the prioritization of certain identity categories over others, which is a recognized risk in intersectional research (Bowleg, 2008). The words they chose to describe themselves were noted and referenced later in the interview when exploring topics such the meaning of community resilience; experiential learning opportunities; and experiences before, during, and after the wildfires in 2015.

The interviews were originally planned to be in person, but due to the COVID-19 pandemic, they were conducted remotely via phone and video calls. In some cases, the lack of reliable internet services was an issue. In other cases, participants were able to connect via video conferencing software, but they required extra time and effort to troubleshoot the technology. In a few cases, materials were sent via mail. The first author analyzed the verbatim transcripts using *NVivo 12* and by applying constant comparative analysis, an inductive approach which allows the researcher to begin analysis as soon as data are available, with a constant return to codes, sub-codes, and singular incidents (Clarke, 2007).

2.4.2 Virtual workshop

Finally, six of the 18 interview participants returned to participate in a two-part workshop (done virtually due to COVID-19 pandemic restrictions) led by the first author. Detailed demographic information about these six participants is not shared to prevent a breach in confidentiality given the small sample and population sizes of the communities; however, these six people were varied in their gender,

resident status, age, and socioeconomic status—all factors that were found to be most influential in the interview participant group. In the first part of the workshop, participants were asked to individually reflect on 15 of the key themes that arose from the interviews. They were asked to rank, categorize, and relate the terms in whatever way made sense to them and to add or remove anything that did not fit. Table 2 shows the ranking of these themes; Figures 3, 4 show how two participants categorized and related the themes. Participants were then paired with a partner from outside of their home community and asked to share their response with each other over the phone. The researcher was not present for these conversations to allow space for participants to make unobserved, authentic connections with each other. Notes and sketches from the individual and paired components of the workshop were then shared with the researcher who subsequently created a draft framework.

This draft framework was presented to participants for review in the second part of the workshop via Google Jamboard, an online workshopping platform (Figure 5). The draft included five stages for post-disaster learning and for each stage, a proposal for key principles and strategies. As a means to operationalize the framework, guiding questions and learning outcomes for each stage were proposed to workshop participants. These questions and learning outcomes were informed by transformative learning theory and the intersectional feminist standpoint methodology. For example, the questions and outcomes encouraged critical reflection on assumptions, feelings, and experiences; addressed numerous scales (individual, community, and broader context such as the environmental, social, or political structures and institutions); and encouraged experimentation with new ideas and approaches in a low risk way (Mezirow, 1994). The workshop participants were provided with prompts about the draft framework and asked about the framework's overall efficacy, accessibility, language, and imagery. The results of this online discussion were also analyzed

FIGURE 3
Example 1 of workshop participants' responses to categorizing key themes.
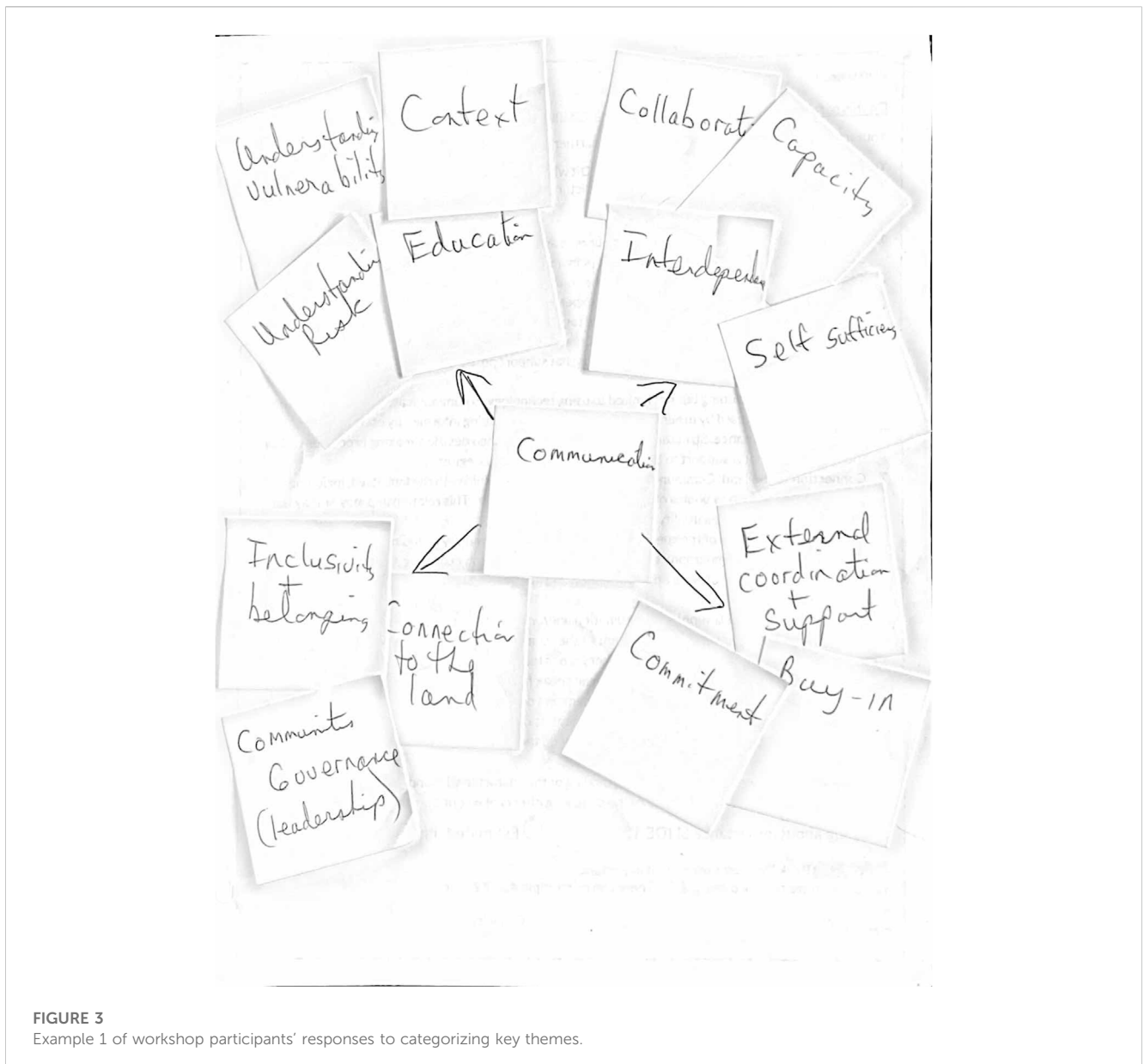
using constant comparative analysis and led to the development of the final framework for post-disaster learning.

3 Results arising from the methodology

3.1 The influence of intersecting social identity factors on experiences of wildfire and post-disaster learning

The open-ended structure of the identity-focused interview questions allowed participants to inductively identify their most contextually relevant social identity factors. Participants noted numerous social identify factors influencing their experiences, including health status, culture, and others. However, four social identity factors emerged as having a primary influence on participants' experiences of wildfire in 2015 as a cohort: age,

gender, socio-economic status, and geography. In this context, geography included two factors: 1) part- or full-time resident status in the community, and 2) self-identification as a Northerner[2].

Intersectional analysis supported deeper understanding of how these social identity factors combined to shape participants' experiences in nuanced ways. The following examples are not an exhaustive demonstration of the influence of each of the four primarily influential social identity factors found in this cohort of

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2 Participants described being a "Northerner" in various ways, including being familiar with and closely connected to the land; having strong familial, spiritual, and cultural ties to the North; being accustomed to isolation, threats of wildfire, self-sufficiency; and a distinctiveness relative to the rest of Saskatchewan. Northern Saskatchewan covers approximately half of the province's geography, although majority of people reside in the southern half.

FIGURE 4
Example 2 of workshop participants' responses to categorizing key themes.

FIGURE 5
Screenshot of online workshopping platform.

participants (see Elliott, 2022a). Instead, these examples[3] are a selection which highlight 1) how a single social identity factor—gender—was influential (in "Jan's" example) and 2) how multiple social identity factors intersected to shape unique experiences for others ("Shirley," "Marla," and "Erica").

For example, traditional gender roles were evident in a situation in Wadin Bay: Despite an evacuation order, numerous community members stayed to defend their community and homes. Among those who remained, the majority were men who focused their time and efforts on the physical and technical aspects of defending their community from wildfire. In the minority, a smaller number of women took on distinctly different roles, focusing their efforts on care and support roles, such as "camp cooks." The division of labour generally fell along traditional gender lines; however, the participants spoke about the value of all contributions.

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3 Participants are referred to by pseudonyms.

One woman who took on this work shared, There were many challenges . . . Coming from a kitchen point of view, there were lots of challenges . . . Because with no power, there's no stove but there's also no refrigeration" ["Jan"]. The women in the participant group also talked about care work in the form of childcare responsibilities and the tensions that arose:

I knew at some point I'd be needed. I just wasn't sure in what capacity. When I was able to talk to (someone in the community) later that night, he said that things were bad. They had a small crew here and we were doing everything that we could. (One woman) was "chief cook and bottle washer" and she was doing it all for a crew of 10 men. And if I could come home, it would be greatly appreciated. But if I couldn't, he also understood, but stressed to me that I was not to bring my kids. They had to stay behind. ["Jan"].

Among the participant group, it was evident that many followed "traditional" gendered division of labour norms, such as men focusing on firefighting and women focusing their efforts on historically feminized work, such as cooking, childcare work, and behind-the-scenes coordination. This example demonstrates how one social identity factor (gender) shaped participants' experiences.

However, in numerous cases, participants' experiences of wildfire were shaped by more than one social identity factor. They drew on these factors implicitly or explicitly when describing their experiences of wildfire and/or post-disaster learning. For example, our participant group included two educated, Indigenous women of similar ages. For these women, their Indigeneity intersected with their socio-economic status as well as geography (i.e., identifying as Northerners), albeit in differing ways.

For example, one participant, "Shirley" described herself as an Indigenous Northerner and elaborated on her intimate ties to the land: "I'm a community member, but in a different way. I'm a member of the land community. So, I interact a lot with the different non-human parts, like the birds, the animals, the plants, the trees, I'm very close with that" ["Shirley"]. Living in this place facilitated activities such as growing medicinal plants, harvesting wild ones, trapping, and going out on the water daily. She went on to share:

I like to be in the Bush. It's kind of the bigger part of my education process. When I finished university, I wanted to go to "Cree University." I told myself, "You got your [official] credential now, but what you have to do is you have to learn real education now." So, because of where I am, I can do that almost on a daily basis."

"Shirley" discussed her journey through institutionalized education, then navigating to find capital to secure a place in the North that reflected her values and facilitated her *real* education. In the interview, she discussed navigating the tension between a desire to "FireSmart" her property and leave it in its natural state. "FireSmarting" involves clearing brush, culling the forest of trees around structures, and a suite of other activities designed to reduce the physical risk of wildfire to property and therefore, capital. While these practices are recommended to reduce risk, they also disrupt the natural landscape and cultural connection that drew her to this place. She shared:

The kind of tree coverage I have in my yard . . . It was so thick that I had rabbit snares in my backyard, but it was a real thick bush, and you know what, I loved it, because I could be right in the bush . . . [but] I hired someone to do some cutting. I told them to cut

almost every big tree except for about 20. And they were only the big, tall trees, those were the only ones that were left. And so, it was pretty bare. And it actually makes it harder too, but you know, I just, like I said when I realized what the potential loss was, if I left it the way it was, if there was another fire and sparks came over here, my house would be one of those houses that would be destroyed probably. So, I had to, you know, compromise on that. ["Shirley"].

She also reflected on the differential valuation of material possessions during the wildfires, noting how certain material things were valued over others—a valuation determined primarily by colonial or Eurocentric notions of what is "worthy" of preservation. Her comments clearly indicate the intersection of culture and socioeconomic status, which are linked to broader power structures associated with colonialism and capitalism:

I was worried about not so much my home, but during the fires itself, I wasn't happy about the response of government in regard to traditional land users. And the possibility of their traditional land or trap lines being burnt versus actual owners of cottages . . . There was a certain term they called a cottage, and they would automatically disperse [wildfire suppression resources] . . . These were properties, privately owned buildings that had valuables in them that were protected by Saskatchewan Environment [provincial agency]. And with trap lines, these are like humble little rustic cabins and stuff like that, nothing too expensive. But you know, when you don't have much, your [snowmobile], and your chainsaws well, all your stuff burns. I know people who've lost everything. I just thought, there's no respect for people that are from around here when it came to that stuff. It's like, okay, well there's no cabins there. So, we won't worry about like fighting that fire, or there are cabins there for (and hopefully you won't be offended by this, but) White people, if they owned a property somewhere, it was a big deal. ["Shirley"].

Another Indigenous woman, "Marla" also identified as a Northerner: "I'm a northerner, like *true* North". For her, part of her Indigenous roots meant being exceptionally resourceful and being skilled in trade, bartering, and rallying community support. Like "Shirley," she talked about her formal educational and employment journey, and the interactions of her socio-economic status with her cultural identity within a capitalist system, working to leverage both her resourcefulness and other skills to protect her values and valuables from within a system that didn't align:

I'm just glad I had the knowledge of two worlds. You know, the traditional world and then the modern world, right? And then be able to fluently move between them . . . I live, you've got to live, on both sides of the fence. ["Marla"].

Similar to "Shirley," "Marla" also spoke of a clash of values between property preservation (i.e., capitalist ways of valuing material assets) and her spiritual and cultural connection to the land and community:

I was able to use a little bit of capital—like the *system* of capitalism—and I was able to use that system. So [I knew that] if we clean up a lot and we document the information and we submit it to government, then they're going see that we have a very strong, vested interest in our area, our community, our neighborhood, our way of life, our personal possessions. Right? And knowing that the government runs a business model, the next step was, . . . to get the FireSmart people out here to assess our community, like what is here, because nobody knew what was here. It has changed a lot since [we moved here] and, nobody [in the government] knew, we're not

even on the census, we're not a dot or we're not classified in a census for the government. ["Marla"].

Similarly, "Shirley" explained how she drew on multiple identities and experiences as a parent, caregiver, Northerner, and educator to identify when people's basic needs were unmet, draw on the strengths people brought to the situation, and act within the complex socio-political, economic, and geographic context of the situation. Her multiple ways of knowing allowed her to see the situation uniquely and prompted her and several other community members to set up a system for people to collaboratively share and access resources to meet basic human needs in a time of crisis. Her story exemplifies the important role of agency in intersectionality found in other studies (Rocheleau et al., 1996; Fletcher, 2018), and the creation of emancipatory moments that may "establish more just adaptation realities" (Garcia and Tschakert, 2022, p. 658).

Last, a part-time resident, "Erica," discussed how age and geography intersected to create an obstacle to community-level engagement in disaster mitigation efforts. She discussed the prioritization of full-time residents' voices in disaster management planning. As a part-time resident, she had fewer opportunities to participate and build relationships, which resulted in her becoming less engaged in local preparedness activities. Her engagement was also dampened by a sense that young people were not viewed as welcome or valued in community- and wildfire-focused conversations, asking "it makes the younger people not want to attend those meetings, because what's the point if your voice isn't heard?" ["Erica," interview participant]. From a standpoint theory perspective, it is those who are excluded or marginalized by systems who are well-positioned to diagnose social problems of injustice—their voices are crucial to problem identification and the development of solutions (Harstock, 1983). Hence, at the community level, a better understanding of how age and resident status intersect to create a barrier to participation might facilitate new, more inclusive approaches to wildfire management. More broadly, it does not mean that young, part-time residents are uniformly marginalized at the societal level. Instead, this is a demonstration of the locally relevant insights that can arise from intersectional practices and a case for using intersectional practices to inform the ways that disaster researchers and practitioners work with communities.

3.2 Post-disaster learning framework and guidebook for rural Canadian communities

Key themes (see Table 2) from the 18 semi-structured interviews were workshopped with a subset of six interview participants. Our collaboration resulted in a framework for community-based, post-disaster learning (Figure 6). The framework consists of five iterative stages: 1) Connect, 2) Understand, 3) Organize, 4) Plan, and 5) Act; these stages are encircled by ongoing reflection, a key element of transformative learning theory (Mezirow, 1994). The post-disaster learning process envisioned by the framework is cyclical to encourage ongoing iterations of the learning process, similar to other learning and adaptation models (e.g., Eriksen and Prior, 2011; Sharpe, 2016; Paveglio et al., 2018). Each of the five stages includes principles and strategies (see Table 3 for a summary and examples of post-disaster learning framework components). *Principles* are foundational concepts that community members would direct their attention to during the post-disaster learning process, and *strategies* are

actions, plans, or approaches where either the process or the goals are social in nature. These strategies support and mobilize the learning about the principles at each stage. For example, in Stage 1 (Connect) community members were asked to *reflect* on, *communicate* about and *engage* with each other about their own feelings, ideas and values, related to their sense of inclusivity and belonging and their connection to place (especially as it relates to expectations, assumptions, and experiences related to the disaster). Community members were encouraged to reflect on topics such as their connections within the community (including the non-human parts of the community) and how those connections impacted their experience of disaster. They then shared those reflections with others in the community.

In addition to principles and strategies, each stage also included guiding questions and learning outcomes (see examples in Table 3). Workshop data indicated that participants were especially enthusiastic about these guiding questions and learning outcomes as a means to translate the conceptual framework into a practical tool to promote learning and change. "Kailey," a workshop participant stated, One goes through the "post-event" analysis at times with no thought to improving the possible outcome of the next wildfire event . . . However, this process does include many more different aspects of looking at how an event happened than other planning or final report type dissections of the "physical" side of a wildfire event. ["Kailey"].

"Mark," another workshop participant, offered:

I think our community learned a lot after the wildfire and think this document really pinpoints the gaps or areas we can improve our plan. It shows areas where we can improve our efforts, e.g., communication, listening to ideas and involvement. ["Mark"].

Such examples of feedback from community members suggested an alignment of their interests with the focus on learning, social action, and change-making.

4 Discussion

4.1 Impacts of an intersectional feminist standpoint methodology on the research design and knowledge co-creation

A key contribution of the methodology is its ability to identify pertinent social identity factors while resisting tendencies to render individuals' experiences as universal or given. In the above examples, common factors were identified while retaining much of the complexity inherent in individual experiences. As an example, intersectionality rejects an essentialist and universal view of "woman" as a motherly, natural caretaker of the earth (Meinzen-Dick et al., 2014). Instead, it aims to investigate the power dynamics, practical implications, and macro-level causes and consequences of such an equation and importantly, the ways these identities intersect with others to create diverse experiences of each. This is not to say that women, nor mothers, cannot be an appropriate category of analysis. In fact, research focused on the work women did during the 1997 Red River Valley flood in the U.S. highlighted how women's care work is often naturalized due to essentialist and universal view of women as mothers. According to Enarson (2001), this leads to important contributions being overlooked, creation of barriers for women in leadership and other roles, and undervaluing of the contributions of women in other domains (Enarson, 2001). In

FIGURE 6
Framework for community-based post-disaster learning.

TABLE 3 Summary and examples of post-disaster learning framework components.

	Principles	Strategies	Example of guiding question	Example of learning outcomes
CONNECT	Inclusivity and Belonging Connection to Place	Reflect, Engage, Communicate	What is my connection to this place?	Assess how disaster experience did not match prior expectations
UNDERSTAND	Inclusivity and Belonging Understandings of Resilience, Risk, and Vulnerability	Reflect, Engage, Educate, Communicate	How can we make learning more about disaster risk easier and more engaging for community members?	Discuss and acknowledge diverse perspectives about resilience, risk, and vulnerability
ORGANIZE	Inclusivity and Belonging Capacity	Reflect, Engage, Educate, Lead and Govern, Communicate	What are some examples of assets, supports, or resources that might be considered unconventional, overlooked, or undervalued?	Develop or strengthen an inclusive and accessible governance structure, including leadership roles based on addressing gaps and strategic use of community members' skills, abilities, and knowledge
PLAN	Capacity	Reflect, Collaborate, Lead and Govern, Engage, Communicate	How can plans accommodate various levels and different kinds of capacity (e.g., financial, physical, social)?	Explore, initiate, and foster new collaborations between people with diverse perspectives or skills. Position and support new leaders to engage the community
ACT	Capacity	Reflect, Collaborate, Communicate	What am I learning as I try out new roles, activities, or approaches?	Allow time and space for learning new roles and incorporating lessons learned

our study, results highlighted how women often filled roles related to mothering and general caregiving. However, not all women participants in this research drew on a mothering or care-taking narrative, nor were the caretaking narratives the same. Instead, the ways that participants spoke about their roles as caretakers were informed by other intersecting factors, such as age or culture.

In some cases, such as Enarson's (2001) research and others (e.g., Méndez et al., 2020), gender or other social identity factors may be predetermined categories of analysis. Alternatively, researchers can take an inductive approach which allows context-specific factors to be explored as data are analyzed (Kaijser and Kronsell, 2014; Walker et al., 2021). In this study, specific social identity factors were not targeted for investigation, nor was it known which or how many categories of analysis would be relevant to the experiences of participants. Instead, this research used a recruitment strategy called maximum variation sampling, which is useful when diversity is of interest, especially in relatively small sample sizes (Patton, 2015). This approach serves to highlight uniqueness among

participants while allowing emergent themes to arise from the data (Palinkas et al., 2015). Then, with a maximally diverse group, participants were asked to think holistically about themselves and the various social identity factors, roles, and descriptors they would use for themselves.

The word cloud encouraged the participants to think deeper and make explicit the multitude of identities and social positions they held and how they might intersect. This prevented the researcher from making assumptions about the relevant identity factors, and helped the participants connect their identities to their experiences. While this is a small decision in the context of the larger research design, it is an example of how the intersectional feminist standpoint methodology informed this empirical research, leading to important insights about people's nuanced and intersectional experiences as well as the broader structures that underlie them (Smooth, 2013). With these data collected, constant comparative analysis helped to build the pertinent categories of analysis. Constant comparative analysis, a strategy from constructivist grounded theory (Birks and Mills, 2015), encouraged iterative reviews of the data fostering a strong sense of familiarity with the transcripts. This allowed for "multiple readings" and for flexible and adaptive conceptual interpretation; encouraging the researcher to be imaginative in the emergent meaning of the data and allowed the interview transcripts to "talk to each other" (Kenny and Fourie, 2015). These multiple readings (both literal and figurative) encouraged researcher reflexivity, causing us to question why meanings of the same text changed from one reading to the next. The repeat comparisons of the data helped unique perspectives to arise even when majority of data indicated another truth. In these cases, the concepts of subjugated knowledge and strong objectivity were useful, and data were reviewed to better understand how the participant might be drawing and weaving dominant views as well as traditionally marginalized perspectives.

Lastly, as data were gathered, there were multiple points at which participants could alter the course of data interpretation. Interview participants were asked to review their interview recordings and/or transcripts, the first part of the workshop effectively shared the aggregated key interview themes to participants for review, and lastly, the second part of the workshop again had participants review the data and interpretation of it. These mechanisms served to share power with participants, asking them to "double check" the meanings arising from the data as the research progressed, add their own voices, and to do so in a way that minimized the labour and impact on them personally. As these "double checks" were done in multiple ways and confidentially, it minimized any stigma around disagreeing with the participant groups' dominant narrative.

4.2 Social and transformative learning outcomes and insights

Engagement with participants and later, development of the framework, drew on transformative learning theory. *Transformative* learning is "learning that leads to a change in an individual's frame of reference [which is composed of] the cognitive building blocks that support deep changes in values, attitudes and associated behaviour that are central to evolving how we respond to living with disaster

threats, including climate change" (Sharpe, 2016, p. 213). Both transformative learning and intersectionality prioritize reflecting about oneself (albeit in different ways). Intersectionality encourages reflection through *reflexivity* of the researcher and the power dynamics inherent in their role, but this is not unlike the role that reflection plays in transformative learning, which asks the learner to examine their core beliefs, assumptions, and values (Sharpe, 2021). Engaging in critical reflection is an early and ongoing activity in the framework, feminist research practices, and social and transformative learning processes (Eriksen and Prior, 2011; Sharpe, 2016; Haque et al., 2021; Harder et al., 2021; Sharpe, 2021).

The post-disaster learning framework prioritizes critical reflection at all stages, intended to be an ongoing activity, but so is the learning process in general (Eriksen and Prior, 2011; Paveglio et al., 2018; Haque et al., 2021). In social learning, learning is "a process of mutual development and sharing of knowledge through *iterative* reflections on experience so that new understanding can emerge" (emphasis added) (Haque et al., 2021, p.2). Sharing reflections on various facets of a disaster experiences provides opportunity to identify a shared sense of dissatisfaction or disorientation (Mezirow, 1997). It can also identify different standpoints: "By encouraging learners to share their fears, concerns or perceived barriers they will start to consciously process these and be able to start to formulate new ideas, beliefs, attitudes, intentions and actions to respond to the problem facing them" (Sharpe, 2016, p. 216). The iterative nature of such learning processes (such as our framework) encourages learners to review prior learning, fold new learning and perspectives back into the learning process, test them out, and, as "James," a workshop participant put it, "provide[s] an opportunity to engage new people and develop new strategies" ["James"].

Importantly, there is an action component to transformative learning (and the framework) which can prompt shifts in behaviors and actions related to climate adaptation and disaster management (Doucet and Mauthner, 2006; Sharpe, 2016). Interestingly, the ways the workshop participants arranged the central ideas of the framework resulted in a design that closely aligns with the phases of transformative learning as proposed by Mezirow, the founder of transformative learning theory (Mezirow, 1994). Beyond the framework, however, other learning outcomes were evident among the participants and came about through the *process* of developing the framework. Participants indicated 1) increased awareness of the social dimensions of disaster and disaster management, and 2) new and stronger relationships within and between community members. In particular, participants noted that the independent reflection activity in part one of the workshop, followed by one-on-one phone calls to share and compare their perspectives, gave them an opportunity to think deeper about their own experiences and learn from one another as it prompted them to collect their thoughts before discussing them with someone else.

Lastly, some community members expressed that the process of participating in the research gave them a sense of healing and validation. During the interviews, several interviewees expressed strong emotions and noted the lasting effects of the stress and trauma of the wildfire season in 2015. Even 5 years after the wildfires, one participant felt a sense of validation being asked about her experiences. This validation, she said, was "part of the healing process" ["Shirley"]. She elaborated:

I didn't realize that this [interview] was going to almost be like a debriefing because I know that you're interested in my experience … I don't feel like I'm trying to convince you … that validity that you're giving is really important and it's part of the healing process … that's very supportive. So just doing this study, asking these questions, listening to the answers … is a really important thing to do and I guess that's kind of what was missing when this happened is we didn't get that … concern enough to listen to what happened to you and how did it go, tell me about how it affected you as a person and what did you think about … just even asking questions is important. Really important. ["Shirley"].

As such, a larger set of guiding questions and learning outcomes was later developed and presented to the communities as a plain language guidebook to empower the study communities to apply the learning they derived from the research and their own disaster experiences (Elliott, 2022b). In each of the five stages, the principles and strategies are outlined, followed by related questions for reflection and discussion. The questions are clustered in three groups: questions for individual reflection, questions for the community to discuss about and among themselves, and questions for community members about the context in which their community exists (e.g., environmental, economic, or socio-political factors). Lastly, each stage proposes learning outcomes which encourage inclusive and transformative change for individuals and the broader community. Additional learning resources related to sustainability, social identity factors, and transformative learning were included, followed by a glossary.

Similarly, both intersectional research and transformative learning theory focus on producing tangible and meaningful change. As such, throughout the research process there were a number of change-oriented goals embedded in our activities, including learning for participants through the research process, learning at the community level, and of course, addressing the research objective to contribute knowledge to scholars, practitioners, and other communities.

4.3 Methodological lessons from community-engaged adaptation research during COVID-19

Prior to the onset of the pandemic, the first author had opportunities to visit the study communities in person, which had a large positive impact when COVID-19 restricted travel. As others have found, establishing community connections (made both before and after the onset of the pandemic) through pre-existing organizations and community engagement forums (e.g., community associations, social media groups, etc.) was an effective strategy (Auerbach et al., 2022). With some community connections in place and data collection set to begin, the pandemic began, shifting in-person methods to virtual methods. This shift both created opportunities and new challenges in this study.

In some ways, virtual methods increased accessibility of research participation. Participants might have experienced a greater level of anonymity since, in the small and tight-knit study communities, visits from the researcher (an unfamiliar face or

vehicle) would be noticeable. Casting a wide net for participation via social media and community newsletters followed by virtual interviews and a workshop meant greater anonymity for participation. This may have been especially valuable for those residents who already felt socially marginalized and excluded from in-person, community-based gatherings and conversations, which in this case, were often seasonal and part-time residents. These seasonal and part-time residents, who comprised a relatively large proportion of the study communities, would typically be less available if the research design had assumed in-person methods. Therefore, moving participation to exclusively virtual methods might have served to equalize the accessibility of the research among community members, regardless of resident status. Virtual methods might also facilitate increased engagement for those with childcare and employment responsibilities—an important aspect of feminist research. For example, one interview was conducted via video call while the participant carried her phone with her around her home, collecting laundry and doing other household tasks. Another participant opted for an audio only call so that she could simultaneously care for her infant child. In these instances, virtual methods of participation minimized barriers to participation such as travel costs, childcare, and time away from work and home—all challenges exacerbated by the pandemic. Examples such as these can also demonstrate the level of strain participants may have been under.

The move to virtual methods posed challenges as well. Community members without reliable and affordable access to internet (not uncommon in the study area), and those not comfortable and engaged with various technologies and platforms (e.g., community Facebook groups) might have felt the research was inaccessible and had fewer opportunities to receive invitations and updates about the research. Virtual methods are also not conducive to casual social interactions that come with in-person gatherings, which build relationships and trust between participants and with the researcher as well (Auerbach et al., 2022). This raises the questions of who might be left out when using such communication platforms and how researcher can mitigate that exclusion (Auerbach et al., 2022).

The pandemic emphasized the importance of flexibility, accessibility and centering the participant experience in the research process. The participant and researcher actively developed technological skills through the research process, but sometimes opted for a back-to-basics approach. For example, one-on-one phone calls and sending documents in the mail, including handwritten thank you notes, were ways to connect in a more familiar, low-tech, and personal manner. A combination of high- and low-tech options proved effective in engaging those involved. Throughout the research process, prompted by the challenges of the pandemic, questions regarding ethical co-creation of knowledge with communities arose. Questions about unenthusiastic or ambivalent consent, processes that accommodate interruptions in participant engagement, and the labour asked of participants (Marino et al., 2020) asked researchers to reimagine how we might conduct research such as this while adjusting to the needs of the moment to also ensure ethical, caring research with people who have experienced disaster.

5 Conclusion

This paper demonstrates the value of employing intersectional and feminist standpoint theories to guide the methodological choices in community-engaged research. Through our exploration of the lived experiences of wildfire among community members, insights about the methodological value of feminist standpoint theory and intersectionality in empirical research emerged, including their value for co-creating knowledge with community members. These insights include the impact of feminist methodologies on 1) the research design choices and practices and their effects; 2) social and transformative learning outcomes; and 3) lessons learned about conducting community-engaged research during the early days of the COVID-19 pandemic.

Walker et al. (2019) intersectionality framework for understanding the social dimensions of climate hazards in the rural global North provided methodological structure for this study, informing both research practices as well as the kinds of knowledge, insights, and outputs it can produce. The framework's five principles include: 1) multiscale analysis, 2) intersecting social identity factors, 3) the relational nature of power, 4) learning processes for social action and change, and 5) reflexivity. Each of these principles influenced this study.

Specific research practices were informed, for example, by the attention to reflexivity and power sharing. A focus on learning, action and social change encouraged research design decisions that prioritized co-creation of knowledge in general, but especially through critical reflection activities and the ways knowledge was mobilized out of the study (e.g., the guidebook for community-based post-disaster learning (Elliott, 2022b)). Whenever possible and practical, this study took a "bottom-up approach" (Smit and Wandel, 2006) to prioritize community members' knowledge, situating the researcher as a collaborator, working *with* research participants rather than as an objective observer. This approach served to share power with participants, centralizing the experiences, knowledge, needs, and priorities that they identified. The complications that arose from COVID-19 amplified the need for accessibility in the research process and particular attention to ethical research processes.

Adopting intersectional and standpoint theories as methodology was also advantageous in that it *produced* particular research insights and knowledge. Our methodological approach helped to identify the specific social identity factors found to be most influential in this participant group, the ways those identities intersected to produce differential experiences of disaster, and the ways those experiences were linked to broader systems of power and privilege. The examples of "Shirley" and "Marla" showed how multiple social identity factors intersected to shape their experiences in diverse ways, creating individualized experiences that were also connected to broader systems of power and privilege, such as their Indigeneity, educational status, and economic status. Insights such as these helped illuminate how research participants were already aware of and mobilizing their knowledge of the social complexities of their experiences as they addressed the myriad challenges before them. Our work also had practical benefit as concrete results included a post-disaster learning framework and guidebook that can support community members to identify additional, locally relevant solutions. The novelty of our methodological approach lies in its application of theory to method

with important lessons for conducting community-engaged research. These lessons are especially valuable for researchers, practitioners, and community members aiming to co-create knowledge and foster learning opportunities to leverage experiences into practical knowledge and strategies, improve disaster management at the community level, and enhance community resilience to climate impacts.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary Material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by the University of Regina Behavioural Ethics Review Board. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

The authors confirm contribution to the paper as follows: Study conception and design: TE, MR, and AF; data collection and analysis: TE; draft manuscript preparation: TE. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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