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Tourist safety on adventure trips: *Guide competencies and risk management strategies in the Arctic*

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Barbara Olga Hild

Dissertation submitted in partial fulfillment of a
Philosophiae Doctor degree in Tourism Studies

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Abstract

Arctic adventure tourism is growing rapidly, increasing the risk of accidents and placing pressure on local emergency preparedness systems. This research explores the relationship between the role and competencies of adventure guides and their ability to ensure safety in the field. Focusing on Iceland, Svalbard, and Greenland, the study examines guides' training, safety practices, risk management, and the role of search and rescue operations.

Based on four years of interviews, document analysis, and stakeholder collaboration, the findings reveal that experienced guides rely on reflective practice and ongoing competence development. However, their expertise is often under-recognized by authorities and some tourism operators, limiting its integration into policy and risk strategies. This research highlights the need to bridge the gap between theory and practice, advocating for the inclusion of guide knowledge in decision-making processes.

By integrating tourism, safety, and education, the study emphasizes that Arctic safety is multi-dimensional, requiring an interdisciplinary approach. The research contributes to a broader understanding of safety competence in polar guiding and calls for more inclusive and context-specific training programs.

Future research should explore long-term impacts of guide education, student self-efficacy, and the effectiveness of stakeholder collaboration. Indigenous methodologies must also be prioritized to ensure culturally relevant and innovative approaches to guide training and risk management.

Ultimately, this study offers a systematic representation of guide knowledge and urges stakeholders to co-create, apply, and share this knowledge to enhance safety and resilience in Arctic adventure tourism.

Útdráttur

Vinsældir ævintýraferðamennsku á norðurslóðum hafa aukist hratt undanfarin ár. Samhliða þessari aukningu þá hefur tíðni slysa aukist og um leið orðið meira álag á staðbundna viðbragðsþjónustu viðkomandi svæða. Þessi rannsókn skoðar tengslin á milli hlutverks og hæfni leiðsögumanna í ævintýraferðamennsku og getu þeirra til að tryggja öryggi á vettvangi. Í verkefninu er þjálfun leiðsögumanna, öryggisvenjur, áhættustjórnun og hlutverk leitar- og björgunaraðila rannsökuð með áherslu á Ísland, Svalbarða og Grænland.

Niðurstöður byggja á fjögurra ára rannsóknarvinnu sem fólst í viðtölum, greiningu gagna og samvinnu við hagsmunaaðila. Niðurstöður sýna að reyndir leiðsögumenn treysta á ígrundun í starfi og sífellda hæfniþróun. Þekking þeirra er þó oft vannmetin af stjórnvöldum og sumum ferðaþjónustuaðilum, sem takmarkar tækifæri til að nýta hana í stefnumótun og áhættustjórnun. Rannsóknin undirstrikar mikilvægi þess að brúa bilið milli fræða og framkvæmdar og hvetur til að þekking leiðsögumanna verði nýtt í ákvarðanatökuferlum.

Með því að samþætta rannsóknasvið ferðaþjónustu, öryggismála og menntunar sýnir rannsóknin að öryggi á norðurslóðum er margþætt og krefst þverfaglegrar nálgunar. Hún stuðlar að dýpri skilningi á öryggishæfni í leiðsögn á heimskautasvæðunum og kallar eftir yfirgripsmeiri og staðbundnari þjálfunaráætlunum.

Framtíðarannsóknir ættu að kanna langtímaáhrif menntunar leiðsögumanna, trú þeirra á eigin getu og árangur samstarfs hagsmunaaðila. Einnig ber að nýta aðferðaðfræði og þekkingu frumbyggja til að tryggja menningarlega viðeigandi og nýstárlegar aðferðir í leiðsögukennslu og áhættustjórnun.

Að lokum veitir þessi rannsókn kerfisbundna sýn á þekkingu leiðsögumanna og hvetur hagsmunaaðila til að leggja til við að skapa, nýta og miðla þessari þekkingu til að auka öryggi og seiglu í ævintýraferðamennsku á norðurslóðum.

To my son, Leó Jökull

Preface

This dissertation explores the relationship between the roles and competencies of Arctic adventure guides and their ability to ensure tourist safety in the field. My interest in this complex subject stems from years of experience working as a guide and teacher, during which I witnessed firsthand the challenges and responsibilities inherent in ensuring safety in such demanding environments.

This research draws on the expertise and generosity of Arctic adventure guides who work tirelessly to ensure their clients return home safely. This dissertation is my way of giving back to the industry that has taught me so much. I am deeply grateful to all the guides-in-training, guides, teachers, tourism stakeholders, and everyone else who made this journey possible. Their insights, shared experiences, and support have been invaluable to this research. I believe that their contributions will play a significant role in enhancing safety measures within the field of Arctic adventure tourism, ultimately ensuring that every guided tourist returns home safely.

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Publication III — Hild, B.O. (2023). Developing Safety Competencies Among Arctic Nature Guides in Training: An Analysis of Student Experiences. *Studia Periegetica*. https://doi.org/10.58683/sp.566

Publication IV — Hild, B., Jackson, J. (2025). Arctic Guide's Mindset: Enhancing Safety Competence Development from the Perspective of Instructors. (accepted with minor revisions at the *Journal of Adventure Education and Outdoor Learning*)

Publication V — Hild, B., Johannesson, G.T., Complexity of Tourist Safety in the Arctic: Stakeholder's Knowledge Co-Production. In Brito, M., Aven, T., Baraldi, P., Cepin, M., & Zio, E. (Eds), Proceedings of the 33rd European Safety and Reliability Conference (ESREL 2023)

In Publication I, the author was mainly responsible for developing and writing the paper. The co-author revised and contributed to the editing of the paper.

In Publication II, the author was mainly responsible for developing and writing the paper. The co-authors revised and contributed to the editing of the paper.

In Publication III, the author was fully responsible for developing, writing, and editing the paper.

In Publication IV, the author was mainly responsible for developing and writing the paper. The co-author revised and contributed to the editing of the paper.

In Publication V, the author was mainly responsible for developing and writing the paper. The co-author revised and contributed to the editing of the paper.

Abbreviations

ANG	Arctic Nature Guide
AGSE	Arctic Guide Safety Education
EL	Experiential Learning
ELT	Experiential Learning Theory
CAK	Campus Kujalleq
FAS	Framhaldsskólinn í Austur-Skaftafellssýslu
ICE SAR	Icelandic Search and Rescue
NOLS	National Outdoor Leadership School
OAE	Outdoor Adventure Education
SAR	Search and Rescue
WFR	Wilderness First Responder

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I would like to express my deep gratitude to Gunnar, my main supervisor, for his unwavering support at every turn of this Ph.D. journey. You have been not only a guiding light but also a steady source of moral support—especially while navigating the complex and often challenging nature of social, field-based research. Thank you for the countless hours you have dedicated to helping shape this work and for believing in its value.

To my supervisory committee — thank you for believing in the value of bringing practice into theory and theory into practice across fields. Your guidance throughout each step of the research process has been essential in shaping the outcome of this Ph.D. journey.

To the founding bodies, including Rannís, the Nordic Council of Ministers, and the Research Council of Norway, and to all members of the Arctic Guide Safety Education Network who generously offered their time and expertise, sharing invaluable experiences across Iceland, Svalbard, and Greenland. This journey would not have been possible without your knowledge and support.

To all my coworkers and researchers who paved the research path before me and alongside me—Daniel, Edita, Stig, Mike, Deisi and others— thank you for all the hours spent debating, brainstorming, and often wondering if I were actually getting any work done. To Audun, for sharing the world of risk with me on Svalbard's glaciers. To Danny and all my Greenlandic friends, for letting me be part of your world, sharing your stories, and showing me the deep value of Indigenous knowledge.

To my mom—thank you for surviving that near-miss adventure trip, which set me on the path my dad always hoped for me: exploring the world of academia! Now we are all doctors!

To my dad—thank you for all the research guidance along the way and endless last-minute phone calls.

To my sister, Agnieszka—for showing me women's strength. You have been my role model in navigating the balance of research and motherhood

To Anna, my Finnish sister, your presence, boundless support across the borders, and unwavering belief in me have meant the world.

To Gerður Jóhannesdóttir—your generosity and guidance in navigating Icelandic family life carried me through the final steps of this Ph.D..

To Tómas — my partner in life and in adventure. Without our shared adventures, I might have finished this Ph.D. a year earlier (at least!), but what a journey it has been! Thank you for pulling me away from the screen when I needed it most, for showing me the light outside my office during the darkest times. It may take many skiing trips to burn off all the rescue candies and ice cream you kept supplying for my survival during late hours at the office. Your love for the outdoors and rescue services has been both inspiring and grounding.

Finally, I dedicate this work to Leó Jökull, who grew inside me for months on the Greenlandic glacier as this Ph.D. neared its end—and who now sees the Arctic as his playground. This is for you and your friends out there: when the time comes for you to explore the great Arctic on your own, be adventurous—but always come back home safely.

PART I: SYNOPSIS

1. INTRODUCTION

1.1 Aim and Research Objectives

Guiding tourists in remote and extreme environments involves significant responsibilities for those in leadership roles. As committed and passionate professionals, Arctic adventure guides assume these responsibilities while navigating stressful, cold, dark, and unpredictable conditions. This research **examines the relationship between tourist safety, guide competence, and risk management strategies on adventure trips in the Arctic.** By exploring the perspectives, knowledge, and skills of adventure tour guides in Iceland, Svalbard, and Greenland, this research aims to contribute to understanding the relationship between harsh and remote environments, the role of adventure guides, risk-management strategies, and overall safety.

The findings produced by this research could be considered common knowledge by some, especially the guides themselves. However, based on my awareness, this Ph.D. thesis is the first attempt to address practitioners' perspectives from an academic context and provide insights into the rapidly growing Arctic adventure tourism industry.

Given the limited research on the challenges of leading tourists on adventure trips in the Arctic, this study contributes new knowledge at the intersection of three academic fields: arctic safety, outdoor adventure education (OAE), and adventure tourism studies. Recognition and exploration of this intersection, referred to later as "bridging islands," is a central contribution of this paper to existing theories across those fields. Therefore, this study builds on the breadth of interdisciplinarity rather than focusing on the depth of each individual discipline.

The majority of this research is built on the collective expertise of guides documented through interviews, observations, and workshops. Toward the end of the project, I facilitated the creation of a platform for knowledge exchange among stakeholders, including public officials, search and rescue (SAR), guiding schools, tour operators and companies, and others who had previously participated in the study. This unique opportunity to contribute to knowledge exchange aligns with the premises of action research, which emphasizes collaboration and the practical impact of academic research.

In conclusion, by examining the relationship between tourist safety, guide competence, and the risk management strategies employed by various stakeholders in the region, in this research I aim to improve tourist safety by raising awareness of the complex and demanding Arctic environment in which adventure guiding takes place.

1.2 The Research Journey

The motivation for my research journey did not arise from a desire to pursue an academic career. Instead, it evolved organically from the recognition of the unique opportunities that research could offer me in constructing a collaborative platform for guides, students, teachers, and companies operating in the Arctic. Prior to beginning my research, I worked as an outdoor educator in the United States, China, and South Korea—experience that culminated in the completion of my master's degree, which focused on outdoor educational programs in the Southeast Asia region. In 2014, I moved to Iceland, where I soon began two years of SAR training. Subsequently, I moved to Svalbard and enrolled in

the Arctic Nature Guide (ANG) program to become an adventure tour guide. While engaged in guiding trips in Greenland and Svalbard, the narrative of my Ph.D. journey began with a memorable dogsledding day trip (see Figure 1).

Figure 1. A dogsledding trip on Svalbard. Commercial dogsledding trips typically have 4–6 dogs pulling the guide's sled, while the guests follow the guide's track and are in charge of 5–6 dogs, with one guest sitting inside the sled and another one standing and driving behind. (Own source)

This particular trip happened during the late winter season and involved guiding three guests, including my mother, on a dogsled through a valley known for its avalanche dangers. The avalanche risk was higher that day due to long sun exposure and temperature rises that typically occur in late season. The risk was marked by a third-degree warning on the scale of five. Despite expressing strong reservations about proceeding in such conditions, I sought advice from the owner of the small company for which I was working and was reassured that everything would be fine.

As the trip proceeded, I decided to run the trip in the opposite direction to the commonly established clockwise direction. In doing so, I did not expect to encounter other dog teams (which would become problematic), as I did not expect others to go out on a trip in such bad conditions. I chose this direction to avoid being in the runout zone in the avalanche-prone terrain. However, an unforeseen complication unfolded farther up the valley when the river beneath my sleds broke (due to the high air temperature), submerging the dogs up to their chins. The sleds proved unwieldy in the water, and I grappled with the fear that my mother's life was in jeopardy, not to mention the safety and well-being of the other guests steering the sled behind me. Unable to abandon my sled for even a moment, I could not assist the guests with their sled and dogs. We collectively battled the river for what felt like an eternity before managing to climb out of the water and return to the base, all completely wet and cold.

Despite the horror and weight of responsibility I felt as the guide, this day resulted in the highest tip in my guiding career. The guests, paradoxically, relished the danger and deemed it an adventure—a testament to the feeling of being alive in such circumstances. This response made me wonder what competence a guide needed to assume the responsibility to lead others in the Arctic environment. I wondered who would be given responsibility whose responsibility if any of the circumstances had gone negatively that day: mine, the company's, or the guests' (who sign a waiver acknowledging the risk associated with the activity). Additionally, I was concerned with how I would explain to my family that, while safeguarding my mom's safety and well-being, I took an irresponsible decision to expose her to increased risk. Another question remained: could risk be avoided if someone like my mother chose to participate in an adventurous trip?

A few days later, in the aftermath of the expedition, the owner of the company called me to apologize for encouraging the trip, acknowledging the potential severity of the situation. He underscored the uncertainty associated with avalanches and emphasized that, contrary to popular belief, most fatalities on Svalbard occur due not to polar bears but to avalanches. Remarkably, no fatalities related to avalanches had been previously recorded in the specific valley in which my trip occurred.

At the start of this research, only one accident on a guided snowmobile trip in Svalbard had taken a guide's life, and this accident had undergone extensive investigation. This made me wonder how many near-misses, incidents, and accidents do not attract attention simply because *they were not bad enough or nobody died*. Throughout my research, a recurrent theme emerged as I encountered numerous guides who shared similar narratives. More significantly, a collective inquiry echoed through these stories: who assumes the responsibility to safeguard tourists' safety and well-being on trips in the harsh environment of the Arctic?

Later, during my research and data collection, one Icelandic company owner noted that the absence of accidents on the glacier, despite a significant number of visiting tourists, was attributed to both luck and a dedicated commitment to taking the guide's job seriously. While the lack of accidents statistics posed a challenge in supporting my studies, I came to realize that the key issue might be not a lack of data on reported accidents, but rather a lack of insight into guide's practices and knowledge. Understanding these aspects could offer a deeper view of the guide's role and responsibilities.

While working as a guide, teacher and being SAR member, I saw a chance to collect and share insights from within the community of practitioners. To elevate my research from a guide's perspective to that of a non-biased researcher, I have decided for the time being (during the research process), to stepped away from land-based guiding to address the issue of risk management in Arctic adventure tourism. In collaboration with Professor Betty Weiler [Publication I], I introduced the research with this poignant quote: "You start with a bag full of luck and an empty sack of experience. The journey is to fill the bag of experience before you empty the bag of luck" (J. Klimko). This research leverages existing expertise in the field and serves as a collection of adventure guides' experiences in the Arctic. As these guides lack advocacy, the need for increased recognition and support for their role in Arctic tourism is pressing.

1.3 Research Questions

This research is inductive, designed to systematically introduce various aspects of the complexity of managing safety on guided trips in the Arctic. The research questions were shaped both by the original design of the study and by the practical process of data collection. Over time, they developed into key "building blocks" that connect the five published papers. Two initial research questions (hereafter referred to as RQ1 and RQ2) formed the backbone of the study and were evident in each of the publications:

RQ1: *What is the impact of the environment on tourist safety and risk-management strategies in the context of guided adventure trips, specifically the risks and hazards of guiding in the Arctic?*

RQ2: *What is the principal role of adventure guides operating in the Arctic, and what competencies does this role involve?*

To understand how competence is developed in guiding programs offered by public institutions, in which anyone fulfilling requirements can participate without much cost, I used a participant observation method to follow guides-in-training in one of the Arctic guiding school programs on Svalbard. Several years earlier, I had graduated from the program, which gave me a foundation for understanding the practicalities, opportunities, and challenges of conducting such research. Upon closer examination of the practices inside the classroom, I focused on seeking patterns that would explain competence acquisition among the students by attempting to answer the following question (RQ 3):

RQ3: *What strategies are used to facilitate safety competencies development in guiding schools in the Arctic?*

RQ3 guided Publications III and IV, which focused on guides' education and, more specifically, the development of safety competence within guide training programs. This research question draw on the conclusions from Publications I and II, which highlight the guide's training as a crucial strategy for developing effective safety and risk-management skills among guides. These two publications examine teaching methods, curriculum design and facilitation, and classroom practices, presenting the findings two-dimensionally—from the perspective of students and from the perspective of instructors.

Toward the end of the project, I was able to create the Arctic Guides Safety Education Network, founded as a networking project with funding from the Nordplus program (www.nordplus.com). This allowed me to gather various stakeholders, including tourist company representatives, regional governors, educators, and researchers, in meetings and workshops with the aim of answering the following question (RQ 4):

RQ4: *How does knowledge co-production between tourism stakeholders in the region enhance safety and risk management on guided trips in the Arctic?*

By focusing on knowledge co-production among tourism stakeholders, this research shifts the perspective from previous top-down approaches to a more collaborative and inclusive understanding of Arctic adventure-guiding issues. In addressing RQ4 through collaborative workshops, I demonstrate how interaction between stakeholders and knowledge exchange can support the adventure tourism industry in advancing collective efforts to improve safety on guided Arctic trips.

1.4 Holistic Research Approach Across Fields

Situating research on adventure tour guiding within a conceptual framework is a difficult task for a researcher. As my research emphasizes the interconnectedness of tourist safety, adventure guides' competence, and risk-management strategies, a key challenge I encountered in the initial stages of the research process was the lack of clarity within the academic literature regarding the actual work and role of adventure guides. Pond (1993) refers to tour guides as *the orphans of the industry*, positioning them as a group that is often marginalized in the tourism sector. Because guides assume many roles, often involving communication on aspects related to the culture, history, or nature of visited places, they are crucial in shaping tourist experiences, particularly in adventure tourism. The focus on guide education and guiding standards in the Arctic has been growing, slowly leading to regional changes in the regulation of the profession (Hovelsrud et al., 2023). However, researchers still face the challenge of positioning adventure tour guiding in the broader context of tourism studies. While building on the multi-dimensional roles played by tour guides (Weiler & Black, 2015), my study focuses on context-specific investigation (of Arctic adventure tourism) to expand and deepen the theory regarding the role of managing tourist safety. Therefore, the theoretical foundation of this research draws on different disciplines, positioning the research within and between the fields of adventure tourism, Arctic safety, and outdoor education. This research provides the unique opportunity to contribute to areas that currently lack strong theoretical foundations and empirical evidence.

At the beginning of my Ph.D. journey, when I was designing the research process, I faced an initial challenge in the lack of scientific literature on the safety and risk management of guided trips in the Arctic. Indeed, a number of studies within separate fields have argued for more integrated research within Arctic safety (Albrechtsen & Indreiten, 2021), tourism studies (Bird, 2020; Cheung, 2021; Rantala & Vakkonen, 2011; Rokenes & Mathisen, 2017; Rokenes et al., 2015), and outdoor education (Mykletun, 2018). Ensuring safety, as a shared priority among guides, becomes challenging when situated in unpredictable environments, where guides make lone and independent decisions. In addition, these guides must navigate guests' expectations of an adventure, balancing the tourists' risk and exposure based on the uncertainty of the outcome. To position my research, I had to identify the scientific shortcomings across various fields and move toward more integrated research, intersecting where they meet and bridging them. Figure 1 below illustrates how each of the aspects of Arctic adventure guiding interconnect and how they influence one another in the Arctic context.

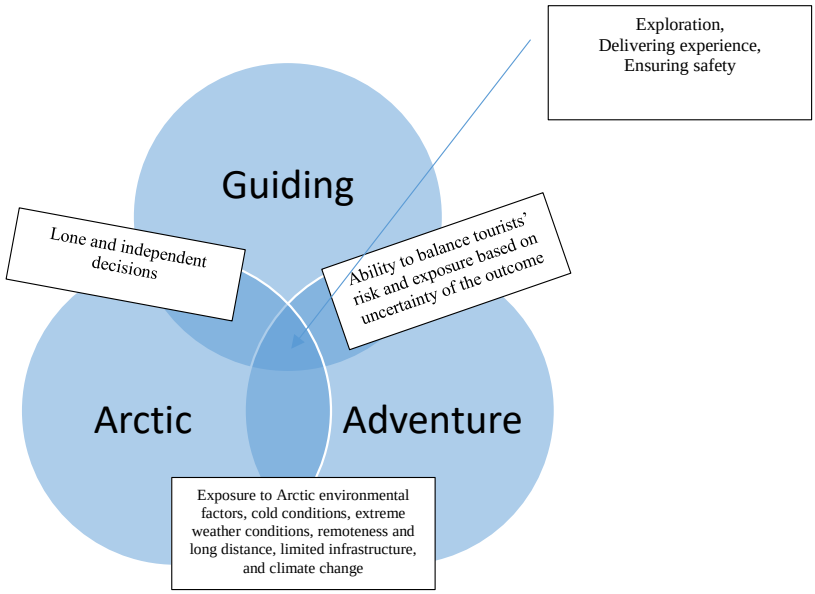


Figure 2. : The positioning of Arctic adventure guides at the intersection of three research fields

The common thread of **safety competence and risk management** serves as the central storyline for this study, and the research advancement in different fields (adventure tourism, outdoor education, arctic safety) is addressed with varying depth across the publications. Table 1 illustrates how each publication is situated within the research fields.

Table 1. Situating Publications within the Research Fields. A plus sign (+) indicates the relevance of the publication's content within a specific field.

Publication/Field	Adventure Tourism	Arctic Safety	Outdoor Education
I. Safety first: Unpacking key roles of Arctic adventure guides	+	+	
II. Everyone can be a guide until something goes wrong: Adventure guide competence and tourist safety in the Arctic	+	++	
III. Developing Safety Competencies Among Arctic Nature Guides in Training: An Analysis of Student Experience	+	++	+++
IV. Arctic Guide's Mindset: Enhancing Safety Competence Development from the Perspective of Instructors	+	++	+++
V. Complexity of tourist safety in the Arctic: stakeholders' knowledge co-production	+	++	+

1.5 Research Population and Study Area

1.5.1 Research Population

This Ph.D. draws on the perspective of guides working in adventure tourism in the Arctic. According to Maher (2007, .2), ´single definition [for Arctic tourism] is virtually impossible. Unified definition of Arctic adventure tourism does not exist neither, and researchers do not agree whether adventure tourism is a concept or a category (Mykletun, 2018; Rantala et al., 2016). Despite numerous studies, research shows that term 'adventure tourism' functions more like as a category, primarily due its fragmented presences across multiple fields and its use in reference to a wide range of activities. (Rantala et al., 2016). For theoretical underpinning of the **concept of Arctic adventure guide**, particularly positioning these guides within this research, I situated my research on the following criteria/concepts:

- Adventure is defined as *uncertainty of outcome* (Hopkins & Putnam, 1993).
- The adventure tour guide's role is to *deliver quality of experience to guests by making lone and independent decisions based on the guide's advanced technical training (*Ewert & Wu, 2007).
- I situated the adventure guides within the frame of Arctic Safety characteristics defined by Albrechtsen and Indreiten (2021) as *cold conditions and extreme weather conditions, remoteness and long distances, limited infrastructure, and climate change*.

In the following, the word "guides" is used interchangeably with the term of adventure guides and Arctic adventure guides. The research population includes various groups of adventure tour guides based in Iceland, Svalbard, and Greenland. The majority of research participants were working as guides, but some held a variety of other positions, including guide manager, company CEO, company owner, and government employee (Publications I, II); students participating in the ANG program on Svalbard (Publication III); instructors working for guiding schools in Iceland, Svalbard, and Greenland (Publication IV); and tourism and emergency preparedness stakeholders across the Arctic region (Publication V).

This research used purposive sampling by defining "adventure guide" with the following preconditions:

- The participants should be adventure tourism guides with high levels of technical skills (Mackenzie & Kerr, 2012);
- They should have experience leading activities involving specialized equipment or risk exposure, such as kayaking, glacier guiding, rafting, and so on (Mackenzie & Kerr, 2012); and
- They should have experience managing incidents while guiding.

The minimum experience of guides involved in the research was defined as 6 months (corresponding to a minimum of two winter or summer seasons of guiding), while the majority of guides had between 3 and 10 years of guiding experience. The research population represented a mix of genders, ethnic backgrounds, levels of training and education, and experience. However, a limitation of this research is gender equality, which is addressed in Chapter V, in the section on the limitations of this study.

For data relevant to guides' education (Publications III and IV), where both students and teachers were already in pre-established groups, I used opportunity sampling. The accessibility and willingness to participate in the research by those pre-established groups was crucial factor in collection process.

This Ph.D. focused on the following activities: snowmobile driving, hiking, kayaking, glacier guiding, rafting, dog sledding, hunting, and boat driving. These activities were assumed to be the most common activities in adventure tourism in the Arctic during both the winter and summer seasons.

1.5.2 Study Area

This research focuses on three islands within the Arctic region, exploring the relationship between the environment, safety, and performance of adventure guides working in the Norwegian archipelago of Svalbard, all of Iceland, and all of Greenland.

The Arctic is most commonly defined using climatic or geographic criteria. Climatically, it is often delineated by the 10°C July isotherm, which roughly corresponds to the treeline and marks a region challenging for vegetation. Geographically, the Arctic lies north of the Arctic Circle at 66°33′ North and is characterized by the phenomena of the polar night and midnight sun (Pravettoni, 2010). The lack of a clear definition of the Arctic becomes even more pronounced when the region is considered in relation to climate change. With rising temperatures in the coming years, the boundaries and current definition of the Arctic may shift; however, its unique environmental characteristics will continue to distinguish it from other regions.

The following section provides an overview of the research population on which this study is based as well as the geographical study area, situating Iceland, Svalbard, and Greenland within the broader context of research. Figure 3 illustrates a geographical map of the Arctic region.

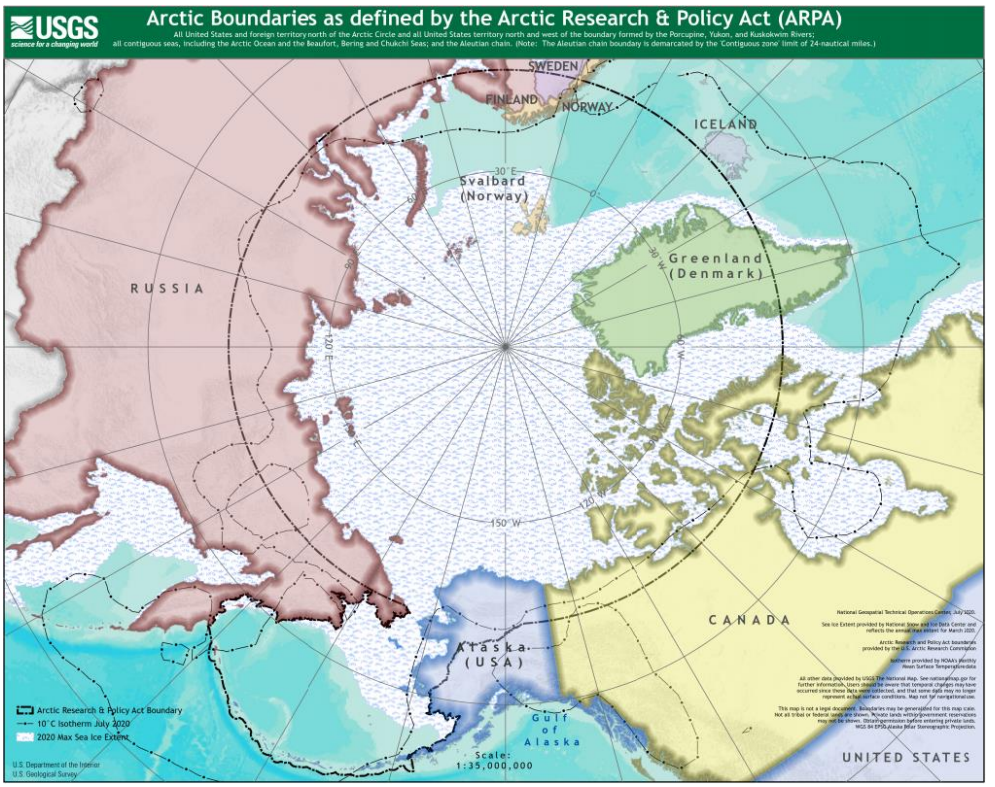


Figure 3. Arctic Boundaries as defined by the Arctic Research & Policy Act-ARPA, Circumpolar Map" Source: https://www.usgs.gov/media/images/arctic-boundaries-arctic-research-policy-act-circumpolar-map

1.5.3 Iceland

Iceland is a relatively newly formed volcanic island in the Mid-Atlantic Rift, between Greenland and mainland Europe. It sits on both continental plates. According to Statistics Iceland (2024), approximately 383,726 people live on the island, sparsely distributed across an area of 103,000 km². Despite the global decline in tourism due to COVID-19, Iceland's tourism industry regained its position as the leading foreign exchange–earning sector in 2022, contributing 7.8% to the country's GDP. The industry provided employment for 26,000 people, who represent 12% of the Icelandic workforce (OECD, 2024). In 2023, 1.3 million international tourists visited Iceland. According to the same report, the forecast for international tourist arrivals is expected to be 2.3 million in 2025 and 2.35 million in 2026.

The governing body in Iceland that focuses on tourism development is the Ministry of Industry and Innovation. The Icelandic Tourism Board operates under that ministry and is tasked with implementing the government's tourism policy, is responsible for development and planning, with a focus on issuing licenses for tourism operations, monitoring activities, collecting data, and overseeing tasks related to quality and the protection of Icelandic nature within a tourism context. The current tourism policy plan highlights three focus areas: economy, community, and environment, with a special emphasis on providing unique experiences. Thus, Icelandic tourism is defined by its professionalism, quality, and commitment to safety. Furthermore, the foundation of the policy is built around know-how, and decisions regarding policy and planning are based on research, data, and experience (Ferdamalastofa, 2024).

However, a key challenge in this area is the current lack of knowledge and limited support for academic research. Without comprehensive research, envisioning well-informed planning and executions of policies is difficult (Jóhannesson et al., 2010). Despite the rapid growth of adventure tourism in Iceland in recent years, no regulations currently govern adventure activities, such as glacier tourism, mountaineering, kayaking, dogsledding, snowmobiling, multiday hikes, and so on. Thus, research or statistics on adventure tourism operations is limited, specifically with regard to safety and risk management.

1.5.4 Svalbard

Located between 71 and 78 degrees north, Svalbard is "a mountainous archipelago of five large and many smaller islands, ice-capped and remote in the northern Norwegian Sea" (Stonehouse & Snyder, 2010, p. 9). The first explorations of Svalbard date to 1591, when William Barents arrived in the archipelago in search of the Northeast Passage leading to China. Since then, it has been explored by whalers, hunters, coal miners, scientists, and, as of the late nineteenth century, tourists.

Since the Svalbard Treaty was created in 1921, the archipelago has been considered part of Norwegian territory. With approximately 4,000 inhabitants spread among two towns, Norwegian Longyearbyen and Russian Barentsburg, Svalbard's popular tourist attractions are on land and water. Indeed, tourism has become an increasingly important contributor to employment and economic activity in Svalbard. The region has gradually evolved into a year-round destination, with a noticeable shift from primarily land-based activities to a growing emphasis on marine-based tourism (Kaltenborn et al., 2024; Olsen et al., 2020).

In 2023, Longyearbyen saw 139,371 guest-stays, with the top tourist activities being boat trips (39%), dogsledding (22%), snowmobile trips (15%), hiking (5%), and glacier walking (3%). Workforce statistics in tourism are scattered across sectors, rendering an estimate of how many people work in guiding difficult. However, a 2022 Svalbard Guide Association workshop estimated that 200–700 guides work annually. Hurtigruten, a major Norwegian tourism provider, estimated around 450–500 people are employed in the travel industry, one of Svalbard's three main industries.

The governing body on Svalbard is Sysselmesteren (Governor of Svalbard), and tourism field operations and other travel in the area are regulated by FOR-1991-10-18-681, with broader tourism regulations described in the framework of the Norwegian Svalbard policy. The regulations are passed by the Ministry of Justice and Public Security and are closely developed in line with the Svalbard Environmental Protection Act. Visit Svalbard, an umbrella organization governed by its 72 member businesses (as of September 2024), focuses on destination management. Although it represents the majority of companies in the region, Visit Svarlbard operates on behalf of the private sector and does not possess authority to act on behalf of the government.

The current Masterplan for Svalbard 2022–2030 highlights promoting safety, interdisciplinary knowledge in decision-making for tourism action plans, and shared responsibility among tourism companies, among others. Although the Tourism Regulation of Svalbard was set to be replaced by the Field Safety Regulations for Svalbard in 2023, which were to focus on guide certification, as of the time this thesis was submitted, no regulations had been implemented by the government regarding the education, certification, or licensing of guides and operating adventure activities on Svalbard.

1.5.5 Greenland

Greenland is the world's biggest island, located between Canada and Iceland. It is sparsely populated with 57,000 people, who live mainly around the West Coast and, by majority, are of Inuit descent. Greenland is mostly covered by an ice sheet; however, settlements can be found on the east, south, west, and northwest coasts. Until September 2024, Kangerlussuaq was home to Greenland's only international airport, serving as the main entry point for most tourist arrivals, with 75,522 international passengers landing at Kangerlussuaq before traveling farther. In 2023, the country received a total of 96,362 visitors (Visit Greenland, 2023). Greenland was among the fastest destinations to recover from the COVID-19 pandemic's travel restrictions, nearly returning to its 2019 levels by 2022 in both land-based tourism and cruise arrivals (Visit Greenland, 2023). In 2023, foreign tourism directly accounted for 1,075 jobs in Greenland, representing less than 2% of the Greenlandic population (MPV, 2024).

The main authority overseeing tourism development in Greenland is Visit Greenland, which functions as the country's tourism board. It operates independently from local businesses and is established and funded by the Greenland Home Rule Government. The strategies for tourism development for 2024 outlined by Visit Greenland are increasing demand for adventure tourists, year-round tourism in all of Greenland, knowledge sharing and competence upgrades, and promoting favorable operational framework conditions (Visit Greenland, 2024). However, the development of year-round tourism, along with strengthening the competence of tour operators and promoting Greenland as an adventure

tourism destination, faces several challenges. These include the country's "distance from key markets, high travel costs, perceived isolation" (Ren et al., 2021, p. 2), and the lack of research on adventure tourism and industry practices. As in Svalbard and Iceland, anyone can open an adventure tour guiding company in Greenland without a license.

This section discussed the geographical background of the research, showcasing the specific challenges faced by the Arctic region, while the following sections will discuss the theoretical premises on which this research rests.

1.6 Outline of the Thesis

This dissertation consists of six chapters, including introduction, the conceptual framework, research design, summary of methods and results of publications, discussion with limitations, conclusion and further research. The first chapter introduces the research topic, emphasizing how the perspective of a guide - practitioner has shaped the study. It also presents the research questions and provides understanding of the context in which the research was conducted. Chapter two provides an overview of the fundamental concepts underpinning this study. It examines the phenomenon of tourist safety by analyzing the competencies of Arctic adventure guides and their risk-management strategies. The chapter contextualizes these elements within the distinctive features of the Arctic environment and situates the research geographically, offering detailed descriptions of the study areas: Iceland, Svalbard, and Greenland. Chapter three outlines the research approach, emphasizing the researcher's standpoint and the application of social constructivism through the study. In chapter four methods and results of each publication are described, discussing the studies and results aimed at answering the research questions. Chapter five concludes the research key findings, as well as describes the limitation of the study. Finally, Chapter 6 presents the study's conclusion and offers recommendations for future research.

2 THEORETICAL FRAMEWORK

This chapter explores relevant concepts and clarifies terminology regarding tourist safety and risk management in Arctic adventure guiding. It covers core concepts from the research fields of Adventure Tourism, Arctic Safety and Outdoor Education, focusing on risk management by Arctic adventure guides while addressing the challenges that environmental conditions pose on each of these areas.

2.1 Adventure Tourism in the Arctic

Although the evolution of guiding began when people started to seek to understanding the world around them (Pond, 1993), the earliest research outlining the guiding profession was established by Cohen (1985), who situated the tour guide and their role. According to Cohen, the guide's role has two distinctions: the *pathfinder*, or a geographical guide who leads the way in the unknown, and *a mentor*, a term which aligns with the more modern understanding of a trip facilitator. Much research on the guide's role has argued for varying functions of the guide, including "(1) interpreter/educator, (2) information giver, (3) leader, (4) motivator of conservation values/role model, (5) social role/catalyst, (6) cultural broker/mediator, (7) navigator/protector, (8) tour and group manager/organizer, (9) public relations practitioner/company representative, and (10) facilitator of access to non-public areas" (Black & Weiler, 2005, p. 23). The limitation of the same study is the lack of recognition given to the guide's role in safeguarding tourists, especially in context of adventure guiding. Understanding how guides judge between those varies roles in the Arctic environment while looking after guest's safety and well-being is a central inquiry of this study.

Exploration of the Arctic region began a few centuries ago, introducing the role of guides who provided local expertise in navigating the region's harsh and remote environments to meet the interests of early travelers. Originally, the first travelers to the Arctic were perceived as adventurous, as many early tourists hiked or used local transport, with the generous hospitality of Arctic people providing experiences and allowing these visitors to stay in local homes or camps. Tourist experiences often included mountaineering, rafting, hunting, and wildlife photography—activities typically facilitated by locals (Stonehouse & Snyder, 2010).

While the literature now recognizes adventure guides as crucial facilitators of guest experiences (Berbeka, 2018; MacKenzie, 2003), research on the specific roles and competencies required to guide in the Arctic is lacking. However, the interplay between the specialized knowledge offered by guides and visitors' desire to experience the "exotic" Arctic (Engeset et al., 2020; Prokkola, 2007) remains significant. Bruin et al. (2004) provide an example where the exploration of local culture in Greenland is categorized as a form of adventure tourism.

To situate this study within the context of adventure tourism, I chose to utilize Beard et al.'s (2012, p. 9, as cited in Mykletun, 2018, p. 322) definition, which proposes that the core of adventure is made up of several essential and interrelated components, such as "uncertain outcomes, danger and risk, challenges, expected rewards, novelty, stimulation and excitement, escapism and separation, exploration and discovery, deep engagement and concentration, as well as contrasting emotions." Moreover, the concept of adventure tourism remains undefined (Rantala et al., 2018a), despite being examined from multiple

angles—including its conceptual meaning (Rantala et al., 2018b), tourist behavior (Buckley, 2012; Ewert et al., 2013; Imboden, 2012; Large & Schilar, 2018), economic aspects (Buckley, 2007), and the role of guides (Berbeka, 2018; Mackenzie & Kerr, 2012). Rantala and Valkonen (2011, p. 582) used the example of Finland and highlighted that "despite the relative remoteness and wilderness-like attributes of the tourism destinations in Lapland, the typical programmed services, especially the ones offered in the winter season, are not generally considered as adventurous." Mykletun (2018) examined the complexity surrounding the definition of adventure tourism in the North, pointing out that adventure tourism lies at the intersection of tourism, serious leisure, extreme sports, and outdoor recreation and is directly influenced by commercialization and remoteness. He also noted a trend of the *softening* of adventures, with more trips in which activities, such as nature and local cultural interpretations, do not require tourists to possess prior skills. From a risk-management perspective, the trend of softening in Arctic tourism reflects a shift toward more comfortable and controlled experiences. However, this often leads to a limited awareness of the region's inherent risks, such as sudden weather changes, sea ice instability, or avalanche forecasts that can disrupt travel and planned activities. While environmental risks cannot be controlled by humans, adventure guides play a crucial role in anticipating and responding to these hazards as part of their responsibility to manage safety in unpredictable Arctic conditions. This judgment is based on their local knowledge.

2.1.1 Risk Management in Adventure Guiding

Limited research has focused on the guides' knowledge and skills in relevance to safety in adventure tourism in general (Røkenes & Mathisen, 2017), and very few studies have investigated the work of guides specifically in the Arctic (Andersen & Rolland, 2018; Berbeka, 2018; Burdenski, 2018; Cheung, 2021; Karlsen, 2022). The main research areas for the study of adventure activities and tourists' safety are New Zealand, Australia, the USA, and Canada (Bentley et al., 2001; Bentley et al., 2006; Bentley & Page; 2007; Callander & Page, 2002; Hansen et al., 2019; Page et al., 2005). While many of these studies have provided valuable findings, most indicated the need for integrated and detailed research and policy for managing tourists' safety. To frame the discussion on risk management, it is essential to first understand the core concepts of hazards, risk and risk management.

They are various approaches to defining risk and safety, often exploring whether safe could be an antonym of 'risk' (Aven, 2014). While risk has been traditionally understood as possibility of harm, outdoor adventure education has adopted a different perspective – one that involves working with risk instead of eliminating it. In his book on risk in outdoor education, Smith (2021) refers to the director of one of the biggest outdoor programs in USA, describing the risk in the outdoors as a possibility to bring a reward that no other activities can, while at the same time, acknowledging that the activities conducted during the programs are not worth the potential harm to the participants. Such statement indicates that the risk is being approached as beneficial, as long as they do not become threat to participants well-being or life. Ewert and Hollenhorst (1989) described outdoor adventure activities as a continuous interplay between the participant and the natural environment, having some degree of inherent risk of uncertainty. This aligns with the principles of adventure tourism, where activities inherently carry varying levels of risk (Furunes & Mykletun, 2012). The potential of experiencing risk in these activities is often viewed positively, especially when personal abilities are balanced with environmental challenges.

Making critical decisions in the outdoor adventure is crucial, not only for the safety of the participant but also for the public, as failure to uphold this balance may lead to "lack of understanding of the benefit of outdoor adventure activities and the level of care with which they are actually conducted" (Harper & Robinson, 2005, p. 145). The same research suggested that the growth and diversity of outdoor adventure activities increase the likelihood of potential fatalities.

From a safety and risk management perspective, Tovey (2007, p. 101) highlighted the problematic nature of the concept of risk, noting that "risks are not absolutes; there is no such thing as a risk in reality, only perceptions of risk. Risk is socially constructed, and what is acceptable in one context or in one culture may be unacceptable in another." Such a statement aligns with foundations of adventure tourism, where the guide's objective is to balance participant exposure and perception of the risks that are involved in the activities and focus on experience creation. Given so, in my research I adopted the following definition of risk, and risk management:

- risk as "uncertainty, with potential for both loss and gain" (Smith, 2021, p. 4)
- risk management as "balancing act between managing actual risks on one hand, whilst simultaneously maintaining optimum thrill levels on the other" (Cater, 2006, p.324)

Risk management is a proactive process, meaning it is built on planning and re-evaluating rather than merely responding to accidents. Research findings from 1996 indicate that the limited number of academic publications focused on safety management or tourism safety issues—such as potential injuries and fatalities—poses a serious threat to the tourism industry and those who depend on it (Clift & Page, 1996, cited in Callander & Page, 2003). Nearly 30 years later, the scientific literature on tourism safety management has not expanded significantly, and newly developing adventure destinations, including the Arctic, have also not been thoroughly investigated. Similar issues can be found in practice, where, despite this longstanding awareness, the main issues in tourism safety management seem to remain static. In their critical view on developing tourism in Iceland, Matti et al. (2022, p. 1) stated that "both tourists and tourism employees have a limited understanding of risk and emergency protocols. (…) Safety of customers and the risk communication needs to be tailored to the needs of the tourism sector, including guides." This statement aligns with the research of Harper and Robinson (2005), who argued that the knowledge and competence required to analyze and manage risk should be considered integral for those delivering outdoor adventure programs. Both Cater (2006) and Snyder (2007) claim that the responsibility for risk management lies with tour operators and licensing authorities, because through participation in organized adventure activity the participant hands over the duty of care to someone who has the right certification or training.

In the literature, numerous findings emphasize the need for regulation in tour operations, particularly focusing on guide certification. However, despite the inherent risks and challenges of working in cold and remote environments, research on safety management for guided trips in the Arctic is lacking. For instance, in a study of ski guides in Iceland, Svalbard, and Greenland, Berbeka (2018, p. 411) noted that "good guides are key to the success of a tour operator's business." Nonetheless, current research has not sufficiently addressed what specific competencies define a *good guide*, how these competencies are developed, or how they can be enhanced. Research by Hovelsrud et al. (2023) on tourism

development in Svalbard raised concerns about whether current regulations are adequate to address climate-driven changes that extend the tourism season and support ambitions for year-round tourism. The same research highlighted inconsistencies and conflicting interests in tourism development, largely due to the lack of regulations governing organized guided activities. The authors argued that issues included no formal system for certifying guides or specific skill requirements, but if introduced, these could lead to "improving guide quality and contribute to displacing unprofessional actors from the market" (p.101). However, none of the eight Arctic countries acknowledge guiding as a profession, nor have industry operational standards been imposed on the operators.

An ongoing discussion exists among tourism stakeholders about introducing standards for Arctic tourism to improve the overall safety and quality of tourism (Hagen et al., 2012; Saville, 2022). The aim of standardizing the Arctic tour guiding industry is to ensure that all tourist operations in the region correspond to the vision of local government and are carried out by professionals. During this research project (2020-2024), the Svalbard Guide Certification concept was introduced to the public by the governor's office, and many meetings were held alongside open hearings for the public. Yet, despite a publicly announced deadline of 2023, no changes were implemented regarding those matters during this research. On June 19th 2025, after I had submitted my thesis to the doctoral committee, the new guide requirements in Svalbard were introduced under the new field safety regulation. The regulation states that Svalbard guides are responsible for preventing hard to people and nature. The requirement to use approved Svalbard guides will take effect on July 1st 2027. (Ministry of Trade, Industry and Fisheries, 2025). Additionally, in 2025, the Greenlandic government introduced a law that emphasized the role of local, Greenland-based tour operators in facilitating trips in Greenland, highlighting the importance of training and education. However, resources to adequately support the implementation of these requirements are lacking, especially standardized training and professional development opportunities for guides.

Research on leaders' practices shows that training in real conditions helps future leaders to develop accurate skill-efficacy regarding their outdoor leadership competency. This highlights the importance of contextualizing the role of Arctic adventure guides and their necessary safety and risk-management competencies specific to the environments and hazards in which guiding occurs—isolated, harsh, and unpredictable Arctic. At the same time, studies on risk management of guided trips in Iceland in glacier and volcano areas have revealed limited knowledge or a lack of systematic strategies being implemented by tour operators to prevent tourist injuries when new hazards or hazardous sites are identified (Bird & Gísladóttir, 2020; Matti et al., 2022). Findings from those studies highlight the importance of understanding concept of hazards that occur on adventure trips in the Arctic.

Kruke and Auestad (2021) in their research on emergency preparedness in the Arctic refer to hazards as a challenging condition that requires adaptive risk management strategies. For this research, I have chosen to contextualize hazards based on the work of Albrechtsen and Indreiten (2021), which aligns the practice-theory intersection of human activity in the Arctic. Their approach does not focus solely on a particular industry, as is often the case in safety sciences. The following section focusses on the key aspects of the hazards that impact guided adventure tours in the Arctic.

2.2 Arctic Safety

Serreze and Barry (2005, p. 17) provided a useful description of the Arctic as the region north of the sixty-sixth degree latitude, characterized by treeless landscapes, mean summer temperatures below 10 °C, periods of continuous daylight or darkness, and the presence of permafrost. Geopolitically, eight sovereign countries exist within the Arctic region: the USA, Canada, Denmark, Sweden, Iceland, Norway, Finland, and Russia.

The Arctic is sparsely populated. Communities are often separated by great distance and limited infrastructure, especially transportation and health services. As Færevik and Wiggen (2014) highlighted, this poses substantial challenges for the health, safety, and operational performance of those living, working, or traveling in the region. The limited infrastructure and remoteness of the region pose a threat to operations in the region, particularly due to constrained SAR capacities (Albrechtsen & Indreiten, 2021, p. 2). In the following, I focus on the main environmental factors that directly affect the practice of guides working in adventure tourism in the region.

Only in recent years have researchers begun to combine the concepts of the Arctic and safety, a relatively new field that still lacks a clear definition, as "both 'Arctic' and 'safety' have many interpretations and dimensions." *(*Albrechtsen & Indreiten, 2021, p. 2). As with adventure tourism, the diversity of the region makes those terms difficult to define. My study specifically draws on the definition of Albrechtsen and Indreiten (2021), in which the Arctic is characterized by cold conditions and extreme weather conditions, remoteness and long distances, limited infrastructure, and climate change. Their definition offers a clear and structured framework for understanding the challenges of the Arctic environment.

Additionally, Albrechtsen and Indreiten's (2021) study resulted from years of development toward establishing the Arctic Safety Centre on Svalbard, which played a crucial role as a venue for data collection throughout my research. This center has provided a valuable setting for examining Arctic safety issues in practical contexts, especially in ongoing discussions regarding Svalbard tour guides' certification. While Albrechtsen and Indreiten (2021) acknowledged that societal, industrial, occupational, and personal safety concerns are as relevant in the Arctic as elsewhere, they emphasized that any discussions and research on Arctic safety should be rooted in the Arctic context.

2.2.1 Arctic Safety Factors

Increasing accessibility to the Arctic has contributed to a rise in visitor numbers but also which has in turn, heightened safety challenges, demanding more professional knowledge and practice from guides and emergency services. Understanding environmental factors, such as terrain and climatic features, is essential in addressing these challenges. Studies investigating the impacts of increased tourism on Svalbard and Iceland have shown a continual increase in the number of tourists using motorized vehicles to reach glaciers on both islands. Approximately "12.9–17.7% of tourists visiting Iceland have paid for glacier/snowmobile guided tours between 2011 and 2016" (Kavan & Anděrová, 2020, p. 64), while snowmobile activities were the most sold product on Svalbard in the wintertime (Dannevig et al., 2023; Kaae, 2006). This expansion in motorized travel increases the likelihood of accidents.

Indeed, research has indicated that most motor vehicle accidents on Svalbard involve snowmobile travel, with 181 people reported in accidents between 1997 and 2001. Visitors face a four-times higher risk of involvement in these incidents due to limited experience and challenging climatic conditions (Ytterstad & Dahlberg, 2005). Further, Saville (2022, p. 8) highlighted the risk associated with tourist's increased mobility and access to new forms of travel without prior local experience: "large numbers of tourists represent a challenge for the very limited local (emergency) response services."

The following sections draw on key Arctic environmental factors that directly impact the guide's role and decision-making on trips. Building on Albrechtsen and Indreiten (2021) work, as well as my own practical background, I have chosen to situate my research with a focus on the following Arctic features that represent key hazards to tourism operations in the region:

- Terrain (sea ice, mountains, and glaciers)
- Atmospheric conditions (snow)
- Climatic and Weather conditions (temperature, wind)
- Wildlife encounter
- Climate change
- Remoteness, which is closely tied to the capacity of SAR

2.2.2 Sea ice

According to UNIS Field Safety guidelines, "most accidents on Svalbard with deadly outcome have been related to activities on sea ice*"* (UNIS, p.12). The Arctic population heavily relies on sea ice for transportation in Svalbard, where it is used as well by tourists and scientists to travel between locations. In Greenland, Canada, and the United States, sea ice is also crucial for hunting and sourcing food in the wintertime. Greenland, where there is a lack of a road system connecting communities, sea-ice importance was mentioned by one of the local entrepreneurs: "The importance of sea ice has always been in our lives. Especially in areas of fjords where land travel is difficult, sea ice gives us more freedom for travel" (Sanguya, 2013, p. 135).

In communities like Uummannaq on the west coast of Greenland, people drive cars on frozen fjord systems to travel between settlements. On Svalbard, sea ice provides travel routes around crevassed glaciers. However, understanding the dynamics of sea ice, current weather and local conditions is a crucial competence for anyone attempting to travel on a frozen ocean. Numerous accidents have occurred on Svalbard involving snowmobile travel over ice, including fatalities among the local population. In 2014, a tour guide died in a snowmobile accident on the sea ice, which broke when the guide was crossing the thin and unstable ice of Tempelfjorden and broke through. In the years since the accident, the fjord has been recognized as unstable for travel and has often remained, to a large extent, ice free. As a result, the route between Longyearbyen and Pyramiden that the sea ice provided formerly has been "relocated" to the glacier systems around the fjord—a route that now requires knowledge of glacier travel and possible crevasse rescue.

The thinning sea ice highlights a "double-edged sword" issue: As climate change leads to the thinning or disappearance of sea ice, more areas previously inaccessible to tourism become open for travel, offering new opportunities for Arctic cruises. However, this increased access comes with significant risks, as the unpredictability of unstable sea ice

renders navigation and safety planning more challenging (Bystrowska, 2019; Palma et al., 2019; Ren et al., 2021; Stocker et al., 2020). Despite media coverage on lives lost on sea ice (Huuhtanen, 2023; Kobalenko. J, 2023), research on safety concerns for tourist land-based operations in Greenland and Svalbard remains largely absent (Wærø, Rosness, & Kilskar, 2018).

2.2.3 Mountains and Glaciers

The highest peak of Greenland, Gunnbjorn Fjeld, rises 3,800 meters above sea level, with the majority (approx. 2,800 m) of its height being covered by an ice sheet. Both the highest peaks of Svalbard and Iceland (Netwontoppen, 1,713 m and Hvannadalshnúkur , 2,110 m) are located in heavily glaciered areas, and both are covered by local icecaps. Thus, the tourist activities related to climbing these mountains require mountaineering or glacier travel knowledge and experience.

Bentley and Page (2008) argued that inexperience, unfamiliarity with the local environment, and a tendency to disregard instructions are key factors contributing to tourist fatalities and injuries in marine, mountain, and wilderness activities. Not only does traveling on a glacier require substntial knowledge and training, but water or land activities near glacier fronts calving into the sea also provide significant risk. The widely discussed 2012 fatal accident resulting from the Esmarkbreen glacier on Svalbard brought attention to unstable glacier fronts. There ice edges can collapse at any time, and even within the what is considered “safe distance” (200 m from the glacier front), accidents can occur (Hamrock, 2023). Another example of glacier hazards is seasonal meltwater, which occurs in late summer, potentially limiting accessibility and the ability to complete expeditions, such as crossing Greenland on skis. This hazard, due to open crevasses, is explicitly noted by SAR in Greenland when applying for a travel permit on the Greenland Ice Sheet (SAR Insurance, n.d.).

According to Assessment of Glacier and Permafrost Hazards in Mountain Regions, which was developed by scientists associated with the International Association of Cryosphere Science and the International Permafrost Association, “corresponding hazard and risk management relating to low-probability events with extreme damage potential is especially difficult for planning, policymaking, and decision taking” (Allen et al., 2017, p. 7). An example of such a low-probability event that impacted tourist operations recently is the emerging hazard of a fracture in the mountainside of Svinafellsheiði, a popular glacier guiding destination in Iceland (Matti et al., 2022; Matti & Ögmundardóttir, 2021). The risk of a major rock-slope failure, which could lead to multiple fatalities in the event of tourist presence in the area, highlights the need for greater focus on risk management, as everchanging Arctic conditions fueled by climate change increasingly affect tourist safety.

2.2.4 Snow

Snow coverage is connected with tourism activities in the region, as many recreational pursuits, such as dogsledding, snowmobiling, and skiing, rely heavily on both the quantity and quality of snow (Falk & Vieru, 2016). However, varied snow accumulation due to terrain features, local climate, and unstable weather leads to hazardous situations (Berbeka, 2018; Furunes & Mykletun, 2012). This has been noted by researchers on Svalbard, where the most common hazards encountered during the winter field season are avalanches on

snowmobile trips (Indreiten et al., 2018). Since 2000, nine people have died in six avalanches in Svalbard: seven on snowmobiles and two on a guided tour (Engeset et al., 2020, p. 6). The same study states that "Svalbard has an extensive snow avalanche problem, and avalanche risk is inherent to field-based activities, such as backcountry skiing, snowmobiling, and dog sledging." Similar concerns over growing popularity in winter and snow sports are found in Greenland, where the first Greenland Winter Warning Association was established in 2022 to provide detailed snow information regarding the two largest settlements on the west coast (Nuuk and Sisimiut). In November 2023, the Icelandic Avalanche Association (SNIS) was founded with the aim for avalanche professionals from different fields in Iceland to share their knowledge and expertise in collaborative events.

2.2.5 Climatic and Weather Conditions

Kelman et al. (2012) advocated for more in-depth studies on how weather—atmospheric conditions, such as temperature, precipitation, humidity, and wind—affects the tourism and hospitality industry. Human presence in polar regions generally heightens the risk of frostbite due to the extreme cold and challenging environmental conditions (Ikäheimo & Hassi, 2011). Denstadli et al. (2014) found that weather elements such as wind and low temperatures do not significantly affect tourists' appreciation when traveling in the Arctic. However, these same factors directly impact operational safety (Albrechtsen & Indreiten, 2021) and, more broadly, tourist operations, particularly in the context of unstable weather patterns including strong winds, unstable sea-ice and snow coverage often referred to as extreme weather events (Hansen et al., 2019; Hovelsrud et al., 2023; Ren & Jóhannesson, 2023; Welling & Abegg, 2019).

In the research on frostbite in circumpolar areas, Ikäheimo and Hassi (2011) highlighted that most cold exposure is associated with leisure activities, including skiing, mountaineering, and snowmobiling.

Low temperatures and wind are the main factors contributing to cold injuries and hypothermia. Although the Arctic experiences 24 hours of daylight in the summertime, in the beginning in April, the high latitude of the region does notreceive the warm air masses found in other southern places. Sea ice, as well as snow, remains in some places year-round, reflecting the solar energy and contributing to sunburns, but not heat gain. Bright but short summers do not allow heat transfer onto land that is mainly covered by permafrost, which further contributes to low temperatures in the region. This is especially evident in the locations where this research was conducted – Iceland, Svalbard and Greenland – which share similar geographical characteristics.

Both extreme cold and warming temperature can influence the variety and severity of hazards in the Arctic. Longyearbyen, Svalbard, has an average annual temperature of -4 ◦C, with a winter average of -14 ◦C and a summer average of 4.5 ◦C (Hanssen-Bauer et al., 2019 in Albrechtsen & Indreiten, 2021). Although a study on skiers visiting Svalbard, Iceland, and Greenland did not demonstrate that cold weather is a challenge for that kind of visitor (Berbeka, 2018), another study on tourist safety in the Arctic region showed that cold is one of the contributing factors to *"*many serious situations" (Rantala & Valkonen, 2011, p. 590*).* On the other hand, increasing temperatures contribute to the likelihood of various hazards, including an elevated risk of avalanches, slope instability, and changes in

sea ice conditions. For example, in his research on Icelandic tourism affected by the weather, Welling (2020) suggested that fluctuating snow conditions, along with rising temperatures, can cause sudden, unpredictable runoff from the snow and ice and trigger avalanches.

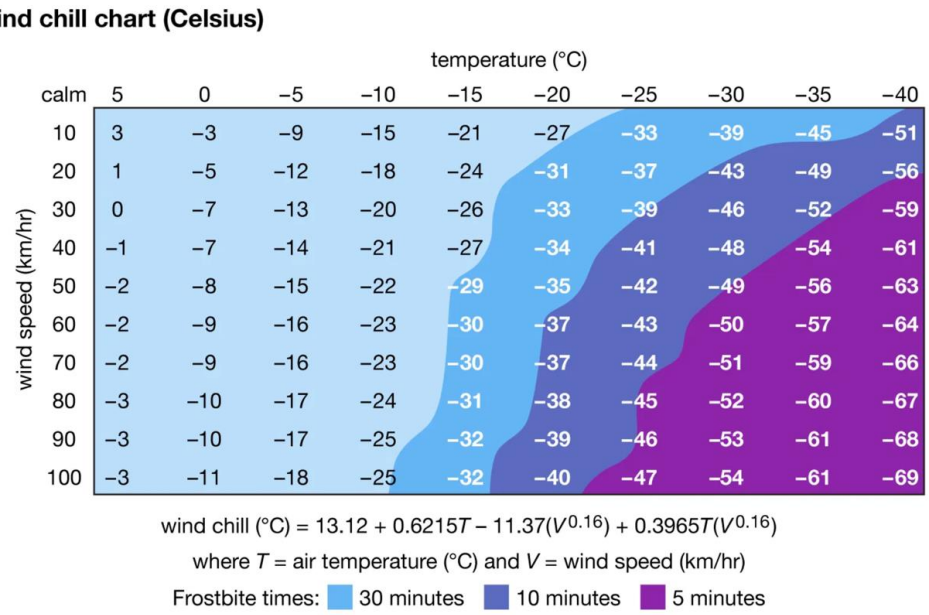
Lauta et al. (2017) proposed a framework for the complexity of cold disasters based on the following three conditions:

- Cold disasters, often leading to faster fatality, typically happen due to low and extreme weather, putting stress on emergency services.
- The most common cold disasters occur in sparsely populated space with limited infrastructure, including rescue capacity.
- Cold disasters commonly involve complex setups, including limitations of countries and authorities, leading to the possible delay of help.

Strong winds, especially in open and exposed areas, also pose a threat to tourists' safety. In the research on Arctic safety factors, Indreiten et al. (2018) stated:

> In winter, travel across a wide-open valley that is vulnerable to wind, which can blow all of the snow away, leading to icy and rocky conditions, while in summer, the wind can lead to increased waves at the sea, making it impossible for the kayakers or small boats to stay on the route or even come back to the shore. (p.1942)

Another, more severe type of wind is katabatic wind, commonly known as "gale winds," which are forced by "radiational cooling of the lower atmosphere adjacent to the sloping terrain on the ice sheet" (Serreze & Barry, 2005, p. 215). Dense, cold air pressure traveling to lower elevations is found near the Earth surface, resulting in both strong winds and cold temperatures. Such winds, found mainly on the Greenland Ice Sheet but also on sloping glaciers in Svalbard, can significantly affect anyone traveling in the region, both for the consequences of the wind on the gear durability and for the non-existent possibility for rescue in such weather. Strong winds also have a direct effect on windchill temperatures; therefore, they must always be considered alongside wind speed and direction. The wind chill chart below shows how wind speed combined with air temperature lowers the perceived temperature, increasing the risk of cold-related injuries (Figure 6).



Sources: U.S. National Weather Service and Meteorological Services of Canada.

Figure 4. Wind chill and time to frostbite table. Matching a specific air temperature (columns) with a wind speed (rows) will show the wind-chill equivalent and the approximate time to frostbite. Source: https://www.britannica.com/science/hypothermia

2.2.6 Wildlife encounters

Both Svalbard and Greenland are considered polar bear territory, and encounters with these animals pose a threat to humans. Despite the strict rules introduced by Sysselmesteren, the Governor of Svalbard, regarding guiding trips to observe polar bears in their natural habitat—commonly referred to as "polar bear safaris"—any form of activities in such places cannot guarantee safety. Research by Wilder et al. (2017) in Greenland, Canada, Norway, Russia, and the USA showed that 74 documented polar bear attacks occurred between 1870 and 2014, majority resulting in human injuries, as well as 20 human fatalities. According to the hospital statistics and the governors' files from 1971–1995, there were six non-fatal and four fatal accidents inflicted by polar bears on Svalbard (Risholt et al., 1998).

Studies on bears' behavior have described the animals as predators that, due to climate change, are spending more time on land as the sea ice in the region is decreasing (Heemskerk et al., 2020; Prop et al., 2015; Wilder et al., 2017). This is especially concerning for the human population on Svalbard, where more polar bear encounters are noted (Prop et al., 2015). As discussed by Wilder et al. (2017), in many polar bear encounters, human behavior—such as approaching too closely, provoking or feeding the bear, using inadequate firearms, or lacking experience—appears to play a significant role in the escalation to an attack. The same research highlighted that firearms were poorly handled in one-quarter of these incidents, mainly due to inexperience or the stress of the situation.

2.2.7 Climate change

The effects of climate change, especially the increasingly rapid and unpredictable changes in the weather patterns, compound the risk associated with guiding in the Arctic. The latest research, although two decades old (Serreze & Barry, 2005), demonstrated that climate change significantly impacts all elements of the Arctic environment mentioned above:

> Downward tendency in sea ice extent, as well as apparent thinning. Sea ice changes have been accompanied by warming and increased areal extent of the Arctic Ocean's underlying Atlantic layer. Small Arctic glaciers have exhibited generally negative mass balances, and more of the Greenland Ice Sheet has experienced summer melt. Permafrost has generally warmed, encouraging increased precipitation and advance of the snow cover. (p. 292)

Climate change concerns were addressed by research in 2013 (Rottem), which indicated that precipitation and strong wind will increase in the Arctic states by 2100, as well as the frequency of extreme weather events. Research in Iceland (Welling, 2020) has shown that the most frequently mentioned impacts of climate change—such as glacier changes and an increase in extreme weather events—have led to reduced accessibility to and within glacier sites, along with an increased occurrence of hazards. Matti et al. (2022), in her research on Icelandic stakeholders' responsibility for the safety of others in glacier regions impacted by climate change, emphasized heightened safety concerns, pointing to tour companies as directly responsible for both employees and guests.

In conclusion, severe effects of climate change include unstable weather patterns, rapidly changing sea ice, and extreme weather events, such as strong winds and heavy rain. Despite ambitious plans for Svalbard and Greenland where current tourism development plans focus on 'increasing length of the tourism season, therefore facilitation of year-round tourism" (Hovelsrud et al., 2023, p. 101), there is need for further assessment how those plans alight with unstable weather, affecting cancelled flights, services and guided activities.

2.2.8 Remoteness and Search and Rescue Capacity

Limited infrastructure in sparse, remote Arctic areas is one of the challenges that threated operations in the region (Albrechtsen & Indreiten, 2021), as the arrival of help can be delayed in the event of an accident (Andreassen et al., 2020; Dallat et al., 2017; Kruke & Auestad, 2021). This delay, combined with low temperatures, can increase the severity of cold-related disasters (Lauta et al., 2018). This limited infrastructure can include poorly charted waters along the Greenlandic coast, minimal communication and navigation aids both on land and water, limited mapping resources, and unpredictable weather conditions.

Simultaneously, the growth in tourist operations in the region complicates the management of these risks. Vulnerability to emergencies in the Arctic due to the lack of infrastructure and harsh conditions jeopardizes tourists' safety. The report on SAR capacity in the Arctic stated, "The Arctic is characterized by vast distance and harsh climate, and no matter how well we prepare, it is impossible to prepare for and meet every contingency in a manner that public would consider good enough" (Sydnes et al., 2007, p. 228). SAR capacity varies across the region, as does the response time due to distance.

The Greenlandic government does not operate a civil protection organization or an emergency management agency to support local fire and rescue brigades. While the healthcare sector is overseen by the Greenlandic Government, the primary responsibility for SAR operations in Greenland lies with the Royal Danish Navy's Arctic Command (p.160). For accidents on water, which represent most SAR responses, Danish Defense becomes involved, while most of the accidents on land are managed by Greenlandic Police and local civilian resources. In case of larger emergencies, additional resources can be sent from Denmark to Greenland within 12–36 hours after the call. For comparison, Svalbard's rescue helicopters mobilization time is 1 hour, however for larger rescue operations where additional help from mainland Norway is required, the response time can take up to 12 hours (Harila, 2019).

Publication IV of this research highlights the challenges in coordinating rescue efforts among various organizations, noting that such coordination is often unreliable in emergencies for those living and working in Greenland, as various agencies depend on each other and their resources. Regarding the general population, clear understanding of whom to call in case of an emergency is lacking, which also delays crucial time for response.

For rescues requiring a helicopter, two SAR helicopters are in Greenland, with a base in Kangerlussuaq, contracted by national civilian airline Air Greenland as subcontractors to Danish Defense. Dahlberg (2020) emphasize current lack of technical capabilities of Greenlandic helicopters to fly in bad weather or night, as well as lack of rescue divers available for rescue at the sea. In conclusion, the research further indicates that SAR capacity in Greenland is constrained by its remoteness and limited resources. It highlights a lack of training, primarily due to the high costs involved, along with scarce response resources and limited contributions from volunteers due to logistical challenges.

The responsibility for all SAR operations in Iceland and within the Icelandic SAR region falls under the Icelandic Coast Guard. The organization has several rescue assets:three boats; three rescue helicopters (Airbus Super Puma), which are able to fly in the most difficult conditions; and one surveillance and rescue aircraft (TF-SIF) equipped for search, rescue, and medevac in the North Atlantic region (SAR, n.d.). Research shows that the median response time for such transports is 84 min during which local healthcare providers are compelled to manage ill and injured patients using limited means (Gunnarsson et al., 2023). Additionally, Iceland's SAR resources include ICE-SAR, a non-governmental organization with approximately 4,500 volunteers specialized in wilderness rescue. These teams are distributed nationwide and are ready to respond around the clock.

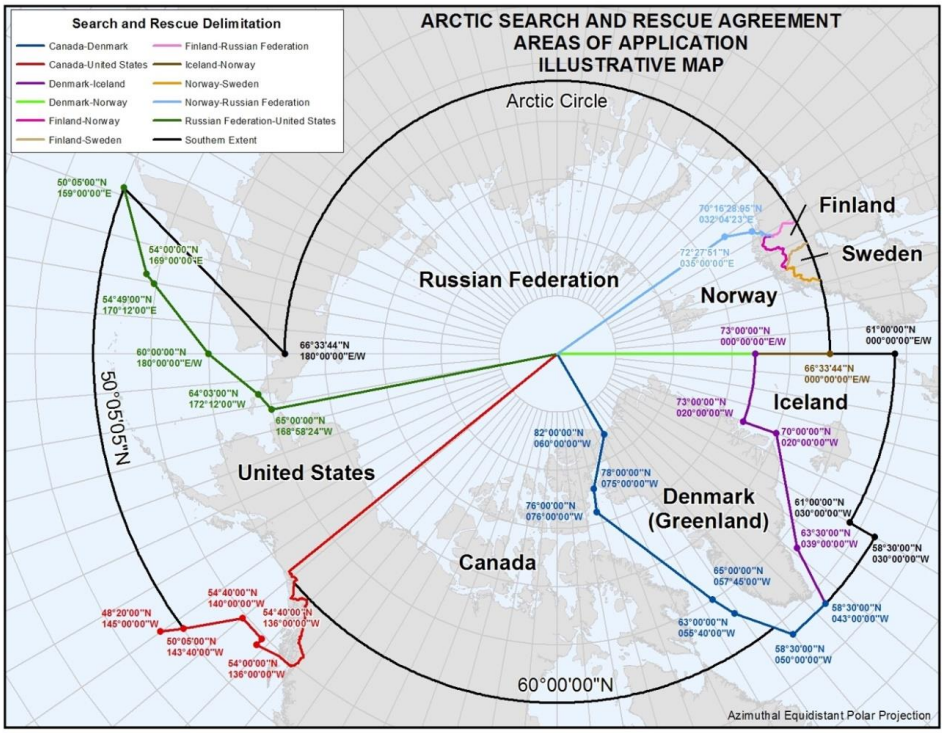


Figure 5. Arctic SAR Agreement Areas of Application. Source: https://arcticportal.org/ap-library/yar-features/421-arctic-search-and-rescue-agreement

2.3 Outdoor Adventure Education

To position the research in the context of the education field, I chose to draw parallels between adventure tourism and OAE, rather than between tourism and more formal education. The premise of such an approach is twofold. First, there is lack of acknowledgment of guiding as a formal profession, which results in an absence of a connection between formal and standardized education within public school systems. Second, OAE and adventure guiding share involvement in the experience of adventure-based activities, where experiential learning plays a is central role. Although adventure tourism and OAE share similar premises, such as "combination of specific activities within a small group context that usually includes an instructors or leader, and which are typically done in some type of nature or outdoor settings" (Ewert & Sibthorp, 2014, p. 1), OAE serves more as an umbrella for programs oriented on learning outcomes rather versus adventure guiding focusing on financial gain for the guides. However, both fields emphasize the importance of technical competence that guides, or outdoor leaders must acquire to manage higher risks and more severe consequences, particularly as their role involves critical decision-making in challenging situations.

In the research on outdoor adventure leadership, a comparison between educational adventure programs and guided trips (Ewert & Wu, 2007, p. 33) revealed commonalities and differences between those fields:

- *The guide aims is to deliver quality experiences for guests, while the outdoor educator aims is to facilitate learning experiences for participants.*
- *The focus of the guided trip is the outcome, while the focus of the OE program is the process.*
- *The decision-maker on guided trips is the guide, while on OE programs, the decision-making is first conducted by the instructor, then the student.*
- *There is a higher risk involved in guiding, while OE programming is based on structured risk.*
- *The leadership composition for guided trips is lone and independent, while for OE instructors, it is a team.*
- *The professional issues related to leadership for guiding are implicit/apprentice, while for outdoor educators, they are explicit and based on curriculum.*
- *The guide should possess advanced technical training, while OE instructors' training is estimated between intermediate and advanced.*

This outline highlights the key features of Arctic adventure guides, which are the focus of my study. Understanding Ewert and Wu's (2007) position on the role of the adventure guide has helped me narrow the focus to guides who, due to the nature of their work environment, align previously mentioned features: making lone and independent decisions in remote Arctic settings, working in high-risk environments, and prioritizing guest safety and well-being—with particular emphasis on ensuring on bringing tourists home safely.

2.3.1 Theoretical Foundations of Outdoor Adventure Education and Their Relevance to Competence Development in Guiding

OAE programs are based on various premises, such as the following: "development of interpersonal and intrapersonal relationship while participating in outdoor activities that include attributes of risk and challenge" (Wagstaff & Attarian, 2009, p. 15); "education that is conducted in wilderness-like settings and physical skills development to promote interpersonal growth or enhance physical skill in outdoor pursuit" (Gibertson et al., 2006, p. 8); "direct, active and engaging learning experiences that involve the whole person and have real consequences" (Prouty, 2007, p. 12). Such premises align with settings in which adventure guides develop their competence—in the wilderness, within experiences that involve challenge and real consequences.

The theoretical underpinning for OAE is an important tool for developing and targeting learning experiences. Many models and theoretical concepts have been used to develop and strengthen OAE curriculum, which, for many programs, begins with the Outward Bound process model developed by Walsh and Golins (1976). In this model, the learner gains knowledge through their interaction with provided experiences, progressing through six stages: a unique physical environment, a unique social environment, a specific set of problem-solving tasks, a state of adaptive dissonance, the development of a sense of mastery and competence, and finally, reorganizing the meaning and direction of the learner's experience, which results in the ability to transfer their skills across various activities. Walsh and Golins (1976) argued that the instructor serves the important role not only of providing the opportunities for the learners to meet particular stages but also of mentoring the learner through their experience. Instructors, as key facilitators of the

educational process, serve three functions within this process: facilitating the experience, safeguarding the experience, and minimizing the visitors impact on the natural environment (Wagstaff & Attarian, 2009).

While many models have advanced the outdoor adventure education theory since 1976, their development has been relatively linear, focusing on the interplay between program curriculum design and facilitation. This includes subjects such as fear and motivation, self-efficacy, personal growth, skill development, and behavioral studies (Hinton et al., 2006; MacKenzie, 2003; Priest, 1999; Shread & Golby, 2006; Sibthorp, 2003). While my research focuses on competence development, it is essential to discuss the foundational concepts related to skill development process – constructivism and safety competence.

Although the focus of this research is solely on the role of the guides and their safety and risk management competence, findings from studies on the relationship between self-efficacy and competence are notable, as the judgment of what kind of risk is acceptable for one and what competence it requires can lead to different expectations and outcomes among outdoor leaders. Self-esteem, an individual's perception of their ability to perform, is developed through experience, particularly through training programs and daily practice, especially for guides. Schumann et al. (2014) suggested that a mismatch between inaccurate self-efficacy beliefs and outdoor leadership training may pose a risk, potentially leading to inappropriate behaviors in future leaders. Observing others and the outcome of their behavior can be seen as a guide for future action (Bandura, 1997 in Schumann et al., 2014), despite their outcome of the performance accuracy. ´´ Inaccurate self-assessment of performance may translate to an inflated self-efficacy belief in future experiences´´ (Schumann et al., 2014, p. 100). Therefore, how guides construct knowledge through their experiences and how they make decisions in the field based on their personal understanding should be explored.

The following overview of constructivism provides context on how safety competence and guiding related knowledge are acquired and constructed, before discussing key concepts of safety competence for outdoor leaders.

2.3.2 Constructivism in Outdoor Adventure Education

Constructivism, a philosophy of education based on the nature of experience, emphasizes learners' ability to construct knowledge. Vygotsky highlighted the role of social interaction and cultural context in learning and problem solving, and my Ph.D. alights with the premises of his approach. The social interaction and cultural context in which Vygotsky situates learning relate to the interconnectedness of language, cultural objects, and norms that influence how people learn and develop when establishing "the zone of proximal development" (Vygotsky, 1978, p. 86). The premises of learning are based on the belief that solving problem activities conducted under the guidance of an instructor or peers helps learner to achieve higher competency. Pritchard and Woollard (2010) identified three aspects of social constructivism, including reality, knowledge, and learning. The premises of reality are that the members of the community create space that they share; knowledge is shared, meaning is created through interaction with others and their environment; and learning is a social process in which lasting learning occurs when the individuals is engaged in social activity that is related to pre-existing knowledge and understanding.

The constructivist approach emphasizes the use of scaffolding as a teaching method. In OAE, this method includes supportive guidance from the instructors until the students are able to master the skills. However, as Pritchard and Woollard (2010) stated, *the more knowledgeable other* does not need to be a teacher but can be within the context of a group. This statement aligns with the often-controversial approach to student autonomy in adventure education based on the assumption that the risk of injury, evacuation, and near-misses would occur frequently if students were traveling independently from the instructors' groups. However, research has shown that, through the empowering process, students are more likely to acquire leadership, communication, and outdoor skills (Sibthorp et al., 2007; Sibthorp et al., 2008).

Other methods used in OAE include reciprocal teaching (peers teaching each other), feedback and reflective teaching (learning from others' feedback), small group teaching (learning from others' expertise and practice). These methods align with another concept under the constructivism theory umbrella: situated learning. In such, learning occurs for one or more participants when they are together and interacting. Guides-in-training often learn this way—through "observation, followed by attempts, followed by a good deal of practice" (Pritchard & Woollard, 2010, p. 17)—that is, through direct experience and repeated practice in the field. In conclusion, the core idea of constructivist theory related to competence is that competence and knowledge are not simply transferred from expert to novice, but are actively constructed through social interaction, contextual experience, and guided participation in educational experiences.

To place earlier-mentioned theoretical underpinnings in the context of my research, Figure 8b illustrates how critical Arctic safety factors, the core premises of adventure guiding, and Ewert and Wu's (2007) framework intersect to form shared spheres of knowledge competence. Those overlapping areas represent essential knowledge and competence for effective risk management by outdoor adventure guides. Based upon examination of the aspects, these competencies and knowledge can be effectively addressed by employing constructivism theory, where learning occurs in group settings, mentored environments, and, for the most part, through practical experience.

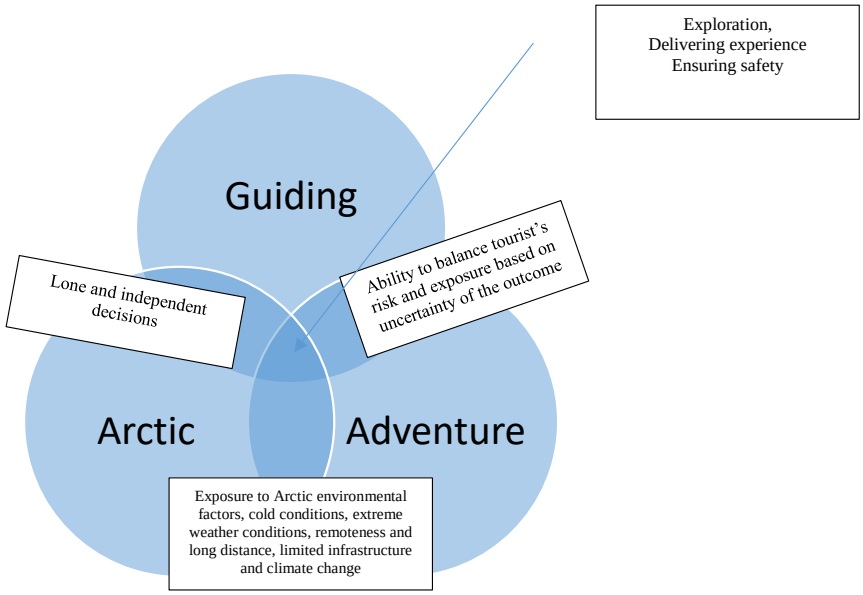


Figure 6. : The positioning of Arctic adventure guides at the intersection of three research fields with focus on knowledge and competence to manage risk on trips

2.3.3 Safety Competence in Outdoor Adventure Education

Based upon previous findings from Ewert and Wu (2007), guided trips involve higher risks than formal-education-based OAE programs, therefore, a guide is expected to possess a higher level of technical competence. Situating adventure guiding under the outdoor adventure activities umbrella, my research advances previous attempts to answer competence among outdoor leaders (Buell, 1981; Green, 1981; Paisley et al., 2008; Priest, 1984; Priest, 1986; Raiola, 1986; Schumann et al., 2014; Sibthorp et al., 2008; Swiderski, 1981). In this work, leadership competence related to risk and safety management has often been described using terms such as following: risk-management plans; liability considerations; judgment; decision-making; the assessment of group abilities and individual capabilities; the ability to anticipate accidents, evaluate hazards, prepare accident responses, exercise good judgment, handle safety problems, and prepare for accidents; risk management; knowledge of group safety; limiting activities to capabilities; safety and first aid skills; judgment based on experience; and environmental awareness.

My research is based upon Shooter et al.'s (2009) model, which outlines the layered factors essential for effective execution of outdoor leadership skills. As the authors of this model state, the challenge with categorizing outdoor leadership skills lies in the significant overlap between them. Shooter et al.'s (2009) model, originally developed from an outdoor program perspective, argues for more context-dependent skills recognition rather than following a hierarchical structure. The first layer emphasizes the purpose and goal of the operator within the scope of acceptable risk; the second layer focuses on specific attributes of the activity, including the environment and group size; and the third and fourth focus on the guide's leadership skills (Figure 9). I chose to base my approach to safety competence and risk management in Arctic guiding on this model because it aligns with the contextual nature of a guide's work.

Figure 7. : Outdoor Leadership Competence Framework (based on Shooter et al., 2009)

Finally, Dekker (2011), as cited in Dallat et al. (2017, p. 2), emphasized that "accidents emerging from relationships between parts, layers and components, and not from broken parts in isolation." Tourism in the dynamic Arctic environment presents unique challenges, including harsh environmental conditions. In this context, the risk-management competence of adventure guides cannot be viewed in isolation; rather, it is inherently integrated within broader outdoor leadership competence. The following section will discuss in detail how formal education contributes to the development of outdoor leadership and safety competence through educational programs in Arctic guiding.

2.3.4 Arctic Guide Education

Despite the initial development of tourism in the Arctic dating back to the late nineteenth and the first half of the twentieth century (Jóhannesson et al., 2010; Kaltenborn & Emmelin, 1993), education in tourism, particular guides' education in the Arctic region, remained nonexistent until the last two decades. Before this, guides were "typically marginal native, local, who were thoroughly familiar with the environment" (Cohen, 1985, p. 18). In the absence of established Arctic guide training programs, during periods of high demand, individuals with limited prior knowledge and experience often assumed roles as guides. This occurred either through in-house training provided by tourism companies or, in some cases, with a notable absence of any specific knowledge or training related to Arctic guiding (Hild et al., 2023 [Publication II]). Given the early stages of Arctic guides' training, studies have yet to examine the training program outcomes.

In my Ph.D., three public guide training programs are discussed: the ANG program on Svalbard, the Adventure Guide program in Greenland, and the FAS Mountaineering program in Iceland. All programs are based within the public school system. Both the Icelandic and Greenlandic programs are targeted to the local population, as the language of the instructor is the local language. However, the ANG program on Svalbard is offered as a university-based program open to international students. The length of the educational programs ranges from five months to two years.

Arctic Nature Guide program on Svalbard

The ANG program on Svalbard is part of the Arctic Friluftsliv bachelor program at UiT (the Arctic University of Norway) based at Alta, which offers 60 credits within the European Credit Transfer and Accumulation System. The program can be completed as a 1-year post-bachelor's degree or as part of a 3-year bachelor's degree. The program on Svalbard is the northernmost specialized tour guide program at the university level in the world. Developed in close cooperation with local tourism industry stakeholders, the program consists of four main subjects: Arctic safety and field leadership, safe tour guiding in the Arctic, values-based guiding and Arctic nature education, and Svalbard history.

Adventure Guide Program in Greenland

The Adventure Guide program in Greenland is a 5-month training program at Campus Kujalleq that offers 30 credits within the European Credit System for Vocational Education and Training. The program in Greenland is the only guide training in Greenland offered by the government and is free of charge for anyone eligible to apply. The program consists of the following areas: an adventure guide technique course, culture, communication, English, wilderness first responder, the history and nature of Greenland, tourism and service, and a boat license to drive and guide up to a 12-passenger boat in Greenland's waters.

FAS Mountaineering Program in Iceland

The FAS Mountaineering program in Iceland is the longest-existing program of the three, but it only recently became more popular due to increasing tourism in the country. The program is offered in two alternatives: a one-year training program with a focus on developing basic skills related to the guided activities, such as mountaineering, hiking, skiing, kayaking or mountain biking, as well as additional courses related to leadership, health, Icelandic culture and history. The hands-on activities include climbing, mountaineering and glacier skills, mountain biking, first-aid training, skiing, winter camping, avalanche awareness, and kayaking. Students receive 60 educational points within Icelandic upper secondary school system, corresponding to vocational training completed after high school. The language of instruction is Icelandic. The program curriculum was evolving at the time of this research and was subject to change. In May 2025, the Icelandic government decided to close the mountaineering programs offered by Framhaldasskóli í Austur-Skaftafellssýslu FAS, marking the end of an era of publicly provided guide education in Iceland.

3 RESEARCH DESIGN

The following chapter introduce my research design including the research philosophy and methodological approach. As key part of this research focuses on understanding the relationship between competences and ensuring tourist safety, the research process was focused directly on collecting and analyzing existing knowledge in the field. The premises of such design are grounded in social constructivism. By using ethnography as extension of field research, I aimed to provide a detailed description of a different (Arctic adventure guiding) culture from the viewpoint of an insider (Neuman, 2011).

I began my research in the fall of 2020, during the early stages of the COVID-19, and spent the first year in Iceland collecting interviews with guides and tourism stakeholders. These interviews formed the basis of Publication I and Publication II. In 2021, I moved to Svalbard, where I immersed myself in the field and gathered data that contributed to Publication III and Publication IV, drawing primarily on interviews, field observations, informal discussions and group interviews during fieldwork. In 2022 and 2023, I conducted research in Greenland, where I also worked as a teacher at the guiding school, gaining in-depth understanding of Greenlandic culture. Alongside these activities, I coordinated networking activities among stakeholders in each of the research locations, collecting data during workshops, which led to Publication V (extended abstract). The data collected throughout this research eventually reached a volume beyond the analytical capacity of a single researcher within the timeframe of a PhD project. This particularly applies to the data gathered during my stay in Greenland, as well as the extensive documentation from stakeholder workshops. The choice of approaches and method chosen for this PhD and published publications were shaped by the practical capacity for data collection and analysis available to a single researcher. They were influenced by my own background, affected by limited funding for this project and for the most, accessibility of the field sites at particular times. On some occasion, I combined teaching responsibilities with data collection. To minimalize my own biases arising from this dual role, I had changed research focus from, for example, students' ability to develop safety competence (in Greenland and in Iceland), to teachers' ability to teach and facilitate learning experiences.

3.1 Social Constructivism

Social constructivism implies that individuals construct their knowledge based on their experiences and interaction with the social environment (Creswell, 2013; Denzin & Lincoln, 2011). To examine risk management in the context of Arctic guiding, I emphasize the lived experiences of adventure guides—exploring how they construct understanding and develop competencies in their social and environmental interactions. From a constructivist approach, understanding of reality does not rely on what is perceived to be the reality but on knowledge exchange and interpersonal interaction between individuals.

As language plays an important role in social constructivism (Blaikie, 2007), establishing a common understanding between me as researcher and the participants was crucial. To do so, each participant was asked to define the concept of Arctic safety at the beginning of each study. This question was consistently used across all interviews, field interactions, and stakeholder workshops, establishing a foundation for shared meaning. Boyland (2019, p. 33) referred to it as "social constructivism researcher positions of the dialogue, where, the researcher, provides each participant with the opportunity to reconceptualize, reframe,

re-construct, understand and make meaning of the reality that is his/her lived experience." By first exploring participants' understanding of the meaning and interpretation of the Arctic environment, I was better able to understand their relationship with the environment based on their roles within it. In the later stages, the focus of the research process shifted toward risk and safety in Arctic tourism operations and further narrowed to specific aspects, such as competence, education, and knowledge-sharing. A more detailed description of these developments is provided later in this chapter.

I refer to the process of constructing and sharing meaning—that is, the dialogue between me as a researcher and research participants—as knowledge creation, which lies at the core of this study. My unique position enabled me to use opportunity sampling, granting me access to the adventure guiding community for the research—a group that often lacks formal representation or opportunities to voice their perspectives. Therefore, this study fulfills the premises of the social constructivist approach—recognizing knowledge as co-produced and shared through situated interactions, shaped by both social context and lived experience.

3.2 Multi-Sited Ethnography

The overall goal of my research is to contribute to the understanding of the complexity of ensuring tourist safety on adventure trips in the Arctic. More precisely, this research **examines the relationship between tourist safety, guide competence, and risk management strategies on adventure trips in the Arctic.** Originally, I adopted a mixed-methods approach for this research to investigate the occurring incidents and accidents in the region and understand the relationship between the environment and the guide's practices. However, soon after the initial investigation, it became clear that due to lack of incident-reporting data, I would need to focus on guides' practices that help to manage tourist safety instead. To do so, I employed an ethnographic approach, conducting a systematic study of people—specifically Arctic adventure guides—in their natural work environment to understand their perspectives on risk and safety.

Marcus (1995) highlighted the challenge of interdisciplinary arenas, where a clearly bounded object of study is often lacking. He calls for a multi-sited ethnography, which involves paying particular attention to the connections, associations, and relationships that emerge throughout the research process. Following this line of thinking, my Ph.D. evolved to include the establishment of connections among various stakeholders (called the Arctic Guide Safety Education network), which eventually led to the integration of an action research approach (discussed in Publication V, extended abstract). Ultimately, multi-sited ethnography enabled me to map the knowledge related to safety and risk management competence across the adventure guides community spread across three geographical locations: Iceland, Svalbard, and Greenland.

To capture the unique connection between these geographic locations, I used various research methods to build those "bridges" between research islands. Despite facing similar issues related to a lack of strong governmental support for developing adventure tourism, these islands present unique communities with distinct characteristics and practices among guides. Indigenous knowledge (Greenland), strict regulatory laws regarding wildlife encounters (Svalbard), and loose regulations regarding guiding in times of overtourism

(Iceland) are only a few of the aspects that directly impact guides' practices. This research not only bridges the physical islands for comparison and mapping but also builds conceptual and practical links between them, offering an in-depth understanding of place-based risk management guiding practices across the Arctic.

3.3 Research Methods

My research was designed based on ethnography and utilized qualitative methods, including interviews, field observations, and participatory workshops. The argument for this approach was to emphasize the Arctic context in which adventure guiding occurs—an approach that aligns with the principle of qualitative design, where the meaning of social action greatly depends on the context in which it appears (Neuman, 2011). The nature of this research was to examine an interdisciplinary, multi-sided field, following the grounded theory approach, in which researchers allow data and theory to interact to construct a theory grounded in the data. Such a method was intentionally used from the beginning, not only due to the previously uncharted interdisciplinary field but also due to the complicated logistics and finances of this research spread across various locations.

The research methods included in-depth interviews, participant observation, and participatory workshops. In-depth interviews were the backbone of the study, as they were initial sources of information that guided the research's direction. Interviews were employed in three papers of this doctoral thesis (Publications I, II, and IV). After gathering and analyzing the initial data published in Publications I and II, I moved to Svalbard to conduct participant observation studies on a group of students enrolled in the guiding program. This fieldwork contributed to Publication III, which described the process of safety competency acquisition. Publication IV was based on interviews with instructors in guiding schools in Iceland, Svalbard, and Greenland, examining the programs' curriculum design and facilitation. Finally, as the final step of this Ph.D., I disseminated the findings to the stakeholders in the region and collected data for Publication V through participatory workshops, which occurred simultaneously with the other fieldwork in all three countries. Table 2 illustrates the methods, data sources, and locations of each publication, which, along with the summary, are described in detail in the following section.

Table 2. Overview of methods, data sources, and location of research population for each publication

Publication	Data collection method	Data source	Location
I	In-depth interviews	16 Guides	Iceland, (Svalbard, Greenland) online
II	In-depth interviews	15 Guides	Iceland, Svalbard, Greenland (online)
III	Participant observation, in-depth interviews	24 Guides in training and 4 instructors	Svalbard
IV	In-depth Interviews	6 school instructors	Greenland, Iceland, Svalbard
V	Participatory workshop, survey	Around 80 tourism stakeholders	Svalbard, Iceland, Greenland

4 SUMMARY OF METHODS AND RESULTS

The following chapter summarizes the research questions, methods, and results of each publication that formed the Ph.D. thesis.

4.1 Publication I

PAPER I: Co-written with Betty Weiler, Emeritus Professor at Southern Cross University, Australia

Title: Safety first: Unpacking key roles of Arctic adventure guides

Abstract

Building on past research on tour guides and guiding, this paper provides an in-depth examination of the safety-management role of tour guides who lead adventure trips. A review of the literature identifies broad dimensions of tour guiding and, within these dimensions, specific guiding roles, mainly in relation to communication. The current study's qualitative examination of experienced Arctic guides illustrates how environmental conditions contribute to near-misses and points to safety management as an adventure guide's fundamental role. The findings highlight the need for guide competence and certification and underpin recommendations for research regarding guide education and practices in remote and extreme environments. Together, these can facilitate enhanced tourist safety and high-quality tourist experiences on guided trips.

Keywords: tour guide, tourist safety, guide role, adventure tourism, arctic tourism

Status: Published in *International Journal of Tour Guiding Research*

> Hild, B. O., & Weiler, B. (2024). Safety first: Unpacking key roles of Arctic adventure guides. *International Journal of Tour Guiding Research*, *5*(2).

Summary

The aim of Paper I is to provide an in-depth examination of the safety-management role of tour guides leading adventure trips in the Arctic. Paper I is essential in contextualizing Arctic guides, their working environment, and their responsibilities while also laying the groundwork for the development of further research.

The following research questions were utilized to guide interviews:

- RQ1: What is the impact of the environment on tourist safety and risk management strategies in the context of guided adventure trips, specifically the risks and hazards of guiding in the Arctic?
- RQ2: What is the principal role of adventure guides operating in the Arctic, and what competencies does this role involve?

Qualitative examination of Arctic guides' experiences illuminated the safety-management role of the guides. The purpose of the interviews was to gain insights into the interviewees' daily world of guiding in the Arctic. Kvale (2007, p. 11) described this method as "uniquely sensitive and powerful method for capturing the experiences and lived meaning of the subject's everyday world by allowing the subjects to convey to others their situation from their own perspective in their own words." The results of the paper are based on 16 interviews with guides and present how environmental conditions contribute to near-misses, incidents, and accidents, highlighting safety and risk management as key responsibilities of Arctic adventure guides. Additionally, this publication is the first academic effort to contribute to the emerging field of research on how extreme environments impact safety and guide decision-making. This publication led to Publication II, which explores the safety competencies necessary for fulfilling the role of safety management as an Arctic tour guide.

4.2 Publication II

PAPER II: Cowritten with Gunnar Þór Jóhannesson from University of Iceland, Iceland, and Are Kristoffer Sydnes from The Arctic University of Norway, Norway

Title: "Everyone can be a guide until something goes wrong": Adventure guide competencies and tourist safety in the Arctic

Abstract

Extreme weather, wildlife encounters, and rough terrain are integral to guided adventure tours in the Arctic. Guides are expected to ensure safety while facilitating adventurous tourist experiences. Although this balance is of vital importance, research on the competencies needed to facilitate tourist safety has been limited. This study responds to this gap by identifying the competencies necessary to ensure tourist safety during guided trips in the Arctic environment, with a particular emphasis on the relationship between competencies and the situated knowledge of guides. The results are based on 16 in-depth interviews with guides leading adventure trips in Iceland, Svalbard, and Greenland. The research draws upon existing theoretical studies on outdoor leadership to relate to the operational conditions of guides working in the Arctic. The findings indicate that various skill sets are needed to ensure safety, with emphasis on a balance between technical, interpersonal, and operational skills as well as situational knowledge. Recognizing competencies essential to facilitating tourist safety, the study introduces a safety competency framework that positions knowledge, acquired through experience and training, as a mediating factor between various skill sets. Last, recommendations for

further research on the guide's role in safety management and safety practices are presented.

Keywords: safety management, safety competence, adventure tourism, Arctic tourism, situational knowledge

Status: Published in *Scandinavian Journal of Hospitality and Tourism*

Hild, B. O., Jóhannesson, G. T., & Sydnes, A. K. (2023). "Everyone can be a guide until something goes wrong": adventure guides' competencies and tourist safety in the Arctic. *Scandinavian Journal of Hospitality and Tourism*. https://doi.org/10.1080/15022250.2023.2289946

The purpose of Paper II was to delve into the skills and expertise needed to keep tourists safe on guided trips in the Arctic. When designing the research, I first set a clear baseline for defining the type of guides I was including in the study, later called Arctic adventure guides. This step was crucial to shape a more specific profile of these guides, especially toward the final steps in the project, where I aimed to build a platform for knowledge-sharing among key players. The article is based on an analysis of the in-depth interviews with 16 guides in Iceland, Svalbard, and Greenland. This is largely the same dataset as used for Publication I. Two interviews used for Publication I were omitted, as they did not provide enough information about the topic, and one new interview was added. The following research question was used to guide this publication:

RQ2: What is the principal role of adventure guides operating in the Arctic, and what competencies does this role involve?

Using a purposive sampling approach, I focused on guides with a high level of technical skill, those leading trips involving specialized equipment or higher risk, and guides who had managed incidents in the field. These criteria were especially important because prior research on Arctic guides is limited, and a clear definition of adventure tourism in the Arctic is lacking. Collection and analysis of the data revealed how important the role of the environmental context was for the guides, especially for those working in other regions besides the Arctic. Without the environmental context, the competence among guides could be assumed to be universal and often similar to leadership skills in outdoor education, outdoor recreation, or guiding. However, due to unpredictable weather and limited resources, such as SAR capacity or lack of local expertise, guides working in the Arctic encounter with more severe consequences in the case of accidents.

Therefore, a key innovation of this paper was the development of a distinct category of competencies focused on local knowledge. This framework acknowledges that Arctic guides require a specialized understanding of the region's unique challenges and that, on the micro level, despite many commonalities, the regions and places vary significantly. Thus, varying knowledge is needed to manage tourist safety. Given the aspect of various SAR capacities, the research pointed toward Greenland, where guides often need to rely on a higher degree of self-sufficiency in wilderness settings.

The research highlighted differences in SAR capabilities across regions, especially in Greenland, where guides often face a far greater need for self-sufficiency. Due to limited

resources and vast, remote landscapes, guides in Greenland must rely heavily on their skills and judgment, as immediate assistance is rarely available in emergencies. This elevated need for self-reliance underscores the unique demands placed on Arctic guides. Finally, Publication II indicates the need for knowledge acquisition based on experience and training, which is discussed in detail in Publications III and IV.

4.3 Publication III

Title: Developing Safety Competencies Among Arctic Nature Guides in Training: An Analysis of Student Experience

Abstract
This paper reports on a year-long longitudinal empirical study conducted in Svalbard that sought to explore safety competency development among tour guides undergoing training. This paper seeks to clarify how tour-guide training in the Arctic contributes to enhancing safety and risk management competencies. The data-gathering methods employed in this study included participant observation by a researcher immersing herself in the learning process of students participating in the ANG program. The purpose of the study was to explore the use of experiential learning theory in tour guide programs, and the findings from the study indicate that experiential learning theory may be an effective tool for developing students' safety and risk management competencies. This study contributes to existing knowledge on safety training for tour guides, providing insight into how training programs can best prepare tour guides for functioning in extreme environments. It also provides recommendations for further research related to tour-guide safety training.

Keyword: tour guide, safety competence, risk management, experiential learning, Arctic tourism

Status: Published in *Studia Periegetica*

> **Hild, B. O. (2023). Rozwój kompetencji przewodników w zakresie bezpieczeństwa arktycznego: analiza doświadczeń uczestników programu Arctic Nature Guide. *Studia Periegetica, 44*(4), 7–30. https://doi.org/10.58683/sp.566**

The aim of Publication III is to explore the process of safety competence development in the ANG university program in Svalbard and answer the following research question:

RQ3: What is the principal role of adventure guides operating in the Arctic, and what competencies does this role involve?

This research differs from my previous studies, as I used a participant observation approach, spending over a year living in Svalbard and closely observing students within their learning environment. The premises for using this ethnographic approach lie within "the understanding of social life at the microlevel; uncovering meaning in the close and detailed study of interaction on how social actors work together to construct social order and, at times, change that order in subtle ways" (Coffey, 2018, p. 8).

After obtaining permission to conduct participant observation, I began data collection in August 2021 and continued until June the next year. I participated in all activities, except one week-long field trip during winter, due to my personal health problems, and joined students in their classrooms indoors and outdoors, taking field notes on activities and students' behaviors during activities. Data collection included direct field observations, note-taking, recording my own notes and diaries (both in writing and on recorder when in cold conditions), taking pictures, field interviews, online and printed surveys, and exit interviews with five students at the end of data collection. Due to the inability to process all gathered data for the purpose of Publication III, primary sources for data analysis were derived from participant observation collected as field notes. These sources included 48-page field notebooks, 28 memos, and several field voice recordings. Atlas.ti software was used to organize the digitized data, while the notes in the notebooks were analyzed manually.

According to Neuman (2011, p. 421), "people often enjoy field research because it involves hanging out with people; however, it can be difficult, intense, time consuming, emotionally draining." While I was able to use my personal experience and knowledge from being a former student of the program and guide in Svalbard for the majority of data collection, a constant challenge was the small and close-knit community that forms the population of Longyearbyen, Svalbard. Sharing living and working spaces with community members who are also research participants has often been intense and, at times, challenging. To maintain professional distance from the people involved in the research, I continually explained the transparency of my role in each step of data collection to the research participants. Other strategies included writing a diary and discussing these challenges with my supervisor Gunnar who was not related to Svalbard and guiding community. What I considered the advantage of my position was the practical familiarity I had with both the location and subject matter of the study—gained through my experience working as a guide on Svalbard, my technical skills that allowed me to accompany students in the field, and my overall understanding of the program curriculum. By possessing prior knowledge in those areas, I was able to focus more on the content of the studies and students' experiences rather than other logistical difficulties. A key challenge in this paper was not data collection but maintaining as much neutrality as possible toward students and instructors while living within a close-knit Svalbard community. Despite addressing the gap in understanding the competency development among the guides, this study also contributes to the limited research on the use of participant observation as a method in guide education studies.

I conducted 89 field days, joined four multiday (between 4 and 7 days) field trips, and participated twice in day trips, which in total accounted for 23 days outside of settlement. During the year, before each trip, I created four surveys related to the measurement of self-efficacy and its relationship with the content of the studies. I also conducted multiple interviews, as well as exit interviews with six students at the end of the course. During that year, I collected an enormous quantity of data, and due to limited resources, I decided to focus this part of my Ph.D. on the educational methods used to build students' competencies. This allowed me to focus on how specific teaching approaches contribute to skill development in Arctic safety.

The paper's findings center on the use of experiential learning theory in the training program but also highlight other essential aspects of designing and facilitating such programs. These include the benefits of extended training duration, the value of reflection

between students and teachers, and the importance of real-life scenarios for effective learning. These findings could be applied to other adventure guiding programs outside of the Arctic region. The original plan for the study/research was to continue using participant observation in other guiding schools to compare methods and program facilitation. However, after gathering and analyzing data for Paper III, I was offered the opportunity to teach and develop an adventure guide program in Greenland for the last 1.5 years of my Ph.D. journey. This shift from observer to teacher inspired a new direction for Paper IV, which focuses on program design and facilitation from the teacher's perspective from three researched guiding schools in Iceland, Svalbard, and Greenland.

4.4 Publication IV

PAPER IV: Co- written with Jeff Jackson, Professor at Algonquin College, Canada

Title: The Arctic Guide's Mindset: Enhancing Safety Competence Development from the Perspective of Instructors

Abstract:

This study focused on the fundamental importance of safety knowledge and competencies for adventure guides leading trips in the Arctic. Due to the challenging environment, remoteness, and limited resources, the safety of tourists underscores the necessity for land-based guides to possess skills that aid in preventing and responding to accidents.

The research aimed to critically assess existing Arctic adventure guide training programs in Svalbard, Iceland, and Greenland. Six instructors facilitating these curricula were interviewed to examine the realities and strategies employed to develop safety competency in different study programs across the Arctic region. Despite the critical nature of these competencies, research on the education of adventure guides is lacking. The study examined how curriculum design and facilitation impact guides' training in fostering students' safety competencies and risk-management strategies. The findings indicated that effective program facilitation hinges on interaction with the realities of the Arctic environment and a mutual understanding of the guide's role. They also revealed significant cultural differences in risk perception among Arctic guides. Moreover, the research identified a gap in existing curricula, suggesting future studies should prioritize knowledge-sharing and the integration of diverse perspectives and Indigenous knowledge to enhance guide competency development across the Arctic region.

Keywords: Arctic safety, Arctic tourism, competence, guide training, curriculum design

Status: Accepted with minor revisions at the *Journal of Adventure Education and Outdoor Learning.*

This study focuses on the fundamental importance of safety knowledge and competencies for adventure guides leading trips in the Arctic. Due to the challenging environment, remoteness, and limited resources, the safety of tourists requires land-based guides to possess skills that aid in preventing and responding to accidents. Despite the critical nature of these competencies, research on the education of adventure guides, particularly

concerning safety competency development, risk management, and guide practices in the Arctic, is lacking.

Therefore, this research aims to critically assess existing adventure guiding programs in Svalbard, Iceland, and Greenland. Six instructors facilitating these curricula were interviewed to uncover the realities and strategies employed to enhance safety competency development in different study programs across the Arctic region.

The study examines how curriculum design and facilitation impact guides' training in fostering students' safety competencies and risk-management strategies. The findings indicate that effective program facilitation hinges on a mutual understanding of the guide's role and revealed significant cultural differences in risk perception among Arctic guides, particularly Greenlandic ones. Moreover, the research identified a gap in existing curricula, suggesting future studies should prioritize knowledge-sharing and the integration of diverse perspectives and Indigenous knowledge to enhance guide competency development across the Arctic region. The research addresses this existing knowledge gap in safety education and tourism operations in the Arctic. The outcomes contribute valuable insights for further research in the domains of OAE, Arctic tourism, and field operations in polar regions.

Building on Paper III, this fourth paper was motivated by the need for mapping various educational strategies to acquire safety competence in guiding schools in the Arctic, with an aim to answer the following research question:

RQ3: What strategies are used to facilitate safety competencies development in guiding schools in the Arctic?

This article does not compare guiding schools, as the programs operate under different premises and are based on various educational levels (university vs. secondary education). However, it examines the shared similarities and challenges unique to the Arctic while also considering the influence of local culture and environment.

Six instructors from schools in Iceland, Svalbard, and Greenland were interviewed for this study to examine their perspectives on program design and facilitation and the importance of cultivating a safety-conscious mindset to develop skilled and competent outdoor leaders for Arctic adventure guiding. In this research, the perspective of instructors aligned with previous findings highlighting the critical role of environmental factors, such as challenging weather, emergency preparedness, and required competencies. The shortcomings of the program design and facilitation presented in Publication IV highlight the potential to integrate a more holistic approach to training design and facilitation, including knowledge-sharing between educators and a more structured pedagogical approach for facilitating and evaluating the learning process. These findings align with Publication V, which focuses on knowledge co-creation between stakeholders.

Publication IV shows that safety competence and risk management are deeply rooted in cultural understanding and relationships with the local environment. Therefore, further research in Greenland or other Indigenous communities in the Arctic should prioritize the inclusion of traditional knowledge by using Indigenous methodologies, ensuring that such knowledge is not undervalued but equally represented, especially when developing tourism education and tourism policies in the region.

4.5 Publication V

Paper V (originally published extended abstract including research questions): Co-written with Gunnar Þór Jóhannesson

Title: Complexity of tourist safety in the Arctic: stakeholders' knowledge co-production/Fostering safety knowledge co-production related to tourist safety in communities in the Arctic

Abstract

Due to the growing demand for tourism in the Arctic coast communities, the knowledge base, skill set, and competencies of the tourism labor force must be improved by strengthening guide professionalism and safety in the region. Complex logistics, rapidly changing weather, and remoteness, as well as the effects of climate change, play a significant role in field practices, especially for tour operators. Because of the growing interest in the region, the likelihood of accidents due to these factors increases, leading to stress on limited local emergency services. Recent findings have shown that local knowledge, experience, and training have been recognized as essential in ensuring safety, while data on knowledge exchange between local stakeholders are limited. Knowledge of the relationship and interaction between the stakeholders, including public tourism boards, rescue services, academia, tour guiding schools, and guiding companies, is essential in the coproduction of knowledge on ensuring tourist safety in the Arctic. By exploring stakeholders' capacity and standpoints related to issues on safe tourist operations, we seek to explore the possible ways to collaborate in knowledge coproduction. Hence, our study seeks to address literature gaps by examining the following:

- What are the safety concerns related to extreme weather events for stakeholders operating in the Arctic islands?
- What is the current state of safety-related knowledge-sharing between the rescue services and tourist companies?
- What strategies and resources are needed to establish collaboration between the rescue services, tourist companies, and guiding schools located on the Arctic islands?

With an aim to understand the process of potential collaboration on tourist safety in Arctic coastal communities, we organized workshops to collect the data. These workshops are planned for in winter, spring, and fall of 2023 in Iceland, Svalbard, and Greenland. Arctic Guide Safety Education Collaboration, which hosted the workshops, is a project with a focus on enhancing knowledge-sharing in the development of guide education in the Arctic environment, highlighting the involvement and integration of research on tourist safety in the Arctic coasts. Collaborating across educational levels creates an opportunity to link and transfer knowledge and experiences between different tourism educators in the Arctic, thus preparing the ground to produce materials for teaching development and continue transnational collaboration in the field.

Data collected during the workshops was recorded, transcribed, and organized into thematic themes. We analyzed the findings using a theoretical approach of complexity and collaborative research theories. The research contributes to the knowledge of tourism management and the safety field, providing insights into a process of potential collaboration in the Arctic and coastal communities facing similar challenges, building resilient infrastructure, promoting knowledge-sharing, and enhancing safety practices while addressing the importance of stakeholders' cooperation, including that of researchers and local communities, in tourism destination development.

Keywords: natural hazards, occupational safety, risk management, knowledge co-production, Arctic tourism

Status: Extended abstract published in ESREL

Hild, B. O. & Jóhannesson, G. Þ., 2023, Proceedings of the 33rd European Safety and Reliability Conference (ESREL 2023) Edited by Mário P. Brito, Terje Aven, Piero Baraldi, Marko Čepin and Enrico Zio ©2023 ESREL2023 Organizers. Published by Research Publishing, Singapore. doi: http://10.3850/978-981-18-8071-1_P707-cd

The aim of Publication V was to conduct action research and shift the focus from the previously used bottom-up approach to a top-down perspective. This shift enables an understanding that extends beyond practical implementation to include policies and the role of decision-makers among stakeholders involved in the tourism industry across the region. The objective of this publication, an extended abstract that will later be developed into a full-scale manuscript, was to address the following research question:

RQ4: How can knowledge co-production between tourism stakeholders in the region enhance safety and risk management on guided trips in the Arctic?

Collaborative workshops were held in each of the study locations to build a regional stakeholder network and assess the capacity to strengthen guide safety competence. While guides make critical on-the-ground decisions, stakeholders play a key role in planning, investment, and broader safety oversight. One of the most valuable forms of investment is the knowledge and experience that guides contribute. As their work is directly affected by guides' performance, stakeholders were seen as essential contributors to safety competence development. The workshops aimed to bridge the gap between these groups and map the knowledge spread across the region.

Three workshops took place in Iceland (February 2023), Svalbard (May 2023), and Greenland (November 2023) in which tour operators; destination management organizations (DMOs), including Visit Greenland, the Icelandic Tourism board, and the Governor of Svalbard; and emergency preparedness actors, including coast guards, SAR, police, and Arctic Commando, were invited and organized by the Arctic Guide Safety Education Network. Between 22 and 30 stakeholders participated in each event. During the meeting, the presentation of the collaborative network occurred with thematic presentations related to various aspects of the safety and risk-management challenges to safety competence among guides in the Arctic. Presentations were delivered by members of the collaborative project in various combinations in each workshop before the discussion, in which stakeholders were divided into smaller groups and invited to actively

participate on presented topics. Each focus group was led by an Arctic Guide Safety Education representative, who recorded audio of the group discussion. Each workshop consisted of a survey among participants before splitting into the groups, and two broad questions were asked to guide the dialogue in groups. The online survey served as data collection for understanding the background of participants, while recorded discussions were analyzed to explore the stakeholder's perspective on challenges and possibilities in enhancing tourist safety and guide's competency development in the Arctic.

The final seminar in November 2024 took place in Reykjavik and highlighted Arctic Guide Safety Education network activities to stakeholders in Iceland. This event provided a platform to share outcomes on collaborative opportunities identified throughout the project and to explore potential directions for further collaboration and research.

Since the first part of this research (Publications I–IV) built upon data collected from guides, this study employed a deductive approach to data analysis, aiming to enrich the insights from the guides' perspective by incorporating the viewpoints of decision-makers within organizations. This extended abstract was published prior to the final Arctic Guide Safety Education Network event, *the First Risk Management and Safety on Guided Trips in the Arctic Conference*, held in Reykjavík on November 11, 2024, where the final findings were presented. These findings will be discussed in the following discussion and conclusion sections.

5 DISCUSSION

My intention with this Ph.D. was to examine the relationship between tourist safety, adventure guides' competence, and risk management strategies on adventure trips in Iceland, Svalbard, and Greenland. This research offers new knowledge on Arctic adventure guide practices and offers understanding on how guides' competencies relate to three interconnected academic fields. Guide competence—especially in managing risk—is the central link across these fields. Drawing on guides' practices, this study reveals the complexity of Arctic adventure tourism operations and aims to improve tourist safety by deepening understanding of the guide's role and competencies.

This chapter discusses the research findings by addressing the key research questions (see pages 22–23, Introduction) in the following order: First, the discussion focuses on the context of Arctic adventure guiding to define the role of the guides and the competencies needed to effectively manage tourist safety on trips in such environments; second, it discusses the development of safety competence through an examination and analysis of guide training programs across the Arctic region; and finally, it explores the advancement of current educational strategies, such as guide training and formal education, while introducing the possibilities of knowledge co-creation with stakeholders in the region. Each section of this chapter is structured around the listed research questions, highlights the contributions of each publication, and concludes by demonstrating how the study addresses research gaps and contributes to building new knowledge.

5.1 The Role of the Arctic Environment on Tourist Safety

In this section, the following research questions are addressed:

RQ1: What is the impact of the environment on tourist safety and risk management strategies in the context of guided adventure trips, specifically the risks and hazards of guiding in the Arctic?

RQ2: What is the principal role of adventure guides operating in the Arctic?

5.1.1. Arctic Safety: Unpredictable, Harsh Environment and Limited Resources for Emergency Preparedness

In this Ph.D., I explore the impact of the challenging Arctic environment on adventure tour guiding practices. These challenges include hazards such as sea ice, which is often used by guides as a transportation route, but has also recently contributed to fatalities in tour guiding on Svalbard. In Iceland, guided activities on mountains and glaciers have similarly resulted in fatal incidents. Winter excursions often expose participants to avalanche risks, which pose a serious threat to tourist safety; only a few years ago, in 2020 tourists on a snowmobile day trip in Svalbard lost their lives in such an event. Similarly, rapidly changing weather, low temperatures, and strong winds significantly increase the risk to tourists' well-being and safety.

To explore RQ1, how guides perceive and respond to these challenges in practice was first investigated. This research question emerged from exploring the relationship between the Arctic environment and guiding practices, recognizing that those Arctic elements, such as extreme weather, remoteness, lack of resources, and climate change, are critical factors that set Arctic guiding apart from more conventional adventure guiding contexts. The research

participants consistently approached the possible consequences in the event of mishap with seriousness, and although guiding is loosely regulated in the region, most guides and companies understood the severity and consequences of their decision-making on guests' well-being and safety.

Not only the guides but also other stakeholders—such as regional SAR agencies—identified limited resources and long distances as key factors directly affecting rescue capacity. These findings (Publication V) align with previous research on operations in the Arctic climate (Albrechtsen & Indreiten, 2021; Andreassen et al., 2020; Dahlberg et al., 2020; Dallat et al., 2017; Færevik & Wiggen, 2014; Kruke & Auestad, 2021). However, the novelty of this study lies in its contribution to the tourism dimension, offering new insights into how these operational constraints intersect with the growing demand for Arctic adventure tourism.

In their research on injuries in cold climates, Ikäheimo and Hassi (2011) stated that such injuries are largely preventable and therefore considered unacceptable from a public health perspective. In the current study, the interviewed guides described the Arctic as cold and wild, with dynamic weather conditions that mean being unprepared can lead to fatal consequences (Hild & Weiler, 2024, p. 27 [Publication I]). Considering this, my research findings align with the view that, even in the challenging context of Arctic adventure guiding and the nature of adventure tourism, incidents, near-misses, and accidents are largely preventable and should be regarded as unacceptable.

5.1.2 Arctic Adventure Guide's role

The guides that I interviewed emphasized their self-reliance and leadership role in light of the risks and hazards integral to the Arctic environment. They described the nature of the job as balancing the maintenance of tourists' perceptions of risk-taking while minimizing the environmental impact of their activities. Based upon Bentley et al.'s (2000) research, which found that any single factor is insufficient to produce an accident risk, it is crucial to understand the interplay between environmental conditions, such as strong winds, low temperatures, and poor visibility, and other factors, like group dynamics or meeting guests' expectations. These factors are an integrated part of the guide's leadership position.

These findings extend the influential work of Black and Weiler (2005), who sought to categorize the various roles of guides. In collaboration with Weiler on Publication I (Hild & Weiler, 2024), I sought to advance this line of inquiry by explicitly addressing the role of safety in guiding practices. In the context of the Arctic, with extreme conditions, the primary role of the adventure guide becomes one of managing risk and ensuring tourist safety before other roles. My research thus broadens existing guide role frameworks and offers a novel understanding: the adventure guide's role is heavily shaped by the context in which guiding takes place—in this case, the Arctic.

While guides showed strong awareness of the risks they are exposed to daily, findings from Publication II (Hild et.al.,2023) revealed that some were unsure whether legal responsibility for tourist safety lies with the guide or the company. This uncertainty prompted a follow-up question in my research: *"Whose responsibility is it to ensure tourist safety?"* As expected, many guides pointed to their duty of care—referring to the obligation to take reasonable steps to protect others—yet struggled to elaborate on the legal

implications of this duty. In contrast, guides in managerial roles, such as owners or CEOs (Publication I and II), emphasized that guides are individually accountable and that companies typically do not offer support in the event of accidents. These novel findings underscore the need for further research into the legal and structural dimensions of responsibility in Arctic tourism, especially considering the growing demand for guided services. As Arctic safety is an emerging field, this contribution provides important insight into how the absence of clear health and safety work regulations across the region can negatively affect both guide working conditions and tourist safety.

5.1.3 Contribution to knowledge creation

By addressing RQ1 and RQ2, this study lays a theoretical foundation in the neglected area of tourist safety on guided trips in the Arctic region. My study focuses on bridging the fields of Arctic safety and adventure guiding, highlighting how safety practices are integral to guiding in extreme environments.

Across all interviews with guides, the Arctic setting amplified the weight of these responsibilities, with the guides often stressing that limited regional resources demand high levels of self-sufficiency in case of accidents. Publication I focused on these responsibilities.
Despite recognizing the crucial role guides play in managing tourist safety, an acknowledgment for their professionalism in the industry is lacking.

During my research, I encountered many situations when the research participants were expressing their concern, frustration, but also acceptance toward the lack of established career paths for guides that could improve the overall quality of guiding, with a focus on safety standards, such as requirements for education, training, or licensing. Prior research on adventure guiding has highlighted the critical role of professionalism in ensuring quality experiences and maintaining tourists' well-being and safety (Andersen & Rolland, 2018; Berbeka, 2018; Burdenski, 2018; Cheung, 2021; Karlsen, 2022). Indeed, recent studies (Hovelsrud et al., 2023) have emphasized the urgent need for a formal system to certify guides and define specific skill requirements to improve the quality of guiding and elevate the guide profession.

Given the lack of a legal framework for competence recognition in the Arctic region, this study aims to guide policymakers toward recognizing the necessary competencies within the field and establishing clear guidelines for legal responsibility in adventure tourism. By building an understanding of the guide's role in the Arctic context (Publication I) and advancing it through the identification of the competencies needed to fulfill that role (Publication II), this research takes important steps toward informing future training, certification systems, and policy development in Arctic adventure tourism. The next section discusses the guide's safety competence.

5.2 Guide's safety competence

5.2.1 Defining Safety Competence Development as a Tool in Managing Tourist Safety

In this section, the following research question is addressed, with a particular focus on its second part:

> RQ3: What is the principal role of adventure guides operating in the Arctic, and **what competencies does this role involve?**

To explore the competencies that guides possess to perform their roles effectively, I conducted interviews with practicing guides that contributed to Publication I and II. Publication II investigated the safety and risk-management competencies expected of guides leading adventure trips in the Arctic. According to Ewert and Wu (2007), the guide is a decision-maker on trips that involve high risks, and as highlighted in **Publication II**, Arctic adventure guiding falls into the category of high-risk activities. Guides in their leadership roles must therefore make independent decisions based on their training and expertise. This Ph.D. adapted the definition of risk as ´uncertainty, with potential for both loss and gain" (Smith, 2021, p. 4), acknowledging that guides in their leadership roles must make independent decisions based on their training and expertise. Despite their training and expertise, they need to employ sounds judgment based on situational awareness, but also on what may be acceptable or not in given situation. For instance, based on the tourist's ability to perform the task.

To build on Publication I, I chose to position my research within the framework of Van Klink and Boon's (2003, p. 6) definition of competence as "bridging the gap between education and the job requirement." By doing so, I attempted to broaden the theoretical understanding—if the guides assume the role of safety management in the Arctic, what competencies are required to fulfill that role?

To situate my research within the broader context of outdoor education literature, I used Shooter et al.'s (2009) model of outdoor leadership skills as a foundational framework (Hild et al, 2023 [Publication II]). The study found that these competencies are aligned with the broader principles of adventure tour guiding and outdoor leadership as outlined by Shooter et al. (2009). The general competence of outdoor leaders includes technical, interpersonal, and operational skills; however, this Ph.D. research extended the existing theory by introducing an additional layer shaped by the unique environmental challenges of operating adventure tourism in the Arctic. This layer, described as *situational knowledge* (Publication II), includes guides' awareness of environmental factors unique to the region, such as knowledge of specific weather patterns, terrain, language, cultural-social context, and understanding of local nature. This situational knowledge is essential for effective risk management and sound decision-making.

Table 3. Arctic Guide Safety Competencies Framework

Technical skills	***Interpersonal skills***	***Operational skills***	***Situational knowledge***
First aid, navigation, reading and understanding meteorology, avalanche training, polar bear safety, skills related to specific activity (snowmobile travel, boat sailing, skiing, climbing, hunting) *Knowledge about correct use of equipment*	*Leadership, planning organization, teaching, confidence, stress and time management, storytelling, ability to assess guest's skills*	*Decision-making, reading guests, communication*	*Knowledge of specific weather patterns, terrain, language, cultural-social context, knowledge of local people, customs and traditions, understanding local nature*

The findings on competencies revealed that participants generally had a strong understanding of the guide's role, as shaped by the Arctic environment. While *situational knowledge* was highly valued, views differed on whether being local or gaining experience over time were more important. Greenlandic respondents emphasized traditional knowledge, local language, and familiarity with the environment as key to competent guiding. Later, in discussions with guiding school instructors (Publication IV), Indigenous perspectives on risk and safety emerged as significant, though links among training, competencies, and risk understanding were often unclear. During my teaching in a Greenlandic guiding school while collecting data, the students frequently noted that guides' safety practices were often followed to meet tourist expectations rather than local norms—for example, wearing life vests, which locals did not view as essential. These findings address a gap in Arctic safety literature by highlighting the importance of cultural context, guide mindset, and local resources in defining competence and developing competence training.

5.2.3. Contribution to knowledge creation

Knowledge of the competencies essential for ensuring tourist safety on guided trips in the Arctic is critical for effective risk management. Ultimately, safety competencies enable guides to make informed decisions about whether and how to proceed with activities, as well as how to adapt plans when conditions change during a trip. Building on outdoor leadership research, which has focused exclusively on defining outdoor leadership competencies (Buell, 1981; Green, 1981; Priest, 1984, 1986; Raiola, 1986; Swiderski, 1981), my Ph.D. thesis advances other studies by recognizing the unique demands of the Arctic context for outdoor leaders. This study revealed that, beyond general outdoor leadership skills, Arctic guiding required *situational knowledge*. This knowledge—often referred to as local *know-how*—guides decision-making but is difficult to define, assess, or

put into rules, as it constantly adapts to changing environments. Its value lies in the guide's ability to interpret the local environment, including cultural and environmental aspects, and respond effectively.

Indreiten et al. (2018) showed that "those that participate in fieldwork acquire new experience every day and thus maintain and develop their tacit knowledge" (p.1944). Their research found that learning is acquired from practical experiences on individual and group levels and that sharing knowledge is one of the actions that contributes to organizational learning. Tacit knowledge, including intuition and abstract and incomplete knowledge, is often passed among guides within the guiding companies and cannot be stored and accessed; rather, it must be gained (Nonaka & Takeuchi, 1995). In contrast, explicit knowledge represents a body of evidence—shared, documented, and communicated knowledge that can be found in manuals and reports. However, a key challenge with both knowledge systems is that the Arctic's unstable conditions require guides to continuously develop and maintain their competencies. My research participants described this knowledge as gained through experience and/or training.

These findings are important for the emerging field of Arctic safety, where many sectors—such as sea drilling, marine traffic, and construction—rely on rule-based decision-making. In contrast, Arctic guiding requires a dynamic and adaptive approach. While guidelines can support decision-making, final judgments should rely on the guide's expertise. Therefore, this research reveals that such competencies cannot be acquired once and for all but must be practiced and refined regularly.

Based on these findings, this study provides the first complete overview of risk management and safety competence required of Arctic adventure guides and introduces a new discourse on situational knowledge within the Arctic environment. Developing this safety competence framework formed RQ 3 and 4, which focus on understanding competence acquisition and training programs. In the next section, I explore how safety competence development is incorporated in the guide training program curricula and how it is facilitated, both from the perspective of the instructors and the students.

5.2.4 Strategies for Safety Competencies Development in Guiding Schools in the Arctic

In this section, the following research question is addressed:

> RQ4: What strategies are used to facilitate safety competencies development in guiding schools in the Arctic?

In Publications I and II, guides' education and training were found to be crucial in developing safety competence. Building on these findings, I explored this concept further by conducting studies that allowed me to observe guide training in practice. First, in Publication III, I explore how the experiences of students participating in the ANG program on Svalbard were transformed into reliable knowledge applicable to working as a tour guide in the Arctic. Publication IV focuses on incorporating the perspective of instructors working in the guiding schools.

My work addresses a gap in the literature regarding safety and risk management by observing learning processes. It took approximately less than a semester to understand the

patterns I was observing—preparation, participation, reflection, and knowledge creation among students—and link those with the existing theories. The findings of Publication III indicate that by using experiential learning theory (Kolb, 1984), students are able to enhance their critical thinking skills and ability to make decisions as leaders of retrospective groups.

Students' preparation in program activities, active participation, and debriefing in both small and large group settings corresponds with experiential learning theory (ELT). These practices are based on conscious educational experiences as a fundamental factor in knowledge formation that occurs in a systematic and cyclical manner (called Kolb's cycle). By exposing students to real-life tour-guiding situations and decision-making scenarios, their leadership skills are enhanced. This alights with constructivism approach used in OAE, were knowledge and competency, as well as self-esteem of students is developed through direct engagement with experience, particularly through training programs and daily practice. Instructors using a constructivism approach employ other methods, such as scaffolding, peer feedback and critical reflection that help students to acquire desired skills, but for the most, learn from, within and about their environment in which learning takes place.

This finding aligns with previous research in outdoor education, as much as it connects to findings from Publication IV, where training should also account for developing the guide's mindset focused on safety. This mindset, in the perspective of instructors working in tour guiding schools in Iceland, Svalbard, and Greenland, was built in relation to three substantial factors: the Arctic context, guiding skills, and culture. In Publication IV, interviewed participants once again pointed toward the importance of situating the context of guiding within the environment in which it occurs. The findings highlighted that a guide's self-reliance and safety competence are particularly developed in areas with limited resources, such as SAR capacities, where the challenges of the environment require greater flexibility, adaptability, and resourcefulness. While findings from Publication III showed that real-life scenarios were crucial in mimicking the guide's working environment within the guiding program, Publication IV revealed instructors' arguments that situational decision-making could be better evaluated if the students had undergone practical work placement or internships during their studies. This also pointed toward the lack of safety and risk-management education among instructors working with those competence developments, raising concerns about instructors practice and teaching.

5.2.5. Contribution to knowledge creation

Findings from Publication III contribute to existing research within outdoor education by providing an initial exploration of the use of experiential learning theory in the tour guiding programs. Since safety competence has not been extensively addressed in previous research on guides' training, this initial foundation offers a valuable starting point for future researchers. The novelty of this study is to situate guide training under the OAE umbrella and to draw on existing theories in the field that align the closest to adventure guiding.

Another significant contribution of Publication III is the contribution to research methods, as this study employed a longitudinal participant observation method for a tour guide training program, which has not been previously done. By adopting this method, I was not

only able to provide valuable insights into guide training in Publication III but also contribute to the further development and critical evaluation of research methodologies in the field of OAE.

Furthermore, by providing an overview of training programs for guides in the Arctic, this study highlights a previously overlooked issue. Findings from Publication IV show that, despite facing similar environmental challenges across the Arctic region, Greenlandic guides are generally more accepting of higher levels of risk in both their daily and work lives. Although this attitude might be perceived as negative or risky by Western cultures and tourists, understanding these cultural differences is crucial for designing and facilitating effective learning programs. These findings also pave the way for further research into these cultural dynamics. As mentioned by one of the instructors, it is important not merely to replicate what has been done in other places but to investigate how knowledge can be shared to benefit others, accounting for both environmental and cultural differences. Thus, knowledge co-creation and dialogue among stakeholders are essential to developing more inclusive and culturally sensitive approaches to guide education, tourist safety, and risk management.

These findings highlight the usefulness of this co-creative approach and suggest improved integration of diverse perspectives and knowledge systems, including Indigenous knowledge, in further enhancement of guides' training development. The findings also underscore the importance of knowledge-sharing as crucial for advancing future studies and fostering dialogue among stakeholders.

In the following discussion, I describe the potential for knowledge-sharing to create a platform for knowledge exchange and collaborations among stakeholders. Furthermore, I explore the opportunities for knowledge co-creation, aiming to establish more integrated and consistent discourse on tourist safety and risk management within the Arctic region.

5.3 Enhancing Safety and Risk Management Strategies in the Arctic: Co-production of Knowledge Between Tourism Stakeholders

This section addresses the following research question:

> RQ4: How can knowledge co-production between tourism stakeholders in the region enhance safety and risk management on guided trips in the Arctic?

The development of a collaborative platform for knowledge co-creation is also discussed, with a focus on integrating diverse perspectives to contribute to the development of more-effective safety and risk-management strategies in the Arctic region. Publication V, designed as action research, was built on the previous publications (I–IV) and emerged organically from the results of earlier studies within this Ph.D. As I approached various stakeholders during the earlier stages of the Ph.D. process, I realized the lack of dialogue between actors that often possessed the same desires—to elevate existing knowledge and practice, eventually contributing to better safety on guided trips in the region. However, despite the almost 30 interviews (of which 23 contribute to the body of this research) with

stakeholders that form Publications I–IV, formal modes of collaboration and knowledge exchange between stakeholders were absent.

The frustration of my research participants regarding the lack of recognition for the importance of the guide's role, competence, and training as potential strategies to reduce accidents was often described as something *someone has to do something about*. Even in the interviews, while respondents acknowledged the significance of my research and referred to it as crucial and groundbreaking for addressing these issues, they seldom identified ways in which their valuable knowledge could contribute to change. This lack of recognition for the importance of their knowledge contribution was puzzling to me throughout the research process. Therefore, the establishment of Arctic Guide Safety Education Network (discussed in Publication V) happened organically - networking across fields and stakeholders became the channel through which my research was able to distill knowledge at the core of the issue and direct it toward decision-makers, helping to give voice to the stakeholders who felt their perspectives were otherwise overlooked. I then realized that the core issue may not be a lack of knowledge about collaboration, but rather the absence of formal knowledge-sharing or accessible platforms by which stakeholders involved in Arctic adventure guiding can exchange information.

During the workshops organized in Iceland, Svalbard, and Greenland, the project was able to gather 80+ stakeholders to exchange knowledge. Each workshop followed a similar structure: brief presentations by network members on their operations and the challenges they faced, followed by group discussions among participants during which data were collected. The majority of the stakeholders expressed interest in gathering and sharing their knowledge in all workshops, ultimately joining the final event for project dissemination in Reykjavik, November 2024. During the conference, some stakeholders were given the opportunity to present their findings and insights, contributing to a collaborative exchange of ideas and experiences.

5.3.1 Contribution to knowledge creation

As Publication V was only developed and published as an extended abstract, it does not provide a full contribution to the comprehensive body of work in this Ph.D. However, as a result of action research, in which stakeholders participating in the previous research process were able to gather and discuss further possibilities of knowledge sharing, it serves as a fundamental work for further development of key concepts. The initial findings from the collected data align with Saville's (2002, p. 8) observation that large numbers of tourists pose a challenge for the very limited local response services. In addition to environmental characteristics around which my PhD has been formed (see Chapter 2.2.1. Arctic Safety Factors), stakeholders frequently highlighted human factors. In particular, they noted that tourists participating in adventure trips are often insufficiently prepared to face the challenges they encounter. This added dimension represents a significant challenge to the role of the adventure Arctic guide, who must simultaneously enrich tourists' experiences, preserve the natural environment, and ensure the safety and well-being of all participants. The lack of clear regulations and authority coordination, as well as need for better collaboration between companies, educational institutions and governing bodies were pointed out, both as challenges and opportunities to enhance tourists' safety. Such findings highlight the importance of a shared understanding of risk and safety in the Arctic environment among stakeholders, as well as the dynamic nature of risk management

in extreme environment. Stakeholders actively engage with and develop their understanding of what constitutes risk in their operations and how such conceptualizations should inform practice. The contribution of this publication lies in bridging practice and theory, with the aim of advancing and benefiting both. Although Publication V has so far only been published as an extended abstract, more detailed research findings in the future would help to explore the possibilities for knowledge co-creation in greater depth.

To successfully manage tourist safety, the dynamic nature of the Arctic environment must be recognized, and guides must be equipped with the skills necessary to assume this responsibility. The action needed is to integrate various approaches to safety and risk management by emphasizing the importance of working across cross-cultural perspectives and knowledge systems to create more inclusive and effective strategies that can be shared across the region. The research showed that stakeholders apply both similar and diverse approaches to risk management and are actively seeking ways to improve their practices. They all have address possibilities of collaboration as a way to enhance tourist safety in the region. Furthermore, the study highlights weaknesses and opportunities for collaboration in knowledge exchange and shows further need for more dialogue opportunities among stakeholders.

Last, Publication V served as an attempt to address the prominent issue that had initially guided this Ph.D. process—the under-recognition of guides' expertise by authorities and some tourism operators, which limits its integration into policy and risk-management strategies in Iceland, Svalbard, and Greenland. By addressing this gap in my study, I hope to have paved the way for future researchers to explore and elevate the role of guides in Arctic safety and risk management.

5.4 Limitations of the research

This research draws on various voices and perspectives of guides and adventure tourism stakeholders in the Arctic, using the premise of social constructivism design. Through my ability to draw on previous professional, working, and teaching experiences, I was able to access the field and gain trust among the researched population by encouraging research participants to voice their rights and concerns. My Ph.D. focused on capturing the practices of guides, documenting their expertise, and translating it into an academic framework. This process aimed to preserve and share their practical knowledge while bridging the gap between hands-on experience and academic discourse. However, as any other researcher, during my research journey I have encountered certain limitations.

By working with guiding communities, living among guiding students, and organizing workshops with stakeholders, I myself became a platform for knowledge exchange. However, this immersive experience often revealed the limitations of what I assumed to be my privilege as a researcher—the ability to communicate effectively with all involved and to utilize all possible connections and knowledge that exist within these communities. As mentioned earlier in the thesis, opportunity sampling employed to collect data in Greenland Svalbard was crucial for successful data collection. However, constrains such as limited funding for the research activities meant that some of these opportunities may have been missed. This challenge highlighted the complexities of bridging diverse perspectives and the importance of mutual understanding in knowledge co-creation when navigating

between the public and private sectors. In this context, research is often too vague, impractical, and slow from the private-sector perspective, while the public sector frequently lacks funding and resources (including human resources) to invest in assessment of practices and studies related to safety topics.

5.4.1 Lack of integrating methods

The first challenge of my Ph.D. was the lack of systematic data related to SAR operations regarding tourism in the Arctic, which made it difficult to analyze trends and identify important gaps in safety and risk management by using quantitative methods. Such methods are often recognized as more transparent in decision-making for stakeholders. I strongly believe that the ability to present quantitative data would strengthen the research, both when discussing risk and safety management by guides and when advocating for more research on practice—both to highlight the need for more knowledge in the field and to recognize existing knowledge among guides. While most research highlights the importance of guides' knowledge, it also indicates that safety is generally well managed. However, such research lacks a clear understanding of *how well* safety is managed, as it relies on the perspective of the individuals. By employing quantitative or mixed methods in future studies, researchers could enhance their understanding of the current situation and gain more precise insights to guide field practices and their effectiveness in risk management.

5.4.2 Narrowing field to land-based tourism

The second challenge of my Ph.D. was its strict focus on land-based guiding, which represents a small part of guiding activities in the Arctic region. By focusing on a particular group of guides and defining adventure tour guides working on land as research participants, this research might have overlooked the perspective of guides working on land when guiding cruise tourists. Although this design was purposeful—given that guides on cruises operate under maritime law and have their own, albeit often limited, medical resources, such as a doctor on board—their knowledge and practices could still share similar insights for guiding in the region. These similarities should be further researched, especially if the law implementation in places such as Greenland requires local guides on board. With a focus on cultural understanding of safety and risk management, further research contributing to the knowledge on this topic is highly needed.

5.4.3 Gender inclusion in the research

The third challenge of my Ph.D. was the lack of gender equality in the representation of voices within the studies. This has been a significant concern for me, especially as I realized that women's voices are underrepresented in guiding, outdoor education, and safety science within academia even before I have started my Ph.D. journey. Research published at the beginning of my studies shows that male guides are viewed as more attractive and competent than female guides (Banerjee & Chua, 2020), but due to strong focus on intersecting elements of the research fields, I was not able to fully explore the role of female guides. Zhang and Zhang's (2020) research on tourism and gender equality "shows that the lack of a multidimensional perspective has stagnated the knowledge contribution in this field of tourism" (p.10). To address the gender gap, I have actively attempted to involve women in my research. However, I have often faced refusals, with

some women expressing that they felt they lacked the necessary knowledge or were *not good enough* to contribute. Warren and Loeffler (2006) highlight the tendency of women failing to recognize their technical expertise or lack of confidence despite being highly capable outdoor leaders. This shows not only the gender disparity but also the challenges women face in feeling confident and valued in guiding and outdoor leadership. This issue was particularly difficult for me during the data collection and analysis for Publication IV, where none of the teachers involved were female. While some schools at that time did not hire women to teach, even in schools where women were employed, many still chose not to participate in the study. After completing the data collection, I became a teacher at a guiding school in Greenland myself, where I quickly realized how important it was for students to have gender role models. Writing Publication IV has been a struggle, as I feel a significant limitation in not being able to represent women's voices in the research. The majority of research cited in this PhD has, in fact, been written mainly by men. Other practical issues arose when organizing workshops, where the majority of stakeholders from both the governmental and private tourism sectors involved in risk management were men. Although the preliminary findings of that action research do not emphasize the significant role of men's voices, future studies should aim to bridge this gap by addressing gender issues and promoting a more balanced representation of guides, safety experts, and instructors in the field.

Acknowledging the limitations of my research, which aimed to lay the foundations for understanding the interconnected context in which Arctic adventure guides operate, I hope that future studies will address these gaps and contribute with further insights.

The following and final chapter summarizes the research conclusions and outlines directions for future research

6 CONCLUSION AND FURTHER RESEARCH

When I embarked on my research journey, initial findings from the first interviews aligned with Klimko's quote: "You start with a bag full of luck and an empty sack of experience. The journey is to fill the bag of experience before you empty the bag of luck" *(J. Klimko*). During the four years of data collection and analysis, I realized that there is a significant amount of knowledge *out there.* Guides seldom rely on luck; many are reflective practitioners that take their job seriously and continuously work on improving their competence, even years after formal, initial training. At the same time, my research findings persistently highlight a lack of recognition of the guide's knowledge and experience from the governmental bodies and sometimes even tourist companies. This lack of acknowledgment and utilization of the guide's existing expertise puts limitations on how to integrate the practice into policymaking and risk management strategies in the region. Therefore, by examining the relationship between tourist safety, guide competence, and risk management strategies on adventure trips in the Arctic, my research bridges the gap between theory and practice, helping theorists better understand the daily realities of Arctic adventure guiding while promoting the often-neglected voices of guides. In doing so, it contributes to a more inclusive and grounded approach to safety and risk management in the Arctic. At the same time, my research shows that knowledge cannot contribute to practice if merely stored or not grounded in practical or cultural insight—as highlighted in Publication IV, where interviews revealed the need to integrate Indigenous knowledge into Arctic risk-management strategies. Instead, this research must be actively applied, critiqued, and recreated through ongoing engagement with real-world practice and those engaged in knowledge co-production, which in this case are tourism stakeholders across the Arctic region.

To foster engagement between stakeholders the future research should supports the adoption of a systems thinking perspective (Dallat et al., 2017; Hollnagel, 2014), which recognizes the non-linear interactions between various elements of that influence performance- in this case, knowledge sharing. Those interactions became crucial elements in my research, as they revealed critical role of knowledge and competence in managing risks by Arctic adventure guides.

Another crucial aspect of knowledge co-production and further research opportunities lies in adopting an integrated approach to knowledge exchange between countries and regions with well-established research and policies on the adventure tourism industry, such as New Zealand. Another valuable next step would be a follow-up study on the data gathered during the stakeholders' meetings organized by the Arctic Guide Safety Education Network. Analyzing these events in depth could provide significant insights, particularly in the context of advancing knowledge co-creation and optimizing the utilization of resources for risk management in the adventure tourism sector. This could benefit individual countries/islands and foster a more integrated approach toward guide education, knowledge exchange, and increasing the capacity of risk-management strategies across the Arctic region.

My research contributes to the practical aspects of guiding and risk management in the field by identifying key safety competencies that guides should acquire to effectively manage risks in remote and dynamic environments. This contribution may play a crucial role for those involved in guide training, risk management strategies development or policy development. Next steps could involve a deeper exploration of guide training programs, and the methods used to develop safety competence. Additionally, future research could focus on students' self-efficacy and the retention of safety competence years after

completing their training programs, providing valuable insights into the long-term impact of guide education. In light of limited avaibility of guide training at public institutions, further research could aim to better understand the motivation behind individuals seeking guide education, and their job prospects following program completion.

The research questions aimed to integrate the fields of adventure tourism, Arctic safety, and outdoor adventure education, underscoring the value of a cross-disciplinary approach. While some participants possessed expertise in only one field, their perspectives (Publication IV, V) offered valuable insights. Similarly, in Publication II, guides without formal education backgrounds still emphasized the need to combine practical experience with educational foundations in defining safety competence. Findings from Publication I reflect the consistency across the research population, stating that "Arctic safety is a multi-dimensional issue, multifaceted and interdisciplinary in nature, requiring comprehensive and integrative methodologies" (Hild & Weiler, 2024, p. 38 [Publication I]). Since much of the existing research is scattered across these domains, the strength of this Ph.D. lies in its breadth and integrative perspective, rather than depth within a single field.

My research highlights the importance of training and education in developing safety competence. While my findings suggest that Experiential Learning Theory can positively influence the acquisition of safety competence, there is need for further investigation towards more diverse teaching methods. This includes the integrated use of pedagogical approaches alongside current and future technology solutions, such as virtual reality. With limited access to education and costly educational programs, such research could enhance the capacity of delivering safety training that meets the demands of real-world field conditions, discussed in Publication III.

Last, as my Ph.D. revealed, there is an urgent need to integrate diverse methodologies when conducting research among Indigenous populations. Future research should prioritize employing Indigenous methodologies to address cultural differences in Greenland. This step would emphasize knowledge co-creation rather than replicating existing strategies, ensuring that future development of the guide training program, standardization, and general development of risk management strategies in the region are innovative and benefit all countries and nations involved.

Finally, this research draws on the expertise of passionate guides who take their role seriously and, through their daily practice, safeguard the well-being and safety of adventurous tourists visiting the Arctic region. These guides serve as a systematic and scientific representation of their knowledge. However, the true value of utilizing such knowledge depends on stakeholders' ability to put this knowledge into the practice- by creating opportunities and platforms where knowledge can be shared, co-created, and integrated into the decision-making processes to enhance safety and risk management strategies in the Arctic region.

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PART II: PUBLICATIONS

Publication I

Hild, B.O., Weiler, B. (2024). Safety first: Unpacking key roles of Arctic adventure guides, International Journal of Tour Guiding Research

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Safety First: Unpacking Key Roles of Arctic Adventure Guides

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Building on past research on tour guides and guiding, this paper provides an in-depth examination of the safety management role of tour guides leading adventure trips. A review of previous literature identifies broad dimensions of tour guiding and, within these dimensions, specific guiding roles mainly in relation to communication. The current study's qualitative examination of experienced Arctic guides, however, illustrates how environmental conditions contribute to near misses and points to safety management as an adventure guide's fundamental role. The findings highlight the need for guide competence and certification and underpin recommendations for research in relation to guide education and practices in remote and extreme environments. Together these can facilitate enhanced tourist safety and high-quality tourist experiences on guided trips.

Key Words: tour guide, tourist safety, guide role, adventure tourism, arctic tourism

Introduction

> *You start with a bag full of luck and an empty bag of experience. The trick is to fill the bag of experience before you empty the bag of luck* (Klimko, 2017:101)

Burgeoning interest in travel and diversification of tour activities on offer in polar regions together bring opportunities for revenue growth but also challenges to the tourism industry. Growth leads to higher demand for specialised and trained guides, who are charged with delivering high-quality experiences in order to sustain both the image of and demand for adventure tours that are exciting but also safe (Røkenes & Mathisen, 2017). This research examines, in particular, the role of risk management played by tourism industry frontline workers, in this case, arctic adventure guides. In our paper we define risk management as the facilitation of tourists' well-being and the prevention of and response to accidents on guided trips. In this paper we use the phrase 'managing risk' interchangeably with 'ensuring tourist safety' and 'risk management role'.

The paper critically reviews existing theories and past research on tour guides and guiding, particularly guides' roles (Curtin, 2010; Løvoll & Einang, 2021; Valkonen *et al*., 2013; Weiler & Black, 2015). While this research is extensive, the review highlights the need for and potential of context-specific studies for extending and deepening theory on the multi-dimensional roles played by the tour guide and, in particular, the role of managing tourists' safety. The current research focuses on the Arctic region as an illustrative example of the imperative of geographic / environmental context in understanding the skills and knowledge needed by guides to ensure tourist safety and manage risks. Given the inherent interconnectedness between human and the environment, especially the impact of the harsh environment on guide's risk management and decision making, this article makes a valuable contribution to the ongoing theoretical discourse on safety aspects of tour guiding.

The study population is adventure tour guides working in the Arctic and employed to manage groups of tourists on tours, typically in harsh, remote areas

including Greenland, Iceland, Northern Scandinavia, and Svalbard (an archipelago between Norway and the North Pole). The daily tasks of these guides vary depending on the spectrum of guided activities, the tour length and the location that together determine a broad range of day trips, multiday trips and expedition-style tours with differing levels of difficulty. Typical examples of guided adventure trips in the Arctic include glacier excursions, snowmobile driving, skiing, dogsledding and boat trips (Saville, 2022; Kaae, 2006; Kotašková, 2022; Varnajot & Saaarinen, 2021). By drawing upon the experiences of guides working in the Arctic region, we aim to examine their role in ensuring tourist safety in an environment that is dynamic and rapidly changeable, is geographically isolated, has limited infrastructure, and poses multiple constraints for performing rescues.

The data on travel to Arctic destinations indicates a growth industry – wild nature is attracting more tourists (Sæþórsdóttir *et al*., 2020; Saville, 2022), resulting in more jobs in the tourism sector – but provides little insight about the tourist's needs and expectations on guided tours, and the role of tour guides in meeting those needs, including their safety management role. The lack of availability of data from tour companies constrains capacity to understand the relationship between tourists' needs, what the industry offers, and tour guiding practices, including the issue of managing risks.

Previous research on polar tourism has identified guides' roles as including visitor behavior management (Mason, 2006), experience co-creation, managing expectations (Heimtun & Lovelock, 2017), environmental protection, and some studies have recognised the importance of tour guides' communication in harsh polar climates (Løvoll & Einang, 2021; Røkenes *et al*., 2015), but none of these studies unpack what these roles entail. A recent study on Icelandic risk management processes interfaced with the tourism sector suggests that

> *'both tourists and tourism employees have a limited understanding of risk and emergency protocols, and that safety of customers and the risk communication needs to be tailored to the needs of tourism sector, including guides* (Matti *et al*., 2022:1).

Research findings by Hanna *et al.* (2019) on the relationship between nature and human performance of those engaged in outdoor adventure tourism activities emphasise the significance of comprehending the vulnerable position of human in the 'battle against the natural environment' (p. 1361). To gain insights into the role of nature and its power, more research is needed on examining the human-nature relationship in outdoor experiences (Hanna *et al*, 2019). Thus, there is a need to drill down into the relationship between the environment and guides' responsibilities *vis-a-vis* ensuring guests' safety on trips (Bird & Gísladóttir, 2020; Matti *et al*., 2022; Andersen, 2022).

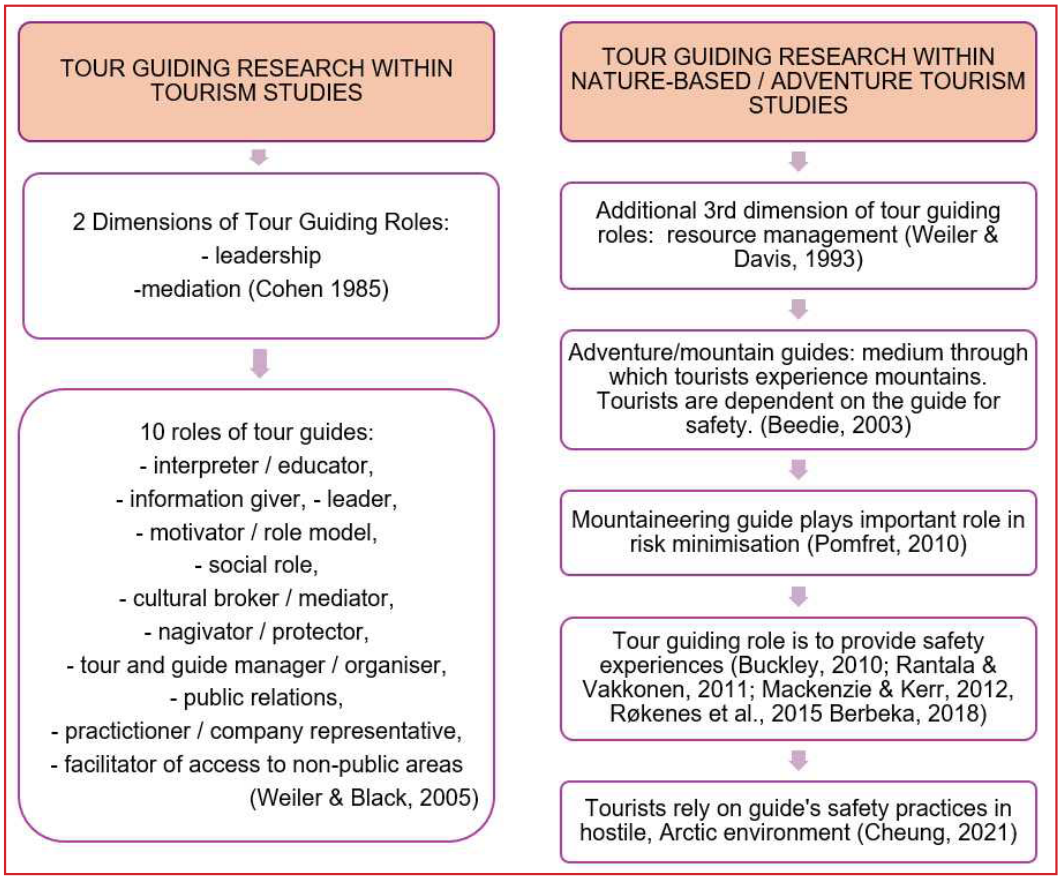
The current research seeks in part to address these knowledge gaps with the following objectives:

1. To examine the impact of the environment on tourist safety in the context of guided adventure trips, specifically the risks and hazards of guiding in the Arctic context.
2. To identify the actions taken by Arctic guides pre-trip and during tours to manage client safety and risk exposure.
3. To identify and explore current and potential mechanisms for enhancing guides' capacity to manage risks and client safety in this context.

Review of Literature

Our review of research begins with existing theories and frameworks that capture the roles played by tour guides. The aim of this review is to illustrate that, although mentioned in the tourism literature (Wilks & Page, 2003; Aliperti *et al*., 2019; Page & Meyer, 1996), the risk management role of the guide has been largely neglected in research. To place our focus on risk management in context, then, this review begins with how the roles of tour guides have been conceptualised, beginning with the broad dimensions of tour guiding (Cohen, 1985; Weiler &

Figure 1: Synopsis of Research on Tour Guiding Role Dimensions and Roles



Davis, 1993), followed by elaboration of specific guide roles that have received the most research attention (Weiler & Black, 2005).

Studies on generic tour guiding have been paralleled by a somewhat distinct body of work on the roles of nature-based and adventure guides (see Figure 1). Together, these bodies of work inform the current paper's focus on the role of the Arctic adventure guide in managing tourist safety.

The Role of Managing Safety - as played by tour guides, contextualised in the bigger picture of the various roles that guides play

Early studies on tour guiding by Cohen (1985) identified two main dimensions of tour guiding: leadership and mediation. Using these two dimensions, Cohen pointed to a number of roles associated with

(i) outer-directed leadership (e.g. navigating, providing physical access),

(ii) inner-directed leadership (e.g. entertaining the group, managing group dynamics),

(iii) outer-directed mediation (e.g. facilitating interaction with locals) and

(iv) inner-directed mediation (e.g. informing, interpreting).

With both dimensions being mainly associated with the communicative roles of guides, this work laid the groundwork for early tour guiding research to focus on communication – being able to direct, inform, entertain, interpret and facilitate interaction with host populations.

Concepts introduced by Cohen were at first mainly theoretical and lacked empirical testing but laid a strong foundation for further research on the guide's roles. Reviewing some twenty years of research, Black and Weiler (2005) identified the ten tour guiding roles most researched as

(1) interpreter/educator
(2) information giver
(3) leader
(4) motivator of conservation values / role model
(5) social role / catalyst
(6) cultural broker / mediator
(7) navigator / protector
(8) tour and group manager / organiser
(9) public relations practitioner / company representative
(10) facilitator of access to non-public areas.

The focus of research at that time and again a decade later (Weiler & Black, 2015) remained on the guide's communicative role, although more recent research shows some evolution in the roles played by guides, in part due to changing tourist profiles and expectations. Weiler & Black (2015) make a case for guides needing to develop new communication skills that involve listening and facilitating rather than just presenting and explaining.

Paralleling this research on the communicative role of guides has been research on the role of nature and adventure guides. First examined by Weiler and Davis (1993), the researchers extended Cohen's two dimensions (leadership and mediation) to include the dimension of resource management, specifically motivating and managing visitors' on-site behavior (Weiler & Davis 1993). This third dimension of managing what tourists do in the natural environment, driven in part by a focus on sustainability, opens up space for elaboration of the safety management role of the guide.

In differentiating between tourist guide and mountain / adventure guide, Beedie (2003) emphasises:

> *the risk on which adventure tourism is based is associated with hostile terrain in which tourist is dependent on the guide for safety, but in a crisis in the isolated location, he or she might have to summon their own resources (learnt from guides) to survive* (157-158).

Guides are now expected to provide both environmentally responsible and safe experiences (Buckley, 2009; Pomfret, 2011; Rantala & Valkonen, 2011; Mackenzie & Raymond, 2020, Røkenes *et al*., 2015; Berbeka, 2018), although limited research has been done to unpack the implications of the safety element of guiding, especially in the context of polar tourism.

In many aspects of their work, guides are placed in an intermediary position between the employer and the tourist (Nieto Pineroba, 1977, in Cohen 1985), and safety is no exception: their performance may at times be a balancing act between meeting the expectations of the employer and the tourist with due regard for the environmental context (Hild, 2023). Røkenes *et al*. (2015) focus ultimately on harnessing the guest-guide interaction, their findings highlight that the process of harnessing interaction needs to be aligned with minimalising guests' exposure to risks. Adventure guides' responsibilities seem to involve leading, mediating, and matching the context and client expectations (Weiler & Black 2015), while also ensuring tourist safety.

Based on the same principle, the Adventure Experience Paradigm introduced by Martin & Priest (1986) asserts that a peak adventure experience can only be achieved by balancing the participant's competence with appropriate risk exposure. The safety management role of guides is also mentioned by Rantala & Valkonen (2011) and Cohen (1985); but the nature and complexity of managing tourist safety has not been widely researched or adequately unpacked (Røkenes *et al*., 2015). This is in part because risk and safety management are highly context-dependent. If the guide's responsibility is to ensure tourist safety, it is crucial to investigate this safeguarding role in specific contexts. Identifying the influences and constraints on an adventure guide's risk and safety management performance

is a key research gap that the present study seeks to fill. A better understanding of this safety management role can underpin initiatives to support and enhance guiding practices through legislation, safety standards and tour guiding program curricula, all of which in turn can ultimately enhance the professionalisation of guiding.

Adventure Tour Guiding in the Arctic

Limited research has examined in detail the guide's safety management role in any context, including the Arctic and the polar regions generally. This paper now turns to a focus on the Arctic context, as an ideal context in which to examine and unpack the safety role of guides.

The various roles of Arctic guides have only been mentioned in a few studies. For example, researchers have noted the importance of trip planning and execution of activities (Karlsen 2022; Andersen & Rolland, 2018), providing an essential link between the tourist and local communities, as well as guides being indispensable figures in the process of regional tourism development (Burdenski, 2018). Studies related to safety matters are either generic or non-existent. The findings from research on risk management on guided trips in Iceland in relation to glacier and volcanic tourism highlight concerns about limited knowledge or lack of systematic strategies implemented by tour operators to prevent tourist injuries when new hazards or hazardous sites are identified (Matti *et al*., 2022; Bird & Gísladóttir, 2020).

Informed by Cohen's concept of the guide's leadership (pathfinder) role and given that the Arctic environment is unknown to most tourists and knowledge is difficult to access (lack of guidebooks, signposts), we argue that the work of a guide in the Arctic region needs to be underpinned by specific skills and knowledge to ensure tourist safety. Some literature has begun to explore the safety element of tour guiding in this context. For example, Furunes and Mykletun (2012:343) highlight that operator and guide competence is one of the crucial factors in reducing accidents. Røkenes and Mathisen (2017) state that a guide's knowledge and skills of real risk are crucial to construct safety adventure activities.

Berbeka (2018) explains that the unlikelihood of external rescue leads to a necessity of tourists to rely on guides, which can be perceived as an attribute of unique Arctic attractions. Cheung (2021:17), in studies on Arctic adventure tour guides highlights the

> *risk associated with the hostile terrain, in which the tourist relies on the guide for safety* ... [a] ... *highly dependent guest-guide relationship*

This points to the need for a skilled guide in managing tourist safety. In research on Arctic adventure guides' competencies, Hild *et al*. (2023) argue that technical, interpersonal, organisational skills together with situational knowledge are key competencies in ensuring tourists' safety on trips.

Overall, 'good guides are key to the success of a tour operator's business' (Berbeka, 2018:411). Given so, our research started by examining the impact of the environment on tourists' safety and explored the relationship between the environment in which guides work and their practices This research contextualises the Arctic as a central element influencing both the creation of the adventure experience and the place of practice (for guides). It investigates how the physical setting imparts significance to the responsibilities of 'Arctic adventure guides' in ensuring tourist safety, outlining previously overlooked safety dimensions within the conceptual model of a tour guide's profession.

Study Context and Methods

As stated in the introduction, the current research examines the impact of the Arctic environment on tourist safety in the context of guided adventure trips, the actions taken by guides to manage risks and ensure tourist safety, and mechanisms to improve guiding capacity and practice. This section clarifies how concepts and terms are operationalised in the research, presents the study context, and details the study methods.

Terms and Concepts: Arctic Tourism and Arctic Safety

Saarinen & Varnajot (2019) highlight that poor understanding and conceptualisation of Arctic tourism leads to poor policy making. Although they focus on how Arctic tourism phenomena can be framed and re-created, their point of poorly defined concepts is relevant to the current study on guides and tourist safety.

In our research we define Arctic tourism as land-based and cruise tourism activities, covering the following locations: Alaska, the Canadian Arctic, Greenland, Iceland, Northern Scandinavia, Svalbard, and the Russian Arctic. Even though tourism in the Far North Arctic can differ in types of activities (ship cruise tourism vs land-based tourism), they have many elements in common, including geographical features such as extreme weather and isolation, resulting in human capital issues, including lack of trained staff, or even a population large enough to handle the tasks (Maher *et al*., 2014:2).

In spite of the fact that much of the polar tourism literature focuses on rapid tourism growth and the need for more research and infrastructure to regulate the activities in the region, especially in the context of emergency response (Jóhannsdóttir *et al*. 2021; Kruke & Auestad 2021; Maher *et al*., 2014), there are no studies examining issues related to land based tourism and tourist safety in the polar regions. Arctic safety is defined by Albrechtsten and Indreiten (2021) as responding to the operational context of Arctic activities, such as harsh weather, remoteness, limited access to infrastructure and resources, lack of knowledge and experience from activities in the Arctic, and climate change. In this dynamic environment, local and situational knowledge emerges as a crucial element of assessment and decision-making by tour guides (Hild *et al*., 2023). While research has examined safety in the context of cruise ship tourism (Dawson *et al*., 2017; Huijbens, 2022; Jóhannsdóttir *et al*., 2021), a critical difference between operations is that cruise operators are required to follow strict maritime law, while there is a general lack of regulation for organised land-based tourism activities.

Tourist operators in Svalbard, Iceland and Greenland are not required by law to provide educated or experienced guides on trips, thus the saying 'everyone can be a guide until something goes wrong' (Hild *et al*., 2023) exemplifies a longstanding issue and the need to address responsibility over tourists' safety on guided trips. Consequently, this research focuses on guides working with land-based tourism activities, its features, and its challenges with respect to ensuring tourist safety. Hence, our findings add a novel angle to this generally neglected topic in academic literature – tourist risk and safety management in the Arctic.

Study Context: The Arctic

With this study's focus on environment settings as a key determinant of the guide's roles, we use the Arctic environment (see Figure 2) as a lens to examine the concerns related to ensuring tourist safety on guided trips. Svalbard, Greenland and Iceland exhibit various characteristics some of which are found in other adventure tourism destinations. Remoteness, challenging climate and weather, and isolation are common to adventure activities such as mountaineering, diving and whitewater rafting in certain other geographical locations, therefore the current study may be applicable in those. At

Figure 2: Figure 2: Map of the Arctic

Source: https://www.beautifulworld.com/north-america/the-Arctic-circle/

the same time, the study location has a unique combination of factors – environmental extremes that are largely unfamiliar to tourists – together with rapidly growing tourism and lack of regulations on tourism operations. In addition, the islands under investigation are sparsely populated, and the rescue services are limited, due to distances and severe weather. Collectively, these create an environment where risk and safety management become an imperative and a priority for guides.

Study Methods: Data Collection and Analysis

Our research data were gathered through in-depth interviews with guides working in Iceland, Svalbard, and Greenland. To obtain study participants, all companies operating in Greenland were contacted, but they were unresponsive to our request for them to invite their guides to participate in the study. As a result, we used convenience sampling, a non-probability sampling method that is often used in exploratory research (Neuman, 2014) on under-researched populations. In doing so, we were attentive to the importance of seeking input from a range of guides with varying backgrounds and levels of expertise. As Cheung *et al*. (2019) suggest the need for more cross-cultural perspectives in polar research to represent various standpoints, we were careful to include guides not only guiding different activities, but also representing various nationalities, levels of education, age and length of guiding experience (see Table 1). The minimum experience to qualify for an interview was considered 6 months of guiding.

By interviewing 15 tour guides based in Iceland, Svalbard and Greenland, working as guides but several also holding a variety of other positions such as guide manager, CEO in the company, company owners and government positions, we gained a diversity of viewpoints on the challenges associated with guiding in the Arctic and the guides' responses to those challenges.

To gain an overview of what responsibilities are associated with the guiding profession, interviewees were asked to reflect on their experiences. The interviews started with questions about entering the

Table 1: Characteristics of Interviewed Guides

	Number of Guides		Number of Guides
Gender		Guiding activities	
Male	11	Hiking	15
Female	4	Glacier guiding	10
Guiding Location		Dogsledding	3
		Boat driving	4
Iceland	6	Boat driving (up to 12 pax)	2
Svalbard	5	Hunting	2
Greenland	5	White water rafting	2
Guides with cross-location work experience	6	Expedition skiing	1
		Snowmobile driving	5
Education		Years of experience guiding	
Svalbard Guide Training	5	6 months – 1 year	1
Arctic Nature Guide, UiT	1	1-3	2
Boat Course (12 pax)	4	3-5	3
Avalanche Training	8	5-10	4
Hunting Guide Training	2	10+	5
First Aid Training	15		

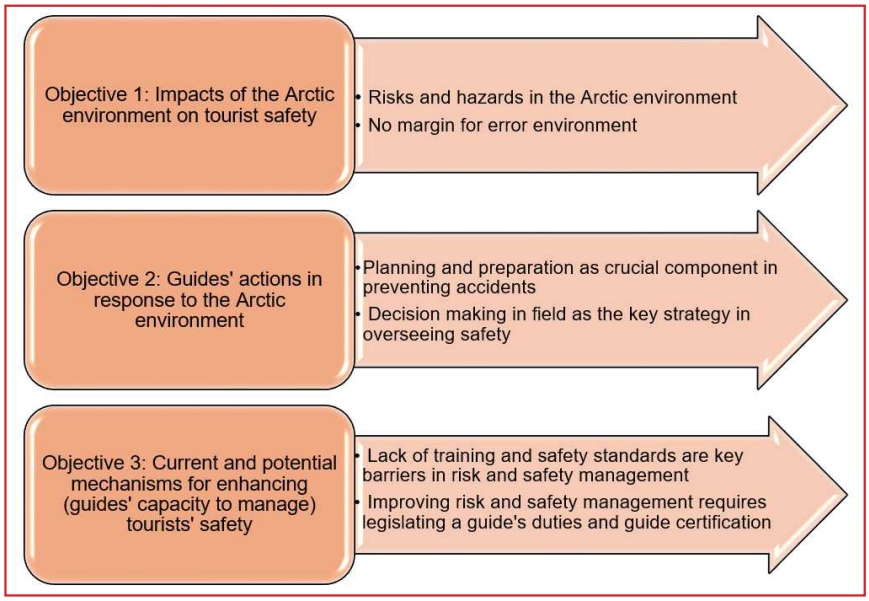
guiding industry, progressing through to topics such as education and training, to finally focus on safety in its broad context.

The interviews were undertaken between December 2020 and April 2022. Guides were invited to participate in the interviews by Facebook Messenger and email, with an outline of the project and signing of a consent form prior to data collection. The interviews with participants in Iceland and some Svalbard guides took place face-to-face, while those in Greenland and most from Svalbard were conducted online. Interviews lasted between 40 minutes and 2 hours. The interviews were recorded, transcribed, and analysed by the first author. To ensure anonymity of the guides, each interviewee was assigned a number.

Atlas.it software was used for coding and analysis. Coding took place in three phases: open coding (Neuman, 2014); axial coding and; assigning of key themes related to the objectives of the study - impact of the environment on safety, guide preparation / actions in response to these environment challenges, and mechanisms to enhance guides' capacity to respond to accidents. The interviews covered aspects including current issues related to Arctic guiding: guiding experiences and training; environmental conditions; accidents; risk mitigation strategies; legal aspects of guiding and; working conditions.

Some of the interview results support themes documented in previous literature. For example, interviewees noted that guides have to juggle multiple roles. Much previous literature has acknowledged that all guides do this, and that responsibility for client safety is one of the many roles of tour guides. Rather than reiterate this theme, the results of the present paper focus on the particular factors and features associated with managing risks and safety in the Arctic environment. Similarly, previous literature – particularly adventure tourism literature – acknowledges that tour guides need to maintain the tourist's perception of risk-taking while at the same time preventing or reducing the chance of injury. While this theme was evident in the results of the present study, we have chosen not to focus on this theme in the present paper. Instead, the results are organised around and focus on emergent themes that have not been examined in depth in previous research. Figure 3 illustrates the three study objectives and the corresponding themes

Figure 3: Study Objectives and Themes Emerging from Research



that emerged from the interview data. As shown, collectively the themes address the three study objectives as stated at the end of the introduction:

(1) the impacts associated with guiding in the Arctic environment,

(2) guides' actions to manage risks and tourists' safety, and

(3) current and potential mechanisms for enhancing (guides' capacity to manage) tourist safety.

Findings

The order in which findings are presented follows the objectives of the study (Figure 3). For each of these three objectives – the impact of environment, guides practices, and current and potential mechanisms for enhancing safety – we report themes that emerged in the data, such as characteristics of the Arctic environment, the importance of planning and decision making undertaken by guides, and strategies that can help enhance safety on guided trips.

Impacts of the Arctic Environment on Tourist Safety

Theme 1: Risks and Hazards Associated with Guiding in the Arctic Environment

Participants elaborated on the impact of the harsh Arctic environment on their working conditions. Hazards related to the extreme weather conditions, such as cold temperature, high winds and low visibility were recognised as integral part of their work. Quickly changing weather and its severity as well as remoteness make the Arctic stand out in comparison to other guiding locations.

> *Everything is good until one small thing goes wrong and then it goes very, very bad* (Interview 10)

This is related to chain events that specify operations in the Arctic. Poor preparedness, lack of knowledge and skills in maintaining best practice, together with a changing working environment can lead to potential accidents. With limited search and rescue capacities (especially in Greenland) guides have genuine understanding of their workplace:

Figure 4: Group of Students (to the left) Guiding on Icelandic Glacier

Photo by Barbara Hild

> *What is the Arctic? It's, cold, wild and the weather changes very fast. So, if you're not prepared just for the change in weather, you can die.* (Interview 3)

Boat trips, including glacier front sightseeing, wildlife watching, traveling between settlements, as well as kayaking or stand-up paddle boarding are among the popular water activities in Svalbard and Greenland. Guides express their readiness in relation to self-reliance, understanding the geographical and infrastructure constraints of guiding in the Arctic. Strong currents, extreme weather events and calving glaciers were mentioned by interviewees as some of the most unpredictable factors; yet they must be expected at any time.

> *Sailing in Greenlandic waters is very special. When you're out there and you're alone, you know you can rely on nobody but yourself. You have to be self-sustained all the time. You need to be able to fix any problems. You need all kinds of safety, equipment and training in order to do it safely.* (Interview 3)

Guides know the risks taken when leading their guests.

> *You know that you're walking on a crevasse.* (Interview 1)

They also understand the uncertainty that is associated with risk assessment and decision making:

> *I was coming back one day, there was a fog and I kind of went a little too close to these huge crevasses. And I stepped into it with one leg and rolled over. And then when I looked down, I couldn't see the bottom. I turned around and I remember seeing the rest of my group. I was the first one on the rope and I just realised that everybody else was standing in that crevasse. I was petrified that we were just going to be sucked in. But I was able to get out and then go back another route. So, you know, it is quite dangerous and not always a hundred percent sure.* (Interview 9)

Even though, some of the challenges might be universal across guiding in the rest of the world, hazards associated with certain types of tourism (such as glacier guiding or skiing) together with factors such as extreme weather events, lack of infrastructure, and limited help from the outside, make for a uniquely risky guiding context. Guides mentioned that the rapidly changeable environment, especially in relation to longer trips and therefore longer exposure to unexpected changes, played the biggest factor in their preparedness approach: the need to be self-sufficient in the remote Arctic environment.

Theme 2: There is No Room for Error when Guiding in the Arctic

Lack of statistics on accidents and near misses in polar adventure tourism makes it difficult to address the challenges related to the harsh environment in which guides operate. The commonly recognised threat by guides was any kind of injury that meant immobility for an individual or a group for extended time, leading to the possibility of hypothermia. While waiting for evacuation can take hours or days, deteriorating weather affects the way guides assess a participant's vulnerabilities in a harsh environment. Even though glacier walks, hiking and snowmobile trips were described as the most exposed to small injuries, the link between an incident becoming an accident was explained:

> *I think broken legs, things like that will be considered life-threatening. Cause you can't move; you will eventually die.* (Interview 13)

Some incidents, such as blisters on a guest's heel due to too small shoes during a Greenland crossing trip that lasted 3.5 weeks, was described as:

> *extremely painful, uncomfortable, leading to possible infection and just pretty bad.* (Interview 8)

While small incidents can have a high impact on a guest's well-being and safety, guides mentioned that a guide's negligence to assess the impact of the environment in relation to the activity can also have severe consequences. Most interviewees mentioned guests not following the guide's instructions as a cause of accidents. The importance of ensuring good

Figure 5: Snowmobile Guiding on Svalbard

Photo by Barbara Hild

communication with the guests was stressed by a number of the respondents:

> *I think that the biggest issue is people getting wet, losing people or failing to give proper instructions. One of the things that you can do wrong is giving instructions without making sure that the instructions are understood. And then you'll probably see that. And then you suddenly see there are four guests instead of six on the top of the glacier, in total white out. That means two people on two snowmobiles just perished on that trip and that's not acceptable.* (Interview 3)

Questions about safety responsibilities often led to guides acknowledging their overall responsibility for a guest's wellbeing, while being aware of limitations:

> *guests cannot free themselves from their own responsibilities.* (Interview 10)
>
> *They hire us to lead the trip. We show them how, but they have to do it themselves'* (Interview 5, talking specifically about driving snowmobiles).

This highlights the dilemma which guides face, that there is never an absence of danger when leading trips in the Arctic wilderness.

> *I mean, if you are traveling to Iceland's highest peak, you rope everyone up, the weather is good and then just a crevasse breaks under one of the customers. I mean, you know that you're walking on a crevasse. And you know of the danger and the customer might just twist or break an ankle or something like that, just because his crampon cuts wrong … You have to understand that as soon as you go into adventure guiding or something like that, there's always a risk of accidents.* (Interview 6)

Even though risks associated with certain types of activities in combination with the harsh environment (changing weather and terrain features) were mentioned as difficult to minimise, guides recognise their influence on risk and safety management by their own decisions. While humble regarding their understanding of the extreme environment, they acknowledge the importance of their knowledge and skills to help them in their decision making.

Guides' Responses to the Arctic Environment to Ensure Tourist Safety

Theme 3: Pre-trip Decision-making is Crucial to Managing Risks and Tourist Safety.

One of the interviewees described guiding as:

> *Sharing a place, a dangerous place where people would not go themselves and you have the skill to bring them safely.* (Interview 8)

This underlines the responsibility that comes from guests when relying on a guide's decisions. To be able to manage risks, guides take preventive and responsive measures by planning the trip, executing the plan, and changing the plan according to ongoing conditions, evaluating both the environment and the condition of the guests. Most of the companies implement measures such as safety introduction talks, signing waivers or limited predetermined route selection to enhance the tourist's safety behavior and their acknowledgment of their own responsibility while participating in the activities that involve risk and potential harm. Despite these procedures, guides act as mediators between guests and companies, both when it comes to meeting their expectations and implementing safety practices. Interviewees mentioned that the entertainment aspects of guiding, including story-telling and knowledge sharing, can always be compromised, while the safety dimension cannot:

> *You can tell the people whatever they want, they will not remember. But safety is number one. Safety for the clients and your own safety.* (Interview 7)

> *It is more important to bring home a healthy, unhappy client versus not to bring home a well-informed client. When we are guiding 50, 60,000 people a year on a glacier, part of course is always luck, but part is also taking your job seriously, and to train guides.* (Interview 11)

The majority of guides openly discussed the challenges of making decisions in unknown conditions and shared the opinion that if the guide doesn't feel safe, he/she shouldn't be pushed to go out. The phenomenon of feeling unsafe was related to deteriorating environmental conditions (weather,

Figure 6: Safety Training for Adventure Tour Guides on Svalbard

Photo by Barbara Hild

route, quality of snow, ice, ocean waves) or guests' lack of ability to continue the trip as planned. The decision to cancel a trip is primarily based on the challenging environment and the need for reliance of the group on the guide, rather than solely relying on the guide's own capabilities to assess and manage the risks if he was on his own.

Theme 4: Tourist Safety Relies on Guides' Decision-making in the Field

While the companies sell pre-designed trips, it is often a guide's task to facilitate the trip according to current conditions. Tourists' safety relies on a guide's decisions made in the field. While most procedures are designed to meet the expectation of both the company and the guest, overseeing tourists' safety and wellbeing is the key duty of the guides.

The environmental conditions frequently mentioned by guides are often intertwined with considerations of time and group management. Many accidents reported by guides were primarily attributed to their insufficient knowledge in effectively reading and communicating with their group under time pressure, often in conjunction with challenging environmental factors.

While discussing the near-misses, incidents and accidents that the responders went through in their careers, several interviewees mentioned 'I shouldn't have done that, I wouldn't do it again.'

> *As a glacier guide, you're basically a risk manager and there are certain lines where you shouldn't cross because the risk is higher than let's say, the reward. But that's something you only get with experience. Unfortunately, that's not something that someone can teach you because as a guide, you are thinking for yourself. (Interview 9)*

Asked what competencies are crucial in making safety decisions, interviewees often placed the importance of a guide's technical abilities below situational leadership:

> *What's very important is to never forget at the end of the day the technical abilities are not a very important issue when compared to decision making. It's the decisions you take, they are the most important.* (Interview 8)

One example from an interviewee included taking the decision of not going on a steep slope on a day of avalanche danger, despite the guide's own technical ability to ski the terrain:

> *Because there's a difference: you could be a great mountaineer, but a horrible guide.* (Interview 2)

Understanding guests' eagerness to participate in a thrilling but unsafe experience, together with being able to read guests' expectations and mental and physical ability, was summarised by the same interviewee:

> *I mean, if you can't deal with people, you can't be a guide, but you can still be a great mountaineer.* (Interview 4)

Turning around when the terrain is too difficult, when the guests are getting cold, or the weather turns bad is always a guide's decision based on his / her assessment and experience. The capacity to harness the lessons learned from experience is not calculated in years of guiding, but in an ability to make the right decision in the field:

> *Ten years of guiding doesn't make you a better guide. It just makes you maybe a better talker, you know, the storyteller.* (Interview 1)

One of the interviewees stated that the position of the guide as decision-maker doesn't come with ease, explaining:

> *Safety judgment, it's based on experience, it's not your position as a guide or the owner of the company.* (Interview 15)

This respondent further elaborated on whether the financial loss and the reputation of the company should be taken into consideration by guides when calling off the trip. The guide as the key figure representing a particular company is in difficult position of balancing between fulfilling expectations from the guests and the company they are working for, while simultaneously matching their own

Figure 7: Guide Looking at the Glacier Front in Svalbard

Photo by Barbara Hild

knowledge and making decision according to variable conditions. Despite this challenge, their responsibility stands above the company's liability, even if the company decides to hire untrained guides. Reflecting over court cases in adventure tourism, one of the guide and company owners pointed out the burden of consequences in relation to a guide's decision-making in field:

> *If I hire someone that doesn't have the proper training, it is still his responsibility not to do something that he hasn't got the training for. That's the kind of demand that the court system has, you do not guide people in the mountain terrain as a professional getting paid without taking the responsibility. Even though you don't have the full training, you are still responsible for your actions.* (Interview 8)

One of the interviewees illustrated guides' judgment as comparable to the job of a bus driver, as many guiding jobs include transportation where guides drive guests to the location. Even if the road sign allows the driver to speed up, if the road conditions are wet and slippery, and an accident happens, the driver will be charged for not acting according to the conditions. Similarly, a guide's decision-making in the field consists of skills and experience, whether they possess or lack experience and / or training. While lack of recognition of guides' duties and their competence remains unsolved, interviewees recognise the importance and repercussions of decision-making:

> *I mean, getting to the point. A long time ago a message was written down for us on the company wall: our job is not to get the client to the summit; our job is to get the client home.* (Interview 15)

Current and Potential Mechanisms for Enhancing [guides' capacity to manage] Risks and Tourist Safety

Theme 5: Lack of Safety Standards and Training are Key Barriers in Risk Management.

In better understanding the parallel between the harsh environment and the likelihood of incidents, guides were firm in making a definite link – the more severe the weather (including increasing wind or deteriorating visibility increasing the chance of accidents), the more responsibility on a guide's shoulders. Previously mentioned 'relying on themselves' positions guides as first responders with their knowledge and skills as essential tools in saving tourists' lives in case of accidents. Training and standardisation remain an eagerly discussed topic as a mechanism for enhancing guides' capacity to manage risks in the field.

Figure 8: Guided Skiing Trip on Svalbard.
Safety point, it is important to include rifles and signal flares for polar bear safety. On Svalbard it is required to have undertaken rifle training in order to carry a rifle

Photo by Barbara Hild

The prevalent issue mentioned in interviews was the link between lack of certification and various safety practices, but also the lack of standardised training available to the guides. While certification such as the *International Mountain Guides* are recognised across climbing, mountaineering, and skiing professions, working as guide in the Arctic requires versatile knowledge and skills, often hard to combine in one training program that would fit all. Guides highlighted the need for standardised training, allowing guides to share knowledge and practices between companies.

The paradox of unrecognised training standards leads to the practice of assessing the previous experience of the guides in the hiring process. This was mentioned as time-consuming and problematic with regard to its validity, where the employers need to rely on a guide's resume and description of previous experience rather than standardised assessment done by experts in the field. As the industry has remained unregulated for a long time, the guiding community consists of guides with extensive experience, as well as freshly educated guides just starting their career and building their experience base.

> *In Greenland we don't need anything to buy a weapon, because most Greenlanders grow up hunting, it's in our culture, we've learned it since we were children. We know how to drive boats because everybody is sailing in Greenland and everybody is hunting and fishing, so why would we need any license for it, it's part of our own culture. The thing is that in modern Greenland there are many young people who are not part of this hunting and fishing society. For the people who grew up with it, it would be easy to pass the exam, but for the people who haven't done it before, they need to learn it first.* (Interview 8)

A few interviewees mentioned the importance of keeping their skills current and their knowledge up-to-date, suggesting that this should be regularly assessed by third parties. Most cited minimum requirements, including first aid, navigation, or group management as necessary conditions to entering the guiding industry. While a situation where 'anyone who can hold a gun can guide in Svalbard' was not unheard of, education enriched by experience was specified as the most pivotal for a guide's risk management practices. Most interviewees used examples of various strategies including self-education in areas such as

- making a logbook and writing the weather patterns to learn what to expect;
- attending avalanche courses and training;
- learning how to read the guests;

The respondents wish to be taken seriously and recognised as professionals in their occupation. Even though known fatalities related to guided trips appear to be very low, guides mentioned their surprise in that regard. Guides from Iceland represented two discourses on that matter: the low number of accidents was explained by good practices in the companies (mentioned by the owners of the companies), vs a combination of general luck (described by one of the interviewee guides as disappointing):

Researcher: *Are you surprised by the small number of accidents?*

Interviewee 9 (glacier guide): *A little bit. ... that's maybe a harsh thing to say, because of the amount of untrained guides that have been able to walk through this terrain and then just walk back. No problem. It's very easy. So that puts experienced guides and all the training that we have done, all the investments, in kind of nothing.*

All guides expressed their concern regarding the growing tourism in the Arctic and the growing trend of an unskilled workforce entering the industry:

> *I think, we need to see how the concerns are developing about land tourists. I guess we need to see some accidents unfortunately before that is really a concern.* (Interview 14, Guide from Greenland)

Theme 6: Improving Safety Management Requires Legislating a Guide's Duties and Guide Certification

The interviewees expressed their interest in the recent movement of the guiding community towards certification with a hope to establish sound risk management at work, as well as increase the quality of guiding. The need for certification is often associated with tourism expansion periods, when meeting the demand for specialised/certified guides is challenging for the companies:

> *It was just that anyone who could hold up a paddle well, got work. I was just getting phone calls when they had big groups, and I realised quite quickly that not a single guide or safety kayaker in that group even had first aid training, none. There's something seriously wrong here, but that was just how it was in those days.* (Interview 1)

Such practices were seen in the glacier guiding industry at its recent peak, 2016, in Iceland, where the standards for guides entering the industry were lowered to fulfill the demand for guides. Those practices were not unusual in the Svalbard community, but the cause of lack of standards for them was mainly due to the high turnover in the guiding community in general.

The anticipated growth of tourist activities in Greenland in the coming years, a country with limited rescue capabilities, places local and situational knowledge as crucial in managing risks and tourist safety, directly affecting the destination image , setting high expectations for guides. Discussing safety standards, a guide from Svalbard mentioned slow change in recognising safety awareness as an important step, both for guides and companies:

> *Even over the 20 years that I've been here, there's nothing new - maybe the geography, the scale, sea ice, climate changes, more avalanches. There has been also a kind of direction into more risk assessment at every (guided) site by the companies. And before this was like, well, I always drive Todalen, because it was never going to be an avalanche danger there. And suddenly there is a large danger. So I think there's been a*

Figure 9: Unregulated Tourism in Iceland.
Self-called volcano guide industry emerged after the recent volcano eruption in 2021. Search and Rescue member at back.

Photo by Barbara Hild

> *direction also towards more precautions. It's more dangerous having the responsibility to be a guide.* (Interview 12)

Even though most interviewee guides see certification as obligatory, they often emphasised that ensuring tourist safety is not about the certificates itself, but a guide's competence. All interviewee guides advocated for establishing guiding as a regulated profession, with equal importance for recognition of training and experience from the field. Until now, safety thinking has been present across the companies, best practice is being used as the approach for field operations. However, increased traffic in the region and the increased likelihood of accidents appears to be awakening the industry to lay foundations for the standardisation of safety practices. Interviewee guides commonly expressed their frustration, pointing to the government lacking the understanding of what is happening on the ground and the hesitancy to implement changes including the guide's voice into the discussion on developing certification.

At the same time, interviewee guides understand the complexity of the task, that establishing certification is not without pitfalls:

> *The problem of certification includes many challenges: who should certify, who should be certified and what should be included into certificate schemes.* (Interview 12)

Common suggestion by responders was for respective governments to introduce operating standards to

prevent the situation where third-party organisations create standards, education or certificates that favor only some, but not all operators. It was questionable who should be involved in the certification creation, as most local stakeholders in the Arctic have close ties with decision-makers, due to size of the communities. Yet, it is important that the policy-making process includes guides' knowledge and opinions, as they are the experts with experience on guiding in the terrain and facing safety issues. While discussion about guiding standards remains inconclusive and the guiding profession remains unregulated, interviewee guides expressed their concerns regarding the Arctic tourist's safety paradox:

> *Tourist safety it's a huge concern of mine because we don't want Greenland to have a bad reputation as being a place where you die. You need to come here and experience the wilderness and have the feeling of almost dying. But you're not allowed to get even close to the dying.* (Interview 13)

While those speaking on behalf of companies appeared more optimistic about the standards and the progress of improving their operational safety within their organisations, interviewee guides with a background of guiding for many companies were less optimistic about the actual status in the field. They often felt reluctance towards the approach of raising safety standards from the decision-makers, not only from the companies, but also at the governmental level:

> *So, as far as it's not a law, the companies won't be willing to invest into better guides or better training.* (Interview 8)

Discussion

This study has drawn on previously established literature in the field of tour guiding, while exploring existing practices, with an aim to fully understand the complexity of guiding roles. Our research does not reject existing literature discourse - the study focus was to advance prior research by examining current practices particularly in the Arctic tourism context. By doing so, our study acknowledges and supports roles established by Cohen (1985), Weiler & Davis (1993), Weiler & Black (2005), Røkenes (2015), Rantala & Valkonen (2011), Buckley (2009), and Cheung (2021), while highlighting and deep-diving into the critical role of Arctic guides as safety managers. Using the study's three objectives as a structure, the following discussion links the current study findings to the literature.

Impacts of the Arctic Environment on Tourist Safety

Guides working in the Arctic described the impact of the harsh environment as key in their safeguarding role, which corresponds with Furunes & Mykletun (2012) research on guides' roles. This indicates that the activity itself is not always difficult, but clients rely on guides' expertise to find their way through the glacial landscape or mountain terrain. By focusing on the context of Arctic guiding, we explored how a particular environment affects guides' practice in the field. The impact of extreme weather conditions and isolation while in the field corresponds to limited ability for external support, positioning guides to play the key role in accident prevention and response. Similar patterns can be found in research on mountain guides, where exposure to the elements and isolation demands a high level of self-sufficiency at work (Beedie, 2003; Berbeka, 2018). Findings from the current study suggest that both guides and guiding companies are aware of this, yet research concludes that the lack of formal recognition of their role can negatively impact on tourist safety.

Guides' Responses to the Arctic Environment to Ensure Tourist Safety

Analysis of interviewee responses indicates their awareness of the leadership role that they have on trips and guides' acceptance of responsibility for guest safety during trips. Understanding and taking responsibility was evidenced in both a proactive approach that includes pre-trip training, planning and preparation as a preventive strategy in mitigating accidents, as well as taking responsibility for decision-making once in the field.

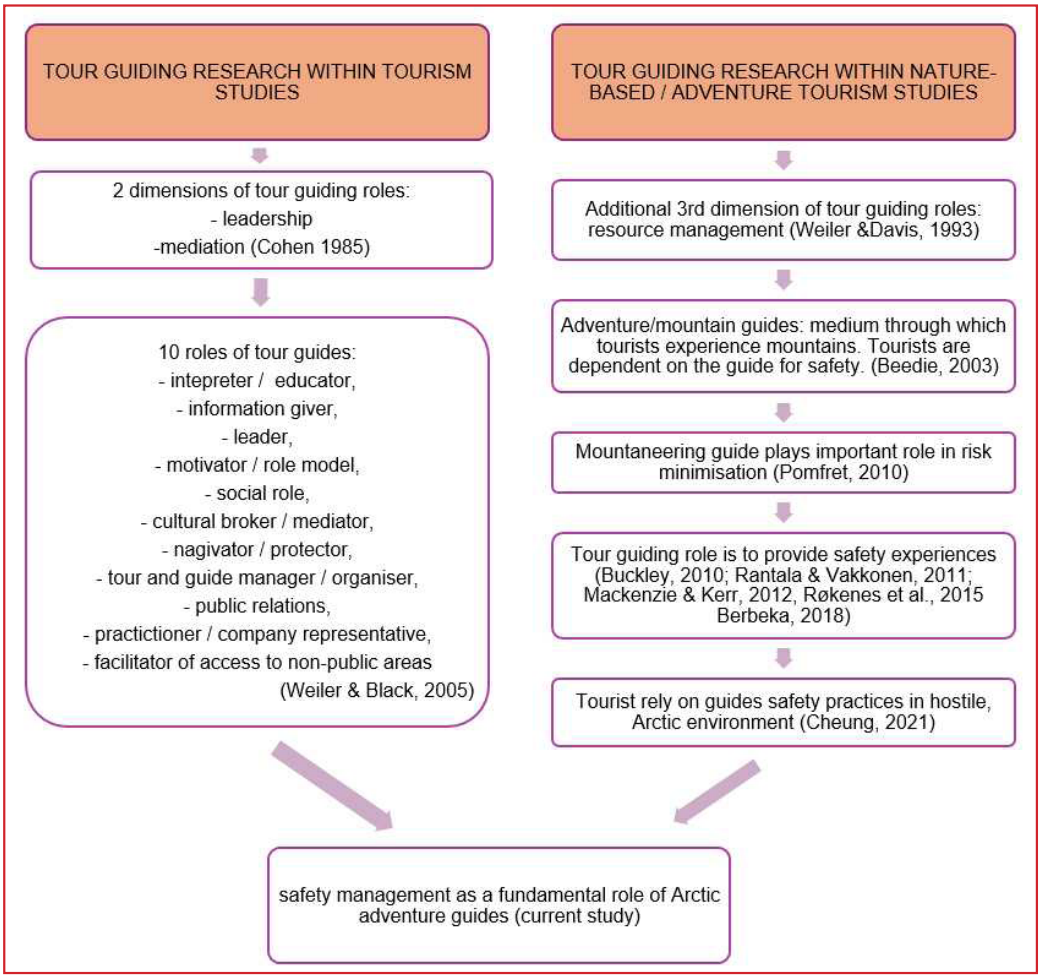
Many guides mentioned that even though not all accidents on adventure trips can be avoided, a guide is expected to act as a mediator between environmental hazards and tourists, to prevent accidents from happening. Interviewees described this mediating role between the physical environment and expectations from companies and clients as a guide's leadership role. The difficulty of leadership has been mentioned in other research, where a difficult part of a guide's job is

> *to work with proximity to their clients, in unpredictable natural environments ... adventure tour leaders will typically make friends with clients.* (Mackenzie & Raymond, 2020:2)

This puts pressure on guides to balance between the role of trip choreographer and risk managers just to name few.

A guide's knowledge and leadership skills can be tools in reinforcing safe behavior and reducing possibilities of injuries on trips, which is consistent with Bentley *et al.*'s (2010) conceptual model of operator's perception of risk factors for adventure tourism accidents. According to this model, the interaction between two or more factors (here:

Figure 10: Guiding Roles Research Review
(Revised version of Figure 1 - including Guides' Safety Management Role



Arctic safety factors and / or a guide's competence / practice, and / or legislation of duties / safety standards) is the most important aspect, as the presence of any single factor alone is insufficient to produce an accident risk.

Failing to give appropriate instructions, keeping control of the group, and making decisions summarise the guides' awareness of the impact of the harsh Arctic environment, where consequences of inadequate planning or poor decision making can be critical for tourists' safety.

Current and Potential Mechanisms for Enhancing (guides capacity to manage) Risks and Tourist Safety

With increased concern on tourist safety and higher demand on guided services, more specialised knowledge is needed to facilitate guests' experiences, but to do so, the guide's expertise needs to be valued, i.e. acknowledged and required (for instance in hiring processes).

These findings are consistent with the literature indicating that specific elements of the environment (such as weather, remoteness), even in other geographical locations, possess common threads in influencing tourist safety (Becken & Wilson, 2013; Jeuring & Becken, 2013; Matti *et al*. 2022). The pending issue remains the lack of mutual dialog on recognition of competence among the guides and decision-makers in the industry.

Even though the guides commonly agreed on the concept of certification and standardisation in the guiding profession as a form of legal necessity implemented from the government in one way or another, they expressed concern about the complexity of such a task: who, how, what and by whom guiding legislation would be initiated and implemented. Finally, the guides reecognise their responsibility for tourist safety because they consider themselves competent and professional in sharing the challenging environment with guests visiting the Arctic. This corresponds with research on mountain guides where the responsibility encompasses ensuring the well-being of clients and dealing with issues of safety resulting from physical dangers associate with the wild terrain (Beedie, 2003). Hence, guides strive to be recognised as competent knowledge sources on contributing to tourism development strategies, including guide certification and standardisation of procedures.

The results from our studies complement and extend the existing research in the field of tour guiding and, in particular, tourist safety and the guide's role. We conclude that tour guiding involves overlapping roles, namely tourist behavior management, storytelling, path finding, and experience creation, while facilitation of the above can only happen if a guest's safety is managed (see Figure 10).

Conclusions

This paper adds to our understanding of a neglected area in both tour guiding research and adventure tourism research: tourist safety on guided trips with a focus on the Arctic region. Adventure guides working in Arctic regions are directly impacted by the challenging environment, hence their knowledge and skills need to be recognised as essential in ensuring tourist safety. According to the guides participating in the research, the nature of the guide's job lies between maintenance of tourist perceptions of risk-taking while minimising the impact of the hard and dynamic environment they are seeking to explore and experience. Adventure tour guides maneuver between various roles, but the primary one is to manage risks and ensure tourist safety. By giving recognition to a guide's knowledge and responsibility on guided trips, we highlight guides' importance and the need for giving them equal status in further discussions of planning strategies, standards establishment, training recognition, as well as potential law enforcement in tourism policies in the Arctic.

While adventure tourism is constantly discussed in terms of risk mitigation, our study reveals that the recognition of adventure guides' role and establishment of career paths for guides can impact on improvements in safety standards, increasing

tourists' safety, as well lead to improved quality of guiding. In the research we examined adventure tour guides in the Arctic, where the impact of the environment is crucial in defining a guide's responsibilities, hence, similar issues can be found in other adventure guiding activities where the harsh environment has impact on tourists' vulnerability to hazards.

Even though the Arctic environment makes some of our study findings about a guide's work and their responsibilities less generalisable, our study rationale, methods and many of the findings are highly relevant to guides working in other remote areas. The commonalities of being a remote island with limited resources, affected by extreme weather events, make our findings applicable to other places facing similar issues in other geographical regions, such as Antarctica and other remote locations.

With the aim to address the neglected dimension of safety in guiding literature, our research demonstrates the need to recognise and further deconstruct the safety management role of guides in other contexts. By using an exploratory approach, we attempt to explain different parts of the tour guiding profession, while strengthening the dialog between guides and industry, including the educational sector, policymakers and researchers.

Using the previously mentioned model by Bentley *et al*. (2010) where any single factor alone is insufficient to produce an accident risk, further research should aim to address the relationship between two or more stakeholders as essential in enhancing strategies for managing tourists' safety in the Arctic. Those challenges should be addressed both locally and across the region. We advocate involvement of stakeholders, such as training providers, tour operators, emergency preparedness and government representatives in research seeking to address similar objectives, especially considering the context of growing tourism and destination marketing strategies. Using other qualitative methods, such as focus groups, follow up studies could advance our findings addressing objective 3, mapping current mechanisms for enhancing (guides' capacity to manage) tourist safety. Knowledge exchange between various stakeholders is crucial in exploring possibilities for collaboration, involvement and integration of advancing research on tourists' safety in the Arctic.

Arctic safety is a multi-dimensional issue, multifaceted and interdisciplinary in nature, requiring comprehensive and integrative methodologies. Exploring the safety role of guides from the perspective of Arctic visitors could advance our research findings and provide better understanding of the relationship between the guides' practice and tourists' expectations.

Future research may seek to explore how guides ensure safety out in the field by using mixed method design (participant observation, surveys) to supplement our research findings. We encourage researchers to explore guiding practices in other remote locations, to address the need for recognition of guiding as a specialised occupation where specific knowledge and skills are essential in ensuring tourist safety. Finally, there is a need to explore how safety competence is developed and evaluated in guide training programs to enhance safety knowledge creation and to share best practices.

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"Everyone can be a guide until something goes wrong": adventure guides' competencies and tourist safety in the Arctic

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ABSTRACT

Extreme weather, wildlife encounters, and rough terrain are integral to guided adventure tours in the Arctic. Guides are expected to ensure safety while facilitating adventurous tourist experiences. Although this balancing act is of vital importance, there has been limited research on the competencies needed to facilitate tourist safety. This study responds to this gap by identifying the competencies necessary to ensure tourist safety during guided trips in the Arctic environment, with a particular emphasis on the relationship between competencies and the situated knowledge of guides. The results are based on 16 in-depth interviews with guides leading adventure trips in Iceland, Svalbard, and Greenland. The research draws upon existing theoretical studies on outdoor leadership to relate to operational conditions of guides working in the Arctic. The findings indicate that various skill sets are needed to ensure safety, with emphasis on a balance between technical, interpersonal, and operational skills as well as situational knowledge. Recognizing competencies essential to facilitating tourist safety, the study introduces a safety competency framework that positions knowledge, acquired through experience and training, as a mediating factor between various skillsets. Lastly, recommendations for further research on the guide's role in safety management and safety practices are presented.

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Introduction

On 8 October 2015, two tourists participating in a guided glacier trip fell into a crevasse on an ice sheet near Kangerlussuaq, eventually being rescued by guides and transported by helicopter to a hospital. On 27 April 2017, five tourists and their guide went through sea ice while on a snowmobile trip in Tempelfjorden, Svalbard. Three years later, two tourists on a guided trip were fatally buried in an avalanche on a snowmobile trip near Barentsburg, Svalbard. On 7 January 2020, 39 tourists were stranded near a glacier for 7 h in a snow blizzard while snowmobiling on a guided trip in Iceland, eventually being rescued by 200 rescuers. These incidents are examples of the downsides of the increased tourist activities in Arctic environments. Due to the physical features of the environment,

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unstable and extreme weather conditions, rough terrain, remoteness, and long distances, when things go wrong on tours, conditions can quickly worsen, sometimes with fatal consequences (Albrechtsen & Indreiten, 2021; Færevik & Wiggen, 2014).

Safety management is the core of keeping guests safe in the Arctic environment. Studies on risks in adventure guiding have shown that a lack of knowledge about specific hazardous geographical conditions – and a lack of abilities, fitness, and skills – are common risk factors contributing to the likelihood of a negative outcome (Gstaettner et al., 2018). However, there remain gaps in the knowledge of tourist safety in the Arctic, including knowledge of guides' perspectives, competencies, and practices. There is also limited research on tourist accidents in the Arctic, although studies on individual locations have indicated that they may be common. Wæhler and Ingebrigtsen (2022) show that after the 1970s, the majority of accidents at Svalbard was associated with leisure-related activities, causing 3–8 times more accidents than in the comparable population on mainland Norway. Furthermore, Rantala and Valkonen (2011) argue that it is imperative to explore the actual safety practice and culture within the tourism industry, underlining the importance of the guides' competencies.

Safety competencies of adventure guides can be considered soft barriers or defences (Reason, 2016), mediating the unavoidable hazards of operating in an Arctic environment and ensuring that the tourists' experiences are both thrilling and occur within acceptable levels of risk. The concept of rush, described as a combination of thrill and flow, is one of the primary drivers for adventure exponents purchasing commercial adventure tours (Buckley, 2012, p. 967). Studies have shown that the most successful adventure operators are those who manage to reduce *actual* risk while increasing the fear and thrill, which are the subjective emotional responses to *perceived* risk (Yang & Nair, 2015). Hence, guides need to be able to balance the risk exposure, safety, and guests' wishes to experience safe but adventurous travels.

This study aims to identify the competencies necessary for ensuring tourist safety during guided trips in the Arctic environment, with a particular emphasis on the relationship between competencies and the situated knowledge of guides. It does this through an exploration of how adventure guides perceive and address the hazards posed by operating in the Arctic. In the research "adventure tours" are defined as activities involving the use of special equipment (such as glacier equipment, skis, polar bear protection) or off-road transportation (snowmobiles, dogsleds, small passenger boats) conducted outside the settlements area in Iceland, Svalbard, and Greenland and led by a tour guide. While most outdoor leadership skills are universal to various types of guide activities worldwide, it is imperative to study guides' competencies in the Arctic due to specific characteristics of the region, including rapidly changing weather, cold temperatures, and remoteness, which all play an essential role in effectively managing risks.

The following chapter starts with a brief literature review on Arctic safety, adventure tourism, and competency theories to outline the context of the study. The methods and data are then described. The following section presents the findings, which are organized in two parts. First, there is a description of how the adventure guides understand and cope with hazards and risks related to operating safely in Arctic conditions. Second, the skills and competencies needed by guides to cope with these hazards and risks and ensure safe tourist adventures are outlined. Finally, in the discussion, competency framework is proposed that outlines the skills needed for a guide to ensure

tourist safety in the Arctic. Lastly, recommendations for further research on the guide's role in safety management and safety practices are presented.

Arctic safety factors

The Arctic poses a challenging operational problem, in particular for adventure tourism, where exposure to extreme environments and perceived risk is central to the success of the experience. Albrechtsen and Indreiten (2021) define four general characteristics of the Arctic environment that are decisive for safety: cold and extreme weather conditions, climate change, remoteness and long distances, and limited infrastructure. Cold and extreme weather are factors that have been studied in relation to the working environment in the Arctic (Færevik & Wiggen, 2014; Hassi et al., 2005). They can reduce human performance, increasing the probability of accidents (see, for example, Kumar et al., 2009). Moreover, the cold climate affects the performance of technology and equipment, which is often designed for more temperate zones. Furthermore, climate change has had wide-ranging implications for the Arctic environment and communities due to rising temperatures, changes in rainfall, melting snow and glaciers, increasing likelihood of floods and droughts, and extreme weather events (AMAP, 2021; Franzoni & Pelizzari, 2016). This increases the uncertainties related to natural hazards and implies that the risk and safety no longer can be based on "old" rules of thumb (Sydnes et al., 2021).

Remoteness and long distances also create challenges for tourist safety in the Arctic. There is a lack of research on rescue operations in relation to adventure tourism activities in the Arctic. However, there is some information from marine incidents and exercises. The response-time of search and rescue (SAR) depends on weather conditions, the availability of equipment, and personnel. As tourism in the Arctic increases and operations reach more distant locations, the balance between response-time and distance, variable weather conditions, and SAR capacity has become more stretched. The Arctic is sparsely populated and characterized by limited infrastructure that needs to be constantly re-equipped to cater to tourism. The growth of tourism places stress on already existing infrastructure such as local emergency services. The communications infrastructure is poorly developed in many regions of the Arctic, affecting both field safety and SAR (Andreassen et al., 2020). Medical care in isolated communities is often limited and unable to deal with serious incidents. Hence, intensive care patients have to be evacuated and transported to larger cities, such as Tromsø (Norway), Reykjavík and Akureyri (Iceland), and Nuuk (Greenland). These serious safety concerns require that guides be well-equipped and competent with working in unpredictable circumstances.

Adventure tourism in the Arctic and guide competencies

According to the Adventure Travel Trade Association, "adventure tourism" involves exploration or travel with perceived – and possibly actual – risk, potentially requiring specialized skills and physical exertion (Adventure Travel Trade Association, n.d.). Adventure tourism has mainly been studied in relation to its conceptual meaning (Løvoll & Einang, 2021; Rantala, Hallikainen, et al., 2018; Rantala, Røkenes, et al., 2018); behaviour analysis (Buckley, 2012; Ewert et al., 2013; Imboden, 2012; Large & Schilar, 2018); the economy (Cater, 2006); and the role of the guide (Berbeka, 2018; Mackenzie & Kerr,

2012). Adventure tourists' perceptions of risk (Cater, 2006; Dickson & Dolnicar, 2004; Kane & Tucker, 2004) and the general role of the guide (Boren et al., 2008; Lee et al., 2017; Mathisen, 2017; Weiler & Black, 2015) have also been widely discussed, while tourist safety has received less attention in the literature.

Adventure tourism operates in somewhat of a legal grey zone: with the exception of Australia, New Zealand, and Canada (Bentley & Page, 2008, 2006; Morgan & Fluker, 2003), most tourism operations remain unregulated by legislation or safety standards. Rather, these operations fall under laws of negligence, where "duty of care means that the responsibility one person owes to another is to take reasonable care to avoid foreseeable harm to that other person through the person's act of omissions" (Dickson & Gray, 2012, p. 56).

In practice, guides play a crucial role in balancing safety and exposure in extreme environments, which underlines the importance of the guide's competence (Røkenes & Mathisen, 2017). There is direct relation between tourist experience and guide's performance (Einarsdóttir & Helgadóttir, 2022; Hansen & Mossberg, 2016; Rokenes et al., 2015). The guide has a mediating role in influence of inherent danger of the adventure activity, and "clients by this expertise" (Beedie, 2003, p. 150). Furunes and Mykletun (2012, p. 343) emphasize that one of the key factors in accident reduction is the competence of operators and guides. Cheung (2021) refers to significant and intertwined relationship between the clients and guides as the hostile Arctic environment requires practical survival skill as essential in guide's performance. While safety competence is recognized as essential in ensuring tourists "safety" there is limited research on guide's competence (Rantala & Valkonen, 2011). Recognition of competencies directly linked to guide's professionalism is a topic that remains pending in the tour guide research, mostly because it is seen as a step-in improvement of the quality of guided services.

The balance of actual versus perceived risks is key to successful adventure tourism both in terms of emotional experience and safety (Yang & Nair, 2015). "Safety" is understood as "the ability of individuals or organizations to deal with risks and hazards so as to avoid damage or losses and yet still achieve their goals" (Reason, 2000, p. 5). A competency-based approach is commonly used in certification programmes with a focus on the application of skills needed for safe operations. To develop certification of Arctic guides and establish standards for tourists' safety, it is important to understand what skills are essential for guides.

In this study, the competence required by adventure guides operating in the Arctic is analysed by assessing guides' perceptions and experiences. Competence, as defined by Van Klink and Boon (2003, p. 6), is a "term, bridging the gap between education and job requirements." The competencies that tour guides need can be described as outdoor leadership skills. The guide's education focuses primarily on guests' safety and experience, while their job involves facilitating trips outdoor. Outdoor practitioners and researchers have commonly divided these into the categories of "hard" and "soft" skills (Swiderski, 1987).

In this study, integrated approach is employed to analyse outdoor leadership skills, drawing inspiration from a model developed by Shooter et al. (2009), which highlights layers of factors that need to be considered. Shooter et al.'s model (2009) was developed from a so-called outdoor programme perspective and provides a useful starting point for assessing guides' skills in adventure tourism when operating in an Arctic environment.

The starting point in the model is that the purpose and goal of operators is to provide adventurous and/or extreme tourist experiences within acceptable levels of risk (Adventure Travel Trade Association, n.d.; Yang & Nair, 2015). The second layer of Shooter et al.'s model focuses on specific attributes of the tour, such as the type of activity, natural environment, type of terrain, group size, and so forth. This study focuses on the activities involved, weather and climatic conditions, and infrastructure that are specific to the Arctic (Albrechtsen & Indreiten, 2021). The third and fourth layers refer to guides' leaderships skills. While these are typically divided into hard and soft skills, the model uses a more detailed categorization of skills, corresponding to the procedural aspects of the guide's daily work (Shooter et al., 2009). The third layer, referred to in this study as operational skills, include judgement and decision-making and managing the group. This layer serves as a mediator between the operators' aims of a successful and safe experience (first layer), the specific attributes of the activity and its context (second layer), and the ability of the guide to effectively apply their technical and interpersonal skills to ensure the outcome. Technical and interpersonal skills are the fourth layer in the model. Technical skills comprise hands-on activities and tasks including navigation, route finding, operating equipment, and first aid. Interpersonal skills concern direct personal interaction with guests, entertaining activities, and so on.

While Shooter et al.'s model effectively classifies and describes outdoor leadership skills, there is a gap in the model regarding the role and significance of knowledge. Even though knowledge-building is integral in advancing tour guides' training, research has not explored the guides' state of knowledge related to competencies and practices. Guided adventure tours in the Arctic are potentially complex operations due to the dynamic nature of the Arctic safety factors outlined above. This complexity poses significant challenges and requires that guides use operational, technical, and interpersonal skills to safely manoeuvre while maximizing tourists' experiences. Furthermore, guides must also have a substantial amount of knowledge regarding how to manage safety procedures in the Arctic operational environment. As such, knowledge is a mediating factor between the second layer – the specific attributes of the tourist field activity – and the effective application of the guides' skills. Without sufficient knowledge, the guides' decisions and actions may prove ineffective or, even worse, unsafe.

General safety knowledge consists of three elements: written organized knowledge (explicit knowledge), personal experiences (tacit knowledge), and best practice and skills application (implicit knowledge). Knowledge creation and knowledge sharing are essential for improving safety in any organization (Kjellen & Albrechtsen, 2017). Experiences gained from an activity function as feedback for decision-makers and inputs for safety management systems, providing a basis to continue or improve future activities (Kjellen & Albrechtsen, 2017). There are a multitude of perspectives on learning and knowledge. In this context, our primary concern regards the production and use of knowledge by guides in an Arctic context. It is useful to distinguish between explicit and formalized knowledge as codified by organizations and tacit knowledge held by individuals (Nonaka & Takeuchi, 1995). This approach has been applied by Indreiten et al. (2018) in an exploratory study demonstrating that an individual's tacit knowledge is fundamental in developing organizational safety as it provides observations and experiences of the "worker at the sharp end." In their words, "tacit knowledge is acquired through multiple seasons and hundreds of hours of field work and manifest by use of part experience and

knowledge to anticipate the hazard and then act accordingly" (Indreiten et al., 2018, p. 1940). In order to yield insight into the competencies and situated knowledge needed for safe guiding in Arctic adventure tourism, the focus is directed on the perception and experiences of guides.

Methods and data

This study gathered data through in-depth semi-structured interviews with 16 guides working in Iceland, Svalbard, and Greenland. Interviews allowed us to explore the guides' experiences of busy tourist seasons prior to COVID-19 and gain insights into their perceptions of the challenges associated with taking care of guests in remote locations in the Arctic.

The interviews were conducted between December 2020 and April 2021. Invitations with a short project description were sent by email and Facebook Messenger. Most participants worked as guides, although some also had work experience as CEOs, operation managers, or owners of tourist companies. Some of the guides were unemployed due to COVID-19, but in normal circumstances, most would have been between tourist seasons at the time of the interviews. Our research focused on the following activities: snowmobile driving, hiking, glacier guiding, rafting, dog sledding, hunting, and boat driving. These activities were assumed to be the most common in adventure tourism in the Arctic during both the winter and summer seasons.

The interviews with participants located in Iceland were face-to-face, while those with participants in Greenland and Svalbard were conducted online. The interviews were conducted in English, they were recorded, transcribed, and analysed by the first author. Pseudonyms were given to ensure the guides' anonymity. Atlas.it software was used for the coding and analysis. Codes were developed in three steps, starting with open coding (Neuman, 2014). Axial coding was then conducted, and key themes were drawn out of the text with reference to the research question regarding the skills needed to ensure safe guiding in the Arctic. The emergent themes were *hazards, risks*, and *competencies*.

The interviewees were chosen using purposive sampling with the following preconditions: the participants should be adventure tourism guides with high levels of technical skills (Mackenzie & Kerr, 2012); they should have experience leading activities involving specialized equipment or risk exposure, such as kayaking, glacier guiding, rafting, and so on (Mackenzie & Kerr, 2012); and they should have experience managing incidents while guiding. This ensured that the interviewees possessed the relevant attributes needed for the study. The 16 interviewees represented a mix of genders, ethnic backgrounds, levels of training and education, and experience.

Profile of interviewees

All guides had experience working as hiking guides, which is the most popular paid activity in Iceland (Ferðamálastofa, 2016), and most were guiding glacier travel and snowmobile trips, which correlate with the image of the "real" Arctic experience according to tourists in Svalbard (Aldao & Mihalič, 2020). Guides ranged between 25 and 65 years old, with the majority between 35 and 45 years old, and had between 1 and 20 years experience as guides. Most interviewed guides entered the guiding industry in their early twenties

and started to work as guides without the relevant education, although they then took some courses (such as avalanche, camping, etc.) applicable to their work during their years of guiding. Guides from Greenland worked mainly in Greenland, most guides from Iceland had cross experience working in Iceland and Greenland, and guides from Svalbard worked in Svalbard and other locations. The tourism in Greenland is coastal, so most of the guides work on boats, while in Iceland most guides have land-based experience, such as hiking, biking, snowmobiling, and rafting. Guides working in Svalbard led the most versatile activities, guiding hiking, glacier, dogsledding, boat driving, skiing, and snowmobile trips. As the tourism is seasonal in Greenland and Svalbard, guides often go to Antarctica and work on cruise ships in the dark season (November – February), while in Greenland they work in other industries (fishery, hunting, administration). Guides in Iceland work year round. During the interviews, the aspect of "being local" repeatedly came up. The meaning of being local differed between the three destinations but mainly referred to being "from the place," such as Greenlandic person working in Greenland and an Icelandic person in Iceland. In Svalbard, the status of being local is more complicated or relative: For the interviewed guides, it mainly refers to having worked for a local company in Longyearbyen for a considerable amount of time.

Results

There has been an increase in tourism in recent years in all three locations, although there is a difference in how quick the growth has been (Maher et al., 2022). The research addresses various types of tourism activities taking place in the destinations. The most cited reasons for visiting Greenland are nature and wildlife. Tourists have been grouped into three categories based on their preference for "nature experiences" in the Arctic: *nature appreciator, nature lover,* and *wilderness seeker* (*Greenland Tourism Statistics*, n.d.). According to Svalbard statistics, 30% of travellers are interested in adventure activities such as snowmobiling, dogsledding, ice cave visiting, kayaking, and ski touring (Visit Svalbard, 2021). Activities such as guided hiking, mountain and glacier trips, and other adventure-related activities are among the most common paid activities in Iceland (Ferðamálastofa, 2016). In all countries, there is significant variety in the length of different types of guided adventure trips, ranging from a couple of hours to multi-day activities.

All the interviewed guides were eager to discuss tourist safety, which they considered to be somewhat neglected by some companies and tourist administration. During the interviews, it became apparent that hazard prevention, accidents, and competence were interconnected in guiding both in practice and at the organizational level. The central themes that emerged from the data were *hazards, risks*, and *competencies*. Below, those hazards and risks are discussed in relation to tourism operations, and afterward, guides competencies are examined.

Hazard and risks related to the (work) environment

Weather

Unsurprisingly, the weather has a crucial and unavoidable impact on the guides' activities and tourists' experiences. Weather can enhance the guests' experiences, but it can also lead to severe outcomes, such as hypothermia, frostbite, and even death. Interviewees

repeatedly identified weather as playing a determining role in relation to safety, with the guides mentioning strong winds, low visibility, and extreme weather events as risk factors and a major cause of accidents. They stressed the importance of understanding weather complexity when making judgments about safety practices. All the participants mentioned the importance of being prepared for all eventualities, enabling them to respond to fast-changing weather conditions in Arctic environments. Magnus, for instance, described his guiding experience in Iceland:

> Here is the thing. Guiding it is not extreme when things are going right. If you are caught in bad weather up there, that is extremely dangerous. That is why you need to be on top of that. You have to check the weather forecast; you have to be absolutely sure that you're not going to be hit by a storm on a glacier, because those storms are crazy.

A common hazard is the combination of snow and wind, which leads to limited visibility and whiteouts as well as snow accumulation on the sloped sides, creating avalanche conditions. While discussing snowstorms in Iceland, Magnus reflected on a well-known accident that occurred during a snowmobile-guided trip in winter 2020, where 39 guests on snowmobiles were stuck for hours in a snowstorm, unable to drive on the heavy, freshly fallen snow. Bad weather came in earlier than expected and eventually the whole group was rescued. *In Iceland, we are always gambling with the weather. And they lost that gamble*, he said. However, several interviewees said that the hazardous weather conditions in the Arctic also presented an opportunity to learn something new and use their skills. For instance, Ólafur, who is a guide in Iceland, mentioned that *near death, extreme weather attracts visitors and could be offered as a product*. This observation corresponds with recent research on travellers' motivations for visiting Longyearbyen, Svalbard, which found that wanting to experience "real winter" is one of the primary motivating factors of tourists (Aldao & Mihalič, 2020).

Terrain – glaciers

Adventure activities in the Arctic are usually carried out on glaciers, on sea ice, in the highlands, or on water. Different terrain characteristics can lead to different risks. All guides mentioned glacier ice as a risk for glacier hiking, skiing, dog sledding, and snowmobile trips. Glacier hiking trips avoid going into crevasses per se (outside of ice climbing), and most snowmobile trips in Svalbard use snow-covered glacier routes to stay away from crevassed areas. Most of the guides cited local experience as the best way of becoming familiar with the terrain in addition to glacier rescue training. However, the glacier movements brought about by climate change concerned many guides due to the risks of driving into crevasses. Discussing the risks associated with glaciers, Josef reflected on his trips to Iceland's highest peak:

> I am petrified when I have to take people up to Hvannadalshnúkur because there's always that […] uncertainty because the glaciers always change. So, you are always going into terrain that wasn't like that the last time you were there [… and] that is a bit scary.

Melting glaciers not only affect hiking trips, they also affect water activities near glacier fronts. Increasing numbers of calving fronts and larger ice-marginal lakes are known dangers in Iceland (Dell et al., 2019) for activities such as kayaking. Gudrun, a kayaking guide in Iceland, described her concerns about changing glacier fronts: *On*

Breiðamerkurjökull, now when the ice breaks off, it can go another 40 meters underneath the water level, and you do not see it. So, we really want to stay far away.

Guides working on glacier walking trips focus more on the ice hardness, which changes between seasons. For example, "sun-crust," the surface of the ice that melts in the summer and makes the ice rugged, helps provide a better grip when walking in crampons on the glacier. Ugluspegill, an experienced glacier trip guide, discussed the various conditions during summer and winter trips:

> Pure winter conditions on a glacier are more dangerous than summer conditions because of the hardness of the ice (…) We needed to sharpen the crampons, while in summer it was fine if they were dull because they would sink in the ice anyway. But in the winter, our guides would be sitting in the workshop sharpening crampons.

Discussing the consequences of a tourist's fall on winter ice, Josef added:

> There's just no stopping them. So, you just realize that everything is good until one small thing goes wrong, and then it goes very, very bad. Like the guy who fell meters down a month ago. I mean now I have this image in my head that if he'd gone down into a moulin [a deep, vertical channel on the glacier], which can be 50, 60, 70, 80 meters deep, it would be done. He would be completely dead. […] I have not been on a glacier since a month ago. So, it will be interesting to see what it is like when I go back next time. I'll probably be even more cautious.

Terrain – sea ice

Travel to the East Coast of Svalbard is among the most popular winter trips offered to incoming tourists in the archipelago. Although it is forbidden to actively search for polar bears, companies in Svalbard offer snowmobile trips to enter polar bear territory (Dybsand, 2020). The East Coast trips are one such example. These trips require groups to drive on frozen fjords with glacier fronts, where sea ice crossing is required. Although snowmobile tourism in Greenland is in the early stages of its development, sea ice crossings occur in the Kangia Fjord region. There are no official regulations or recommendations regarding sea ice crossings in Greenland, so tour operators usually rely on the knowledge of local fishermen who use the same routes. Palmson, an experienced guide leading dog sledding trips on sea ice in Greenland, mentioned an incident in which he had been called to assist tourists who had fallen through the ice while travelling on their own. He said, *Only locals know what features to look for and where it is safe (or not) to walk*.

In the interviews with guides working in Svalbard, discussions about sea ice always returned to a 2017 accident, where seven guests and a guide fell through the sea ice in snowmobiles while crossing the frozen Tempelfjorden (Kelman et al., 2020). This was the first case in which a guide in Svalbard had died as a result of an injury on a trip. When asked how this accident had affected her view of safety, Una said, *due to the accident, guides became more alert on trips involving sea ice crossing*. The locally recommended measures that she had relied on previously, such as 30 cm ice thickness, were no longer enough: *I wouldn't say I trust them entirely. I would look more at the quality of the ice itself,* she added. When asked what could be learned from the accident, she emphasized the need to *assess the sea ice conditions with a focus on the weather, including storms and sea currents*.

Terrain – avalanches

Avalanche risk is inherent to land-based activities such as backcountry skiing, snowmobiling, and dog sledding. Since 2000, nine people have died in six avalanches in Svalbard: seven on snowmobiles and two on a guided tour (Ingest et al., 2020). When asked about avalanche danger, the guides talked primarily about the weather – the snow, the wind, and changeability:

> Knowledge of how to respond to accidents in our work nowadays focuses mainly on avalanche danger. Next to melting glaciers and opening crevasses, the avalanche problem [is one of the most dangerous]. Every local guide needs to know where he or she can travel, where to stop, and what places need to be absolutely avoided. Guides being hired now need to have avalanche trip knowledge. Just last year, we had an accident due to a wrongly parked snowmobile – an avalanche fell and fatally buried two tourists on a guided trip. (Birgir, guide from Svalbard)

The avalanche accident that Birgir referred to raises questions about safety practices in the guide community. When asked about the causes of accidents, all guides mentioned a lack of avalanche awareness and poor judgment as well as changing weather conditions that are difficult to evaluate. They also cited knowledge and training as the main factors for guides and companies to consider when assessing avalanche danger. However, some guides stressed that the risks cannot always be reduced and are an inherent part of the activity.

Remoteness, infrastructure, and complicated logistics

Remoteness and long distances were identified as major logistical obstacles to ensuring guests' safety. Guides working in Svalbard mentioned that even hiking trips near the Longyearbyen in Svalbard can be challenging due to rapidly changing weather conditions, polar bear encounters, and the guests' lack of preparation for strenuous activity in demanding terrain. Under these circumstances, the guides are first aid responders, and they noted significant differences in search and rescue capacities in Greenland, Iceland, and Svalbard.

Search and rescue operations in Svalbard were described as fast and reliable, depending on the weather. The interviewees described broken bones, spine injuries, and stamped shoulders as the most common injuries, and these were responded to by transporting the injured guests back to Longyearbyen by helicopter. Assistance could arrive within 30 min to 1 h. The guides were satisfied with the medical and technical assistance provided by their companies in the field.

Search and rescue operations in Iceland were described as highly specialized and headed by well-trained personnel who had substantial equipment – such as belted vehicles, snowmobiles, and cars. Guides estimated that a rescue helicopter could arrive within 45 min, on average, anywhere in Iceland. This corresponds with the Icelandic emergency preparedness plan, which mentions a 60-minute response time for all helicopter flights (Velferðarráðuneytið, 2018). The shorter distances and larger number of rescue volunteers in Iceland were described as advantages compared to the more limited rescue system in Greenland, a larger territory as Ugluspegill explains: *If you have a hiking group in East Greenland and have an accident, then a helicopter in the area is the option. There is a hospital in the area; but if they cannot fly, you just have to wait.* When asked

how long such a wait could be, Snæbjörn, a guide experienced in search-and-rescue missions in Greenlandic waters, explained:

> On a very good day, you can expect the helicopter to be on top of you in maybe 6 hours after you push the red button, normally, maybe eight. And then, there is weather of all kinds that affects us. So, the resources are scarce and, of course, there is the remoteness and the big distances. It is a very big challenge.

Other guides working in Greenland, both on land and water activities, expressed similar views: the more isolated the location and the greater the possibility of extreme weather events, the more caution the guides took due to the inability to rely on external help. Injuries such as broken bones that required helicopter evacuation from the scene were described as potentially critical. This concerned the guides working in Greenland and the Icelandic interior:

> Some worst-case scenarios in Greenland would be on an icecap when you're out of reach of helicopters. You need, uh, twin otter plane with skis to get to you. If you are in very stormy weather without visibility, you could have to wait for two or three days. (Ugluspegill)

When the resources are scant due to the logistics, just like SAR operations in Greenland, knowing who to contact and what resources are available plays a key in ensuring fast responses. In an interview, Palmson highlighted the important of local expertise in the context of both creating experiences and ensuring safety: *You cannot talk about the experience of living in Greenland in [the] summer or winter from reading Google or a guide manual, we* [Greenlandic guides] *know people in the settlements, we know the area*.

Guides' competencies

As the discussion moved on to the guides' roles, the interviewees described themselves as being "safety officers" and entertainers. When asked what skills were needed to ensure safe adventures, the guides mentioned various skillsets. When asked about bad guiding styles, they mentioned *overconfidence* and *showing off*, while good guiding involved equal measures of technical, interpersonal, and operational skills as well as knowledge of local conditions and context.

Technical skills

The interviewees described shelter building, first aid, and survival techniques as first responder skills that are directly beneficial for ensuring guests' safety in emergency situations. Knowledge of weather patterns, the ability to read weather charts, and an understanding of clouds were all also cited as vital for making judgments about the weather. Guides working in Svalbard and Greenland mentioned that the official weather forecasts were not reliable due to differences between the weather stations and the location of the activities. Ólafur mentioned the importance of being able to process the information about currents and wind patterns (explicit knowledge), combining it with personal experience from work in the specific area (tacit knowledge), and applying it in practice: *We need to learn those patterns, to be able to predict the weather at least so far ahead that you will be able to be somewhere safe* (Ólafur).

Another important skill related to the weather was the ability to travel in avalanche terrain. This skill consists of three elements: knowledge of the danger, the ability to assess risks, and the ability to act in case of accidents. The guides in Svalbard mentioned that polar bear safety skills were a basic requirement for guiding in Svalbard. These skills consisted primarily of safe handling of firearms. Guides in Greenland listed sailing skills as necessary for travelling on sea in all conditions and having an understanding of the risks associated with calving glacier fronts and sea ice. The guides named crevasse rescue as a key glacier travel skill. Josef explained the reasoning behind this: *So if you couldn't pull somebody out of a crevasse, it didn't matter how long it took you, then you basically failed. They would not hire you on the glacier.* Skills such as crevasse rescue were linked to another skill: being able to navigate the terrain. Miki, a guide in Iceland, explained that *walking cluelessly on the glacier means you're going to be a dangerous guide and you're going to need to do crevasse rescue every day with the clients. So, basically, you're just failing your job, you know?* The specific skills needed for guiding hunting trips were hunting proficiency, spotting wildlife, knowing how to get the snowmobile out of slushy ice, and being able to turn the boat on a right angle at the right time, which comes with reading the water for white water rafting. Some specific skills, such as good skiing abilities, were not considered sufficient for safe guiding. Magnus made this point:

> Many people tend to think, he is a great skier, so he is a good ski guide. This is absolutely not necessarily the case. He might be lacking all the skills of a reading group, avalanche safety, and all that. So, I had that a few days ago when I was talking to the guy who manages ski patrol. He hired a guy because he had wilderness first aid, which was good and he was such a strong skier, but he was missing the avalanche training. I said to him, "Well, for me, the skiing part is the last thing." Of course, the guy has to be able to ski, but he does not need to be the best skier around. He needs to be solid in wilderness first-response, avalanche evaluation, and then just risk management. Skiing is the fourth skill.

In the category of technical skills, the most commonly highlighted skills were wilderness first aid, navigation, reading and understanding meteorology, avalanche training, polar bear safety, and skills related to leading specific activities (such as driving a snowmobile, sailing a boat, skiing, climbing, and hunting). Guides also mentioned knowledge about the correct use of equipment.

Interpersonal skills

When asked about "people skills," Gudrun explained these involved the abilities to *read the people, meet their expectations, [and understand] what they need and what they want*. The guides saw their role as one of experience managers and entertainers (meeting guests' expectations). They shared the view that the guide is the leader, and it is up to the guide to strike a balance between what guests want and what is safe for them to have. They mentioned that experience and confidence were key to attaining this ability. Ketill said confidence was important for successful guiding. After years of guiding, Ketill is now in charge of hiring guides and searching for the specific skills that would fit the company profile:

> Some people are just more likable than others, and they can convince a lot of people to behave in a certain way. But others can't. The way the guides act is usually the biggest

> influence on how the guests perceive the tour, whether it was fun, or especially if the guide showed signs of fear, the guests immediately become very afraid. The guide has to be pretty competent, so he can't be uncertain when he's making decisions.

Interpersonal skills are needed for direct personal interaction with the guests, and the most commonly mentioned skills in this category are the management of guests; leadership, planning and organization; teaching; confidence, stress and time management; storytelling; and flexibility. The ability to teach guests to use snowmobiles, walk in crampons, and drive dogsleds were also listed as well as the ability to assess the guests' skills. Most of the guides mentioned *good planning*, *being able to deal with challenging situations*, and *not panicking* as foundations of good performance. Some of those skills, such as planning or time management, can be developed by acquiring explicit knowledge, while being able to apply the skills in practice, such as being confident and flexible in decision making, comes with experience (implicit knowledge) and improving one's skills and practice (implicit knowledge). Experience of being exposed to various situations helped guides deal with uncertainty and their knowledge about situational leadership.

Operational skills

The most often mentioned skills in relation to the operational aspects of running a trip were decision-making and risk management. The skills in this category were described as a *way to facilitate safety* using interpersonal and technical skills. The capacity to perform these skills is mainly based on how a guide applies their know-how to reach the best outcome. Decision-making is central to the guides' actions, whether it is related to choosing a route (and having the technical skills to do so) or group leadership (communicating and being a leader during the trip). Stefan highlighted the importance of reading clients when making decisions:

> You need to observe who your guests are. What are their physical and mental conditions? You need to answer the question, are you comfortable taking this trip? Because if you are not, then you, being responsible for people, need to make another decision – change the trip, or maybe you would feel more confident if you had two guides for that group.

To explain the complexity of the decision-making, Ulfur used a hunting trip as an example:

> It is all the same everywhere. You know, most plane crashes happen because of plane delays – there's weather or some instruments [stop functioning]. And the pilot is tired. And that starts a chain of events that ends in a plane crash. And there is the same kind of thing in hunting situations. Problems usually occur when you hiked half the day and you need to turn around, but there's a caribou two kilometres away. If you get it, you need to carry the whole caribou on your back to the camp in the dark. The guide must always be capable of telling the clients, "No, we can't do that. It's too late." So, there's technical competency – like first aid and communications – and then there is the psychological stuff. You have to be able to look the client in the eye and say, "We can't do that."

Guide's knowledge

Another factor mentioned when discussing skills was the importance of familiarity with the local environment. Interviewees cited this as one skill set that did not fit entirely

into a singular category. Local "know-how" mainly applies to the knowledge and experience in certain areas and the needed expertise to guide people in a very broad setting (the Arctic) while applying localized, specific knowledge. This might include knowledge on the specific weather patterns, terrain, language, and cultural-social settings. Guides mentioned local knowledge as essential for decision-making and risk management, which is execution of the technical and interpersonal skills. For example, getting the most reliable weather forecast needs to be combined with understanding its limitations, such as its limited reliability and local deviations.

Ugluspegill reflected on applying knowledge of one place to another, referring to his mountain guiding practice in France and Iceland: *I underestimated that environment, because I have some experience in Iceland and I thought I could use it* [in France]. *But it doesn't work like that. If you think you can take your experience and just directly move it to another type of country without learning something new, you are doing it wrong.* The guides in Greenland mentioned that knowledge of the local people, customs, and traditions was important for ensuring the quality and safety of the trips and understanding the local sea ice conditions. The guides in Iceland noted that foreigners often underestimated the knowledge that the locals possessed: *The competence that's needed in the Arctic is very different from [those needed elsewhere]* (Birgir). For guides working in Svalbard, local knowledge was derived from experience of the terrain and polar bear safety.

Knowledge of the Arctic conditions and possession of the necessary skills need to be conceptualized to highlight the importance of these cross-cutting factors, which have a significant influence on decision-making while leading trips. Interviewees mentioned that even though training by gaining soft and hard skills is essential for the guest's safety, understanding the environment comes from experience and familiarity with the local area. Thus, local knowledge becomes the umbrella formation for other types of knowledge (explicit and implicit) that are based on experience (tacit knowledge).

Discussion and conclusion

This study has identified the competencies required to operate safe adventure tours in the Arctic by exploring how guides perceive and address the hazards posed by operating in three Arctic destinations: Iceland, Greenland, and Svalbard. The respondents noted the importance of various skills that are similar to those required in the general outdoor industry, such as group management (Black & Weiler, 2013), communication skills (Løvoll & Einang, 2021), and technical skills (Valkonen et al., 2013). The study further demonstrates that Arctic adventure guides' leadership skills are in line with existing models of outdoor leadership, including technical, interpersonal and operational skills (Shooter et al., 2009). Yet, in the Arctic, with its specific safety factors, guides' competencies need to reflect the complexity and volatility of the operational environment they work in. These skills include, for instance, knowledge of meteorology, including the local weather, the charts in relation to the conditions outside, and the limitations of the published weather forecasts. All interviewees also mentioned the importance of having good navigation skills. This corresponds with Furunes and Mykletun's (2012) research on the role of the guide, which found that the activities themselves are not always difficult but the clients rely on the guides' expertise to find their way in the new terrain.

In addition to navigation skills, the guides' coping strategies for dealing with glacier terrain included regular glacier training, checking the conditions (trip recon, analysing helicopter and satellite pictures before the winter season), and avoiding unnecessary exposure to known risks. As they are navigating various types of terrains, the guides need skills in assessing danger and reading the snow and sea ice charts in case of sea ice crossings. Although the individual personality of the guide can affect the guests, the interviewed guides mentioned education, training, and experience as ways of improving guiding and safety standards. This corresponds with research that has shown "[competencies] as a result of skills and disposition beyond cognitive ability such as self-awareness, self-regulation, and social skills are fundamentally behavioral, and unlike personality and intelligence, may be learned through training and development" (McClelland, 2016 cited in Le Deist & Winterton, 2005, p. 31).

Tourist safety in guided adventure tours in the Arctic depends on the guide's competencies.

While these are built upon technical, interpersonal, and operational skill sets, situational knowledge is also required to ensure appropriate risk management and decision-making. Together, they can be grouped into an Arctic Guide Safety Competencies Framework (Table 1).

Technical and interpersonal skills are gained through experience and training, while situational knowledge is gained by experience and understanding of local conditions. While explicit knowledge, such as that gained from manuals or documents (such as weather forecast), provides information about the procedures or conditions, sound decision making requires tacit knowledge, which is gained by experience, education, and skills. Operational skills are then needed to make decisions based on the previously listed competencies. As Baker and O'Brien (2020, p. 4) mention, "skills are hard to visualize in [a] practical sense, [they] are fluid and adaptable, but managing risk and safety is a practical way of utilizing knowledge for the outdoors leaders." The importance of situational knowledge is clear in the guides' discussion of the causes of fatal accidents, as they pointed to a lack of avalanche awareness, poor judgment, and changing weather conditions that are difficult to evaluate. Situational knowledge, whether it be explicit or implicit, is needed in judgment and decision-making and is the key component in mediating previously mentioned layers of exposure to the environment and skills needed to facilitate safe experiences.

Guides manage uncertainty in various ways, using their skills and knowledge. All the interviewees highlighted that risks cannot be completely eliminated in adventure

Table 1. Arctic Guide Safety Competencies Framework key components.

Technical skills	Interpersonal skills	Operational skills	Situational knowledge
First aid, navigation, reading and understanding meteorology, avalanche skills, polar bear safety, skills related to specific activity (snowmobile travel, boat sailing, skiing, climbing, hunting) Knowledge about correct use of equipment	Leadership, planning, organization, teaching, confidence, stress and time management, storytelling, ability to assess guests' skills	Decision-making, reading guests, communication	Knowledge of specific weather patterns, terrain, language, cultural-social context, knowledge of local people, customs and traditions, understanding local nature

guiding. Therefore, knowledge of how to manage risks is essential for managing safety. The guides' competencies regarding safety measures are similar to those required in other industries in which the human factor is an integral part of the decision-making process, affecting the outcomes for tourist safety. Furthermore, as noted above and highlighted by the interviewed guides, competencies can be taught and should be continually re-evaluated to keep the safety standards specific and up-to-date in an ever-changing Arctic environment.

Adventure guides need to acquire the necessary skill sets through formal training and practice. However, they also need knowledge of the operational context to apply these skills. The knowledge often highlighted by the guides in this study is, to a large extent, experience based. It is the result of conducting specific activities (e.g. snowmobiling) while being exposed to specific operational conditions (e.g. sea ice crossing). For example, Una considered the formal rules (of being able to go on ice of 30 cm thickness) less trustworthy than her own experience-based assessment of the ice quality in Tempelfjorden, Svalbard.

The operational conditions discussed in this study are specific to the Arctic and thus can be categorized as Arctic factors (Albrechtsen & Indreiten, 2021). Furthermore, in terms of the guided activities, the knowledge needed by the guides to make sound decisions is both very situated (locally specific) and dynamic, requiring experience. Hence, situational knowledge is not easily transferable from one season/location/terrain/activity to another. It often has to be gained through experience. Consequently, there is a tendency that such knowledge remains tacit (individual) or implicit (shared through common practice) rather than made formal and explicit (Nonaka & Takeuchi, 1995). This makes formal safety management based on experience-based feedback more demanding (Kjellen & Albrechtsen, 2017). Moreover, it demonstrates how the use of guides' skills is dependent not only on the aims of the activity (levels 1), its specific attributes, such as terrain, weather-conditions, group, etc. (level 2), but also the guides' knowledge of the specific operational conditions in which they are conducted (mediating level). It is on this basis that guides can make judgements and decisions (level 3) upon the use of technical and interpersonal skills (level 4) to ensure both the safety and experience of the clients (see Figure 1).

The findings suggest the need for further research in safety management and safety practices in Arctic adventure tourism. Researchers are especially encouraged to explore the following areas: tour guides' education, operating standards, safety regulations, and guides' practices. With the emphasis on skills and knowledge acquisition, more research is needed to explore the current trends in guides' training, the use of learning theories and mechanisms in decision-making development process. Finally, the proposed Arctic Safety Competencies Framework should be explored further in practice to better understand the practical interplay between different skillsets and knowledge.

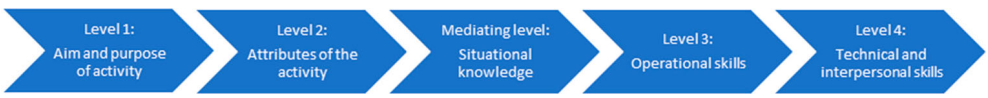

Figure 1. Levels of outdoor leadership competencies in the Arctic. Source: Based on Shooter et al. (2009, p. 10).

Owing to the challenges of working in a dynamic Arctic environment, safety competent guides are clearly the key to tourist safety management.

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Publication III

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Developing Safety Competencies Among Arctic Nature Guides in Training: An Analysis of Student Experiences

Abstract. This paper reports on a yearlong, longitudinal empirical study conducted in Svalbard that sought to explore safety competency development among tour guides undergoing training. This paper seeks to clarify how tour guide training in the Arctic contributes to enhancing safety and risk management competencies. The data-gathering methods employed in this study included participant observation by a researcher immersing herself in learning process of students participating in Arctic Nature Guide program. The purpose of the study was to explore the use of Experiential Learning theory in tour guide program. The findings from the study indicate that Experiential Learning theory may be an effective tool for developing students' safety and risk management competencies. This study contributes to existing knowledge on safety training for tour guides, providing insight into how training programs can best prepare tour guides for functioning in extreme environments. This study also provides recommendations for further research related to tour guide safety training.

Keywords: tour guide, safety competence, risk management, experiential learning, arctic tourism

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1. Introduction

Safety concerns related to travel in the Arctic is an emerging research topic in tourism and safety studies, especially in the context of field operations (Adumene & Ikue-John, 2022; Kruke & Auestad, 2021; Albrechtsen & Indreiten, 2021; Indreiten, Albrechtsen & Cohen, 2018; Sydnes, Sydnes & Antonsen, 2017). Although remote locations and extreme weather may be attractive for tourists traveling in the Arctic, these attributes make it difficult for adventure guides to ensure the safety of tourists. Research indicates that there is an urgent need to emphasize tour guide training meant to enhance tourist safety (Weiler & Ham, 2002). Risk management

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and safety training for tour guides in high-risk environments teaches the skills needed for effective coordination, especially during emergencies. Tour guides must possess superb leadership, decision-making, and communication skills in order to maintain safety standards. Moreover, both individual and team training should be implemented to enhance knowledge-sharing capacity (Grote, 2012). Tour guide training in the Arctic is intended to enhance tour guides' capacity to lead guests in inhospitable environments, therefore it is important to understand how guides are trained and what learning theories are used to develop safety and risk management skills. This paper addresses the gap in research on training tour guides who work in extreme environments by examining how the Arctic Nature Guide (ANG) program provides students with reliable knowledge that can be applied to manage risk during adventure tours in the Arctic.

This study employs an ethnographic approach to focus on the experiences of guides in training, with an emphasis on integrating their personal perspectives and interpretations of the learning process. The study focused on examining the key factors related to successful safety competency development for tour guide training in the Arctic. Moreover, this paper contributes to the limited body of ethnographic research on nature-based tourism (Rantala, 2011), particularly in the context of tour guide training and safety practices (Rantala & Valkonen, 2011).

The data analysis identified a pattern of reflection on expanding decision-making capacity, which is in line with Kolb's experiential learning (EL) theory. Experiential learning theory is deeply rooted in outdoor education, and it is commonly used for training (Valkanos & Fragoulis, 2007) and education purposes (Lam et al., 2019; Healey & Jenkins, 2000; Fowler, 2008; Kolb & Kolb, 2017). This paper, however, seeks to expand its potential applications by analyzing its utility for tour guide training.

The novelty of this research it twofold: an exploration of the safety skill acquisition process during tour guide training programs in the Arctic by using participant observation method.

Hence, to fulfill the aim of the research, this paper seeks the answer to the following questions:

- How students' experiences during ANG program influence the process of development of safety and risk management competence?
- What strategies can be used to enhance risk management and safety competence acquisition in guide's training?

This paper first summarizes existing knowledge related to safety in the Arctic, tour guide training programs, and EL theory. Next, the paper examines the ANG

program by describing five cases of students' experiences participating in various activities as part of the training program. This discussion highlights the importance of exposing students to real-world environments (in this case, the Arctic) and importance of encouraging students to take on the role of decision-maker when training as a tour guide, as both approaches are crucial to developing target competencies among tour guide trainees. Finally, the conclusion emphasizes potential future applications of EL theory for developing safety and risk management competencies via training programs. It also addresses further avenues of potential research related to training Arctic tour guides.

2. Literature Review

2.1. Tour Guide Training

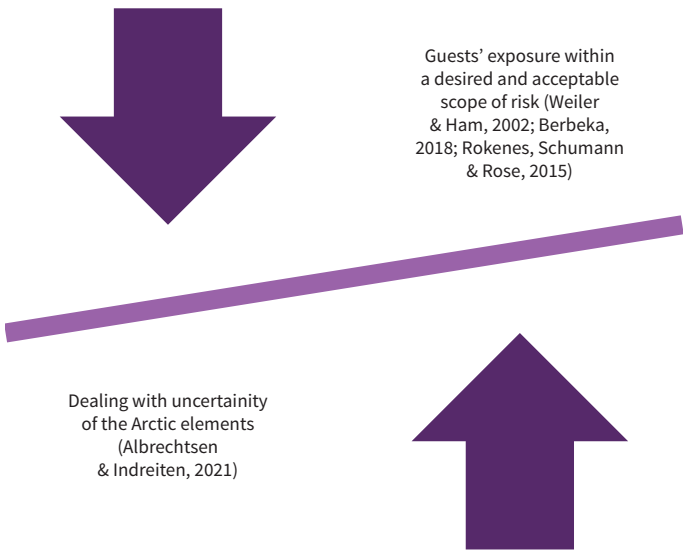
The occupation of tour guide has a long tradition of informal learning, where guides often learn on-the job rather than in the classroom. Despite continuing efforts to gain recognition of the knowledge and responsibilities of tour guides, limited research focused on value of guides education (Weiler & Black, 2015). Most research on tour guide training has been conducted in countries where tourism businesses require some form of official certification, such as tour guide licenses (Dahles, 2002; Esichaikul et al., 2020; Huang & Weiler, 2010; Mason and Christie, 2003). Some forms of certification are also required from businesses involved in high-risk adventure sports, such as white-water rafting, scuba diving, and mountaineering (Hunter, 2007; Wilks and Davis, 2000; Mackenzie & Kerr, 2012). In the research on tour guide training, Mason and Christie (2003) argue "that good guide training should lead to change, not only in terms of knowledge and skills, but also in attitude and behavior" (p. 1). Many existing studies on tour guide education, including Brito (2020), Mason and Christie (2003), and Prakash and Chowdhary (2010), evaluate program curriculums and discuss whether programs produce the desired outcomes. However, these studies only discuss the well-known roles of guides, including mediator (Cohen, 1985), "leader, educator, public relation representative, host, [and] conduit" (Pond, 1993 in Mason & Christie, 2003), as well as "educator, information giver, leader, role model, catalyst, mediator, protector, organizer, company representative, [and] facilitator of access to non-public areas" (Weiler & Black, 2015, p. 23). Although these roles are essential to facilitating guests' experiences, they all lack to prioritize the role of guide safety management. The importance of the tour guide for ensuring safety has been mentioned in several existing studies

on guide training and practices, particularly in the context of risk perception and guest experience facilitation (Cater, 2006; Mackenzie & Kerr, 2012). Although these studies discuss the safety practices of guides, it is imperative to understand how guide training can successfully develop guides' risk management skills and which strategies can be used to enhance safety skills acquisition. Therefore, this paper addresses the gap in the literature on how tour guide training can successfully enhance the safety competency development among tour guides.

2.2. Guiding in the Arctic: Tour Guides' Roles and Safety Competency

Tour guides must continuously balance ensuring tourist safety with delivering experiences (Weiler & Ham, 2002). This tension must be considered when discussing safety procedures, as guides are responsible for meeting the expectations of various stakeholders (Weiler & Black, 2015). Guides working in the Arctic face a twofold challenge: They must ensure that guests' exposure to hazardous environments is within acceptable limits of risk (Berbeka, 2018; Rokenes, Schumann & Rose, 2015) while also coping with environmental uncertainties, such as rapidly changing weather, the risk of avalanches, the dangers posed by glaciers, and the changing availability of search and rescue services (Figure 1).

Figure 1. The Role of Tour Guides in the Arctic



Source: own elaboration based on Albrechtsen & Indreiten, 2021; Weiler & Ham, 2002; Berbeka, 2018; Rokenes, Schumann & Rose, 2015

Arctic safety in an operational context is an emerging research topic in tourism and safety studies. Albrechtsen and Indreiten (2021) have written a comprehensive summary of Arctic safety in operational contexts that addresses several challenges, such as harsh weather conditions, remoteness, limited infrastructure, climate change, and a lack of knowledge and data. In the Arctic climate, guests' wellbeing is dependent on tour guides' sound judgment and decision-making; therefore, it is imperative to understand how tour guides develop their critical thinking and decision-making skills. Tourist safety and accident prevention in the Arctic depend not only on the guide's actions, but also on the organizations where guides are trained and pursue careers.

This paper makes use of the *Arctic guide safety competency framework*, which the author developed as part of her own Ph.D. research. This framework is based on research conducted on tour guides working in Iceland, Svalbard, and Greenland. The findings, summarized in Table 1, reveal that Arctic adventure guides must possess technical, interpersonal, and operational skills as well as situational knowledge to successfully manage environmental risks on trips.

Table 1. Arctic guide safety competency framework

Technical skills	Interpersonal skills	Operational skills	Situational knowledge
First aid, navigation, reading and understanding meteorological data, avalanche, polar bear safety, skills related to specific activities (snowmobiling, sailing, skiing, climbing, and hunting); the ability to correct use of the equipment	Leadership, planning, organizational, teaching, stress and time management, storytelling skills. the ability to assess tourists' skills; confidence and flexibility	Decision-making and communication skills;	Knowledge of specific weather patterns, terrain, language, sociocultural contexts, local people and nature, and customs and traditions

Source: based on own research

Although this proposed safety competency framework builds on existing studies in the field of outdoor adventure education, it is unique for emphasizing situational and local knowledge—in this case, situational and local knowledge about the Arctic. Local knowledge has been identified as a mediating factor in decision-making, and therefore, this paper seeks to understand how situational knowledge is dealt with, if at all, by formal training programs. The findings from mentioned study highlight that knowledge is built on training and experience; therefore, this paper explores the use of EL theory for enhancing safety competency development in training programs.

2.3. Experiential Learning

There is little research on the competence learning process in tour guide training programs. Therefore, to discuss the use of EL, it is crucial to conduct research in situations where learning resemble real-world situations, such as outdoor adventure education, wilderness education, and environmental education (Martin et al., 2017; Ewert & Sibthorp, 2014). This kind of learning, according to Martin et al. (2017, p. 5) should include "teaching and learning activities and experiences usually involving a close interaction with an outdoor natural setting and containing elements of real or perceived danger or risk in which the outcome, although uncertain, can be influenced by the actions of the participants and circumstances."

Outdoor education is perceived as transactive, and it emphasizes interactions between two words: students and the natural environment, which is also referred to as "sense-making of active engagement between the inner world of the person and the outer world of the environment" (Beard & Wilson, 2006, p. 2). Such interaction increases student's awareness to participate in the process, create meaning and reflect upon gained experiences. EL theory, introduced by Kolb as "learning as the process whereby knowledge is created through the transformation of experience" (Kolb, 2014, p. 49) has strong relation to outdoor education.

Experiential learning theory is based on the recognition that learning is a lifelong process, adaptive in nature, and oriented towards a conceptual bridging across life real-world situations. Drawing on the work of Dewey, Piaget, and Lewin, with Kolb concluding that "the knowledge results from the combination of grasping knowledge and transforming experience" (Kolb, 2014, p. 51). Kolb's EL cycle, which describes the process of learning, is composed of the following components: concrete experience (CE), reflective observation (RO), abstract conceptualization (AC), and active implementation (AE; see Figure 2).

When discussing EL theory, other related concepts developed by Kolb must be mentioned, such as grasping and transforming experiences. Kolb includes several dimensions of the learning process within the cycle, including grasping and transforming experiences. In this context, grasping refers to the act of experiencing or comprehending an experience (CE and AC), and transforming includes reflecting upon an experience (RO) and applying that experience to a real-world situation (AE). Both, grasping and transforming processes are equally important and complementary within the learning process.

Experiential learning theory places emphasis on the learner and the process of competence acquisition. The process needs to be carefully designed and facilitated, as low-quality experiences and lack of reflection will result in poor educational value. In EL theory, learning is a continual process that can be initiated during

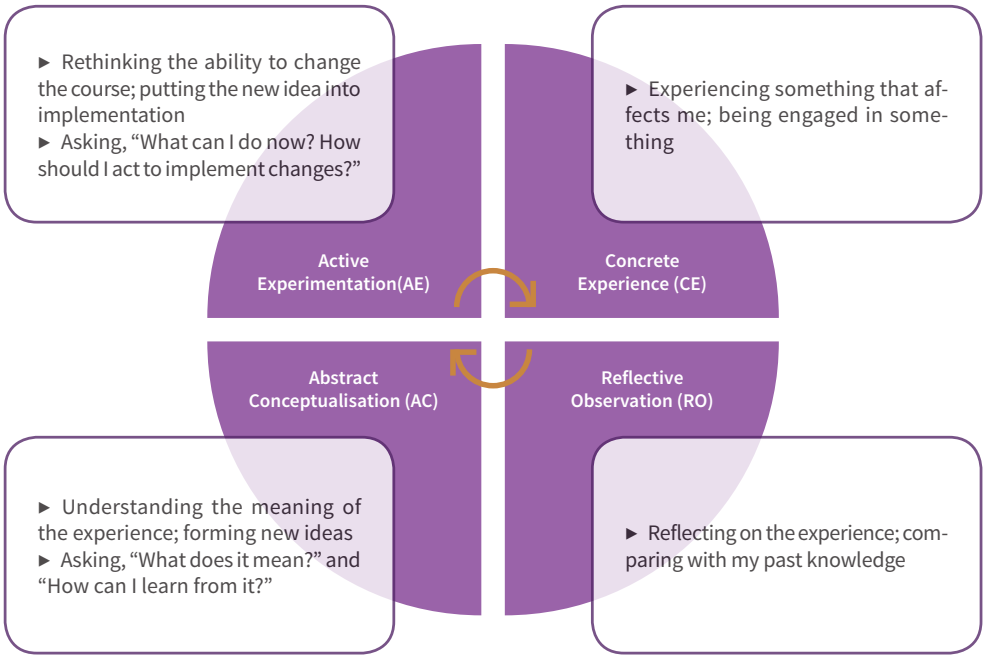


Figure 2. Kolb's Experiential Learning Cycle with Guiding Questions
Source: own elaboration based on Kolb (1984)

any phase of the learning cycle. Consequently, student knowledge acquisition is measured by the student's ability to critically reflect on their knowledge and skills rather than on their ability to achieve tangible program outcomes, such as obtaining technical skills.

Additionally, EL theory emphasizes the processes of adaptation and learning and recognizes knowledge acquisition as a transformational process of creation and recreation. Hence, to fulfill the aim of the research, this paper addresses the process of student's critical reflection on competence development in Arctic Nature Guide program.

2.4. Arctic Nature Guide Program in Svalbard

The ANG program in Svalbard is part of the Arctic Friluftsliv bachelor program at the Arctic University of Norway, which offers 60 credits within the European Credit Transfer and Accumulation System. The program can be completed as a one-year degree or as part of a three-year bachelor's degree. The program at Svalbard is the northernmost specialized tour guide program at the university level in the world. Developed in close cooperation with local tourism industry stakeholders,

the program consists of four main subjects: Arctic safety and field leadership, safe tour guiding in the Arctic, value-based guiding and Arctic nature education, and Svalbard history. The curriculum outlines the main learning objectives as follows:

1. Theoretical knowledge of safe travel in the Arctic, outdoor leadership skills, knowledge of nature-based tourism and outdoor education
2. Skills for safe travel in the Arctic and hostmenship
3. Awareness of the responsibilities, skills, and competencies related to leading guests in demanding arctic environments; the ability to reflect on values related to nature experiences (UiT Norges Arktiske Universitet, 2020)

The curriculum content is taught in the classroom and applied during field trips, and students are required to attend all classes and participate in field trips in order to graduate. Practical skills courses on topics such as glacier guiding, multiday hiking, winter camping, skiing, snowmobiling, sea ice crossing, avalanches, motorboats, and first aid are part of the program. Students must also complete a five-week practice placement, during which students initially follow an experienced guide, to eventually practice guide's role within learning settings. The program also partners with the University Centre of Svalbard, where students take courses on Arctic safety and leadership and receive field assistance during field trips from technical staff. The courses focus on field leadership, as well as technical skills such as Arctic first aid, snowmobile driving, travel on sea ice etc. Each year, approximately 25 to 30 students attend the program, and most are of Norwegian origin. The program is taught in English.

The ANG program enables students to engage in hands-on activities in order to fulfil the numerous objectives of the program. This paper will now examine the relationship between learning outcomes and EL theory in order to better understand the learning process in the ANG program.

3. Methods

3.1. Research Process

This study is part of the author's larger Ph.D. project, which focuses on the role of Arctic tour guides in managing tourist's safety, as well as the role of training in enhancing safety competency. This research employed an empirical, longitudinal study tracking safety competency development among students of the ANG pro-

gram in Svalbard. Competency development at tour guide training schools occurs mainly through cooperative learning that involves students working together and collaborating on group tasks. This is consistent with a constructivist approach, where "learning occurs when one plays an active role to construct one's knowledge whereas teachers create a platform with challenges and coach them in the learning process" (Chaille, 2008 in Harfitt & Chow, 2020, p. 27). The researcher employed a constructionist approach in order to collect field data on cooperative knowledge creation and classroom interactions and generate meaning upon analyzing observations from the field (Crotty, 1998).

The author, as a participant observer, conducted ethnographic research on a group of students training to become tour guides in the Arctic. The author gathered data by observing and taking field notes on students' behavior during classroom instruction and field trips. The research practices included direct observation, participation in group activities and discussions, note-taking, and self-analysis. Prior to data collection, the researcher identified herself to the group of students and teachers, gained informed consent, and explained her research objective for shadowing the classroom activity. Participant observation involved the following steps: (1) gaining access to the training program upon dialog with the program coordinator; (2) explaining the objectives and methods of the research project to the students and collecting consent from participants; (3) observing classroom activities and collecting data; (5) analyzing data and organizing data into themes; (6) completing the research by drawing an conclusion. The researcher acted as a participant and observer and remained in these roles without taking part in any decision-making processes. During the first few field trips, students approached the researcher seeking advice; however, the researcher explained that she was unable to offer advice as she was simply an observer. The students respected her explanation.

During this yearlong study, various methods of data collection were employed, such as field interviews, photographs, field notes, surveys, and in-depth interviews. For the purpose of this paper, the primary sources for data analysis derived from participant observations, collected as field notes.

3.2. Data Analysis

Ethnographers do not always specify their research questions before entering the field; indeed, they sometimes observe their study subjects while employing an inductive and integrative approach (Reeves et al., 2013). Likewise, the research questions for this study were formalized during the time spent in the field conducting observation. The notes taken by the researcher consisted of six 48-page field notebooks, 28 memos, and several field voice recordings. ATLAS.ti software

was used to organize the digitalized data, while the notes in the notebooks were analyzed manually. It is while observing the students that the author formulated the following research questions:

- How student's experiences during ANG program influence the process of development of safety and risk management competence?
- What strategies can be used to enhance risk management and safety competence acquisition in guide's training?

These questions motivated the researcher to focus her observations on students' interaction with potential tour guide environments and discussions that focused on reflecting on those interactions. By exploring this relationship, the researcher sought to identify patterns of how students discussed their skills and knowledge. In the following analysis patterns are presented as cases, each representing learning context- student's milestones in gaining knowledge and experience, including reflective sessions upon skill acquisition.

4. Results

4.1. Identification of Student Experiences During the ANG Program

In the process of data analysis of students' descriptions of the *experiences* during the ANG program, following themes were identified: opportunity and activity. After the initial selection of themes, examples of students' experiences (*further referred as cases*) observed by the researcher were selected and analyzed in the context of codes (action, discussion, exposure, experience, and reflection) as factors influencing the understanding of the elements of the development process. As re-organizing, searching, and re-linking are part of the research process (Reeves et al., 2013), Table 2 was designed as a tool for illustrating the relationship between the themes, codes, and cases. Table 2 also provides a rigorous explanation of the process of safety competence acquisition over time. Activity 1 occurred at the beginning of the study, and Activity 5 occurred at the end of the study.

The findings are summarised in the form of five activities in which students gained experiences during the ANG programme. Each activity (consisting of description of learning environment, learning content, discussion set up and skill development represents an EL cycle, while all experiences (activities 1–5) make up

a yearlong learning cycle (where each consecutive activity builds on the knowledge gained from the previous one).

Table 2. Student Experiences During the ANG Program

	Case 1	Case 2	Case 3	Case 4	Case 5
Activity	Hiking	Glacier rescue training	First aid and leadership course	Final skiing trip	Classroom discussion
Learning environment	Polar bear territory, exposure to leadership and decision making	Harsh weather, unfamiliar terrain, exposure to social interaction	Remoteness, exposure to leadership role	Guiding guests in the Arctic terrain, being a team member, situational leadership	Reflection on learning environment (leadership role in the Arctic including technical, interpersonal, operational and skills and situational knowledge)
Learning content	Issues related to lack or limited knowledge and experience on Arctic safety	Various experiences and background between group members, glacier travel, hiking; interpersonal skills	Technical and operational skills; leadership role	Planning and facilitation of the trip; guide's role in experience creation; interpersonal skills	Performing leadership role, active participation in course as group member; decision making in Arctic environment
Discussion set-up	Small group	Small group	Whole class	Small groups and guests	Whole class
Skill development area and strategy for improvement	Need for more experience and input from others for better decision-making, improving leadership style	Integrating various experiences and time management in harsh environment	Acquiring skills related to the ability to sustain life in a remote and cold environment; situational leadership	Recognizing the learning process, including role-play and exposure to the elements of Arctic safety and guiding as important in developing competence	Maintaining *competence toolbox* for decisionmaking based on obtained experience and skills related to guiding groups in the Arctic

Source: own research

Before each trip, students were divided into groups. Once in groups, students planned and prepared for the upcoming activity: They identified group challenges, mapped the various needs and competencies of each group member, and decided

on the group rules. After being divided into smaller groups, the student left the campsite. They hiked different routes during the day but met at the same location to set up camp. This was done primarily so that they could share responsibility for the polar bear watch, which lasted from arrival until departure the next day. Each morning, the "guide of the day" took the lead until lunch, when another person was appointed leader and guided the group to the camp. The purpose of this arrangement was to enable students to practice different roles, solve problem and make decision as guides. Each trip typically lasted five to six days. Each trip typically lasted five to six days. Students were accompanied by teachers for the first four days. After four days, the teachers left the students alone after ensuring that they had established safe camp and hiking routines.

After the activity was over, the group engaged in a discussion, which included presenting their work to the class. As the year progressed, the students became increasingly independent in their planning. They organized a final skiing trip with guests, identified and planned a route, maintained relationships with guests, and solved problems during the trip. The various activities were as follows: a multiday hike (September), glacier travel — rescue practice (October), a first aid and leadership course (late October), a final skiing trip (May), and a final debriefing at the end of the program (June).

4.2. Activity 1: Multiday Hiking Trip

Description: After breakfast on day four, the teachers left the field trip location with students who were unable to continue the trip due to health reasons. The remaining students were left to make their own decisions. While some students had already worked as tour guides, for others it was a first-time experience and an opportunity to practice their decision-making and problem-solving skills as guides. The group that the researcher followed was the last one to leave the camp, and the guide in charge displayed a relaxed attitude. Guides can delegate tasks to other group members, and this guide had sent someone else to walk in the front of the group while himself chatted with the group members in the middle. During breaks to adjust clothing or drink water, some students looked confused; they somewhat expected to be given clear instructions from the guide about time and group management during the hike. Such issues eventually escalated into a bigger discussion during lunchtime. Some students who were in Svalbard for the first time were worried that their safety skills were not adequate to travel in polar bear territory. One student recounted a polar bear encounter from the first camping trip two weeks prior to the hiking trip. On that occasion, students guarded their campsite against a polar bear for several hours.

Reflection: One of the guides for the day initiated a discussion on leadership style and decision-making. Some students expressed their concerns regarding different leadership styles in relation to specific safety threats, such as polar bears.

One of them criticised the choice of the lunch location: although it a patch of hollow ground, which offered protection from the wind, it made it difficult to spot polar bears. This remark was acknowledged by the guide in charge, who described the situation as a "difficult Svalbard choice" between a location with good visibility or one that provides protection from the wind and cold. The decision was evaluated as being the result of "forgetting about the Arctic environment," and was used to highlight the need for guides to gain proper experience and knowledge so that their decision-making skills could improve. According to another student, a decision, such as where to stop for lunch, must be made after consulting with all group members. She said: "If nobody speaks up, then the rest of the group will be unaware of the issue, and it cannot be expected that the problem will be fixed."

4.3. Activity 2: Glacier Rescue Practice

Description: Students practiced glacier rescue on a glacier in outskirts of Longyearbyen town, the place where students live and study. The exercise required preparation, practice, and documentation of group work, and group members worked together before, during, and after the exercise. In the morning, before heading to the glacier, students gathered at the designated meeting place. Some members were late, and therefore, the group was not ready to leave on time. Once on the glacier, the groups worked together in the roped team (technique used for traveling as group on the glacier) taking part in a "crevasse rescue operation." Once the exercise was over, the followed group prepared to leave the glacier. Some students were taking longer to pack their belongings, making other students impatient and concerned about the unpleasant cold weather and wind. There was a lack of transparent communication between group members; some were left behind, posing a safety risk associated with polar bears. Because the snow was deep, walking back was strenuous and became more challenging, causing gaps between group members to increase. Once back in town, the group decided to discuss the tension between group members.

Reflection: Since the discussion was to be held in the kitchen of the house inhabited by some of the students, the group agreed to eat first and then conduct the discussion. The conversation began with addressing the different expectations of group members. This led to a discussion on differences between team members, their previous experiences, especially in relation to safety in the inhospitable Arctic environment. This helped the group to become aware of differences between each member's physical and mental abilities and their previous background. Time

management, especially in the context of upcoming winter trips, was mentioned as a crucial factor contributing to safety. The group did not reach a conclusion; however, the discussion was described by one of the student as "not nice, but needed".

4.4. The First Aid Course and Leadership

Description: Students took part in a three-week course on risk analysis, situational leadership, and first aid. Each part of the course consisted of lectures followed by practical exercises. During the week of first aid course, students were able to practice emergency medical cases indoors and outdoors, often working in cold and windy conditions. The discussion took place at the end of the 40-hour first aid course. It was a summary of an outdoor exercise day outdoors, with case scenarios. The debriefing took place in a classroom in the presence of the instructors involved in the first aid course.

Reflection: Students were asked to reflect on the experiences and explain their tasks and roles. Students mentioned experiencing difficulties communicating with rescue services via a satellite telephone. They also experienced stress when reading coordinates from a map and had challenges with decision-making. Students also reported feeling frustrated when the arrival of outside help was postponed. However, they appreciated the exercise as an opportunity to be exposed to "real environment," such as cold and isolated environments which can affect leadership performance and decision-making. Each exercise involved a few hours of exposure to the environment, which helped make students aware of the "seriousness" of the situation. This also highlighted the need for better leadership skills when leading a group.

4.5. Activity 4: Final Skiing Trip

Description: The last field trip was a six-day skiing trip that involved students guiding groups of guests. The trip began indoors with an explanation of the plan for the ski trip. Next, members of each group introduced themselves. Afterward, each group went skiing on the mountain and gathered at the joint campsite at the end of the day with other groups. Finally, all of the groups returned to town. At the first pre-departure meeting for each small group, the students asked the guests to introduce themselves and describe their expectations regarding the trip. These included things like wanting to explore Svalbard nature, ski on glaciers, or learn how to camp in the winter. Some group members, who possessed an extensive background in winter sports, mentioned that they had never gone on a multiday skiing trip and had never tried winter camping. This trip provided students with

many opportunities to talk to guests, as everyone gathered for meals in the afternoon and evenings when they talked and got to know each other. In the middle of the trip, especially during the long skiing days, the difference between guests with more skiing experience and those with less experience became more noticeable. However, frustrations of individual tourists had no effect on social interactions between them. During the last two days, the groups spent many hours chatting and discussing their experiences during the trip. The discussions took place after dinner when students served cake and coffee. The groups gathered in the "lunch pit," which was a circular structure made of snow that had walls to lean on. While openly sharing their experiences, the group members sat comfortably next to each other with a clear view of the mountains and the fjord.

Reflection: The discussion started with one of the student asking guests what they had learned during the trip. While many expressed their gratitude for being able to take part in the experience of skiing in Svalbard, a few focused on the personal challenges they encountered during the trip. Two of the comments are worth mentioning: one was made by a person with broad experience in skiing and winter traveling who stated that he was "okay with not reaching the goal but enjoyed learning about different people in the group on the trip and felt part of the group." The other comment came from a guest with less experience in winter camping and skiing and focus on her physical condition, expressing her satisfaction with being able to camp on the glacier and ski in such consistently cold weather.

Then, the guests asked the students what they had learned during the year. One of the students stated "learning how to be more comfortable with the winter in Svalbard." Another mentioned, "to work with others and trust my group." The student emphasized that by working with students from a previous trip, they had developed a mutual understanding and respect for each other's space and leadership style while working toward the same goal. Having been able to guide "real guests" instead of just their peers was cited as an important opportunity for applying the knowledge they had learned in the classroom to a real-world scenario.

One student stated that previously she had not been interested in guiding but developed a better understanding of the role of a tour guide due to the training program. She mentioned that being given the responsibility of ensuring the wellbeing of other people and dogs enabled her to see "the bigger picture." She also mentioned that she is considering working as a tour guide after she graduates. Another student mentioned that "being able to make mistakes and learn from them" was crucial to developing his tour guide skills.

4.6. Activity 5: The Final End-of-Year Debrief

Description: The last discussion of the year involved the entire student's group and was conducted indoors, upon finishing the exam trip. Students discussed the skiing trip and reflected on their experiences over the past year. Students were situated in a U shape, with the teachers in the front of the group, forming a shape resembling a circle. The discussion started with the teachers reflecting on the logistics and organization of the skiing trip. At the end of the discussion one of the teachers said that the students had accomplished a lot.

Reflection: Reflecting on their working and living environments, especially during their experiences as guides during practice placement, students mentioned becoming familiar with the elements of the Arctic environment. Students mentioned the interplay between the hazard of Svalbard—that is, cold temperatures, darkness, and polar bears—and their responsibility as guides to protect guests from the elements while exploring the Arctic environment. They particularly benefited from opportunities to practice crevasse rescue, use navigation skills, and look after the safety and well-being of the group members by preventing blisters and ensuring they were hydrated; they learned how important these skills were in preventing the escalation of safety issues. One student stated that her perception of safety in the Arctic environment changed over the course of the year: "First, you think that everything can go wrong, then you learn that maybe only some things can go wrong, but at the end [of the program] you realise that you have the skills to travel in different areas and deal with those challenges."

When discussing the topic of competency, students expressed what they considered important, highlighting the combination of various skill sets, which can be described as a kind of *competence toolbox* including:

- hard skills related to safety, e.g. knowing how to use the glacier equipment, and
- soft skills necessary to interact with customers or guests, because without them, it is more difficult to ensure safety; this includes the ability to convey knowledge.

"You need a foundation of hard skills, and then soft skills take you further; you cannot have one without the other" he said.

The discussion was summarized by one of the teachers who said that being able to recognize things before they happen, as well as going out, sharing, discussing, and learning from each with an open and honest attitude is what really matters and what helps to create a good atmosphere among fellow guides.

5. Discussion

This paper explored how the experiences of students participating in the ANG program were transformed into reliable knowledge that was applicable to working as a tour guide in the Arctic. This paper addressed the gap in the literature regarding safety and risk management skills development by observing learning processes at a tour guide training program using EL theory with a focus on the EL cycle of grasping and transforming experience. The findings presented in the previous section show that the program helped the students to develop their critical thinking skills and ability to make decisions as leaders of the respective groups. While tour guiding need reflective practitioners (Mason & Christie, 2003), it is important to acknowledge the role of students in the learning process. Therefore, EL may be an effective method for tour guide programs to develop safety competency, since it treat's students' experiences as essential to the learning process.

5.1. The Experiential Learning Cycle

During the training program, students participated in field trips that required preparation, active participation, and debriefing in both small and large group settings. Moreover, self-reflection allowed students to process their experiences and relate them to previously acquired knowledge. Group discussions, in which students shared their subjective narratives enhanced their safety awareness and motivated them to seek other solutions and implementing them in the next phase. Through various experiences, students went through all four stages identified in Kolb's EL cycle: preparation (Active Experimentation — AE), participation in a trip (Concrete Experience — CE), group and class reflection (Reflective Observation — RO), and knowledge formation (Abstract Conceptualization — AC).

The first trip, during which students encountered a polar bear, had a strong impact on students' perceptions of the risk of conducting tours in the Arctic. Indeed, this trip influenced their awareness and behaviors in the field, and other experiences (exposure to various elements of the Arctic environment) influenced students' perceptions of self-preparedness regarding handling safety and risk when conducting tours in the Arctic. The students realized they needed to master a set of specific skills, which one student described as competence toolbox. This is consistent with Healey and Jenkins' (2000, p. 190) view that "the central practical applications of the EL theory include how a session, or a course, can be developed in a way that takes students systematically through the whole cycle, as well as the consideration of the teaching methods that are particularly valuable at certain stages of the cycle."

5.2. Grasping and Transforming Experiences

Students used reflection as the key to understand their experiences during activities. Through discussion, they re-evaluated their existing knowledge and then applied what they had learned during following trips.

This transformation of experiences occurred during the reflection phase (RO), in which students focused on the inclusion of the previous experiences including social and environmental settings, which allowed students to better prepare (AE) for upcoming trips. The findings show that students' reflections during multiday hikes indicated a lack of or limited experience with Arctic environments and a limited understanding of safety when traveling in polar bear territory. The importance of transforming experiences (RO and AE) is also recognized in a studies by Rokenes & Andersen, 2016 (p. 750) on decision-making among skiing guides, highlighting that the "important part of *friluftsliv* [outdoor education] competence is for the guide to constantly and instinctively analyze the situational risks and consequences." As students progressed in their studies, gained more exposure in the Arctic environment (harsh weather, remoteness) and tour guiding (including technical, operational and interpersonal skillset), they were encouraged to develop their competencies in processing and applying new information (grasping experience).

Exposure of being a guide and taking a different role (CE), enhanced students ability to understand (AC) the situation of tourists during guided trips and their own responsibility as guides. This is especially important in the Arctic environment, where guests with various backgrounds rely on the guide's technical competence and ability to strike a good balance between the level of risk and quality of tourist experience (Figure 1). This was most evident at the beginning of the year, when students had the least amount of trust for one another. Exposure to the Arctic conditions that tour guides must work in and opportunities to practice leadership skills are elements that contribute to knowledge transfer. According to Sibthorp et al., (2011, p.113) "learning should involve characteristics of the environment in which learning is applied or to which learning is transferred".

5.3. Safety Competency and Experiential Learning

The findings demonstrate that students reflected on their technical, interpersonal, and operational skills and enhanced their understanding of local nature. The activities covered here included discussions of polar bear safety, first aid skills, planning, organization, leadership, time management, decision-making, and communication.

In particular, in discussions, students mentioned that their exposure to real-life tour guide situations and decision-making scenarios increased their confidence and leadership skills. For them, the field trips served as learning environment in which they were faced with new challenges (CE) and could learn from their own experiences (RO, AC, and AE) before engaging in another activity (CE). In other words, this element of the training program included the complete EL cycle. Figure 3 shows student's activity at each stage of the EL cycle and the type of environment (social and geographical) in which they practiced different skills that a tour guide must possess.

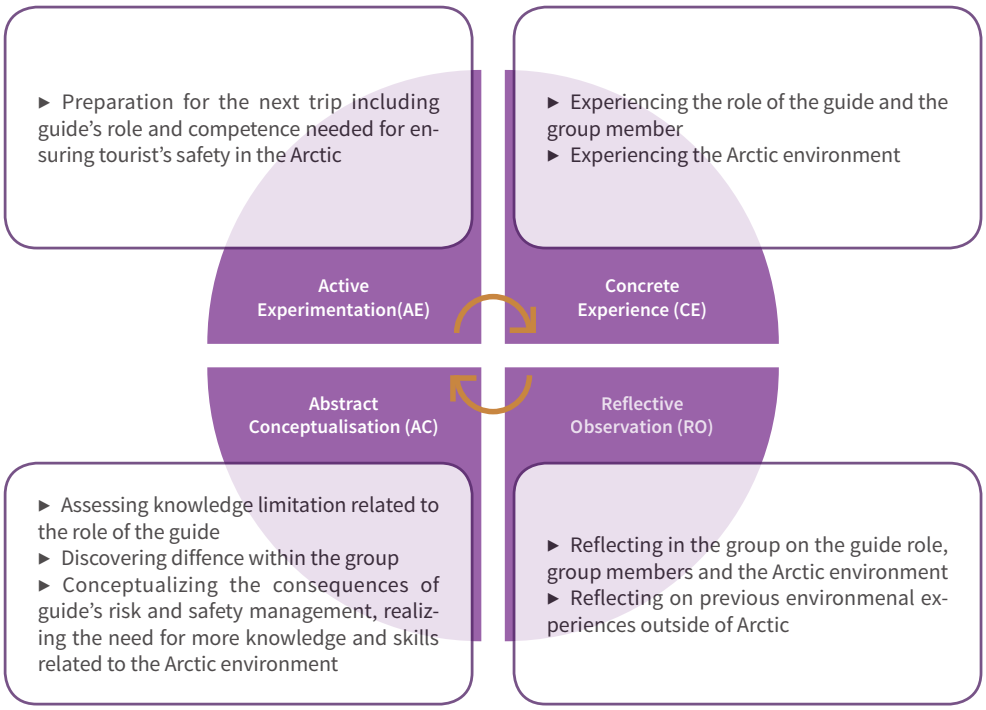


Figure 3. The Use of the Experiential Learning Cycle for Analyzing the Experiences of Students During the ANG Training Program
Source: own research

6. Conclusions

These research findings indicate that tour guide training programs should include various activities and experiences that enable students to evaluate their own knowledge and reflect over decision-making process. By striking a balance between grasping and transforming experiences, the teaching process can address

various learning objectives, including the development of technical, operational and interpersonal skills, while expanding local and situational knowledge, in this case concerning the Arctic environment. Students exposed to the various activities and experiences can engage in continuous and increasingly complex knowledge creation (re-creation), which corresponds with EL premises.

While many tour guide training programs attempt to develop key competencies during short course, it is necessary to appreciate the value of students becoming aware of the process of the competence acquisition during such programs. Student's ability to learn from their own experiences gained in real settings resembling their future work environment plays a key role in developing their safety competence. While certain technical skills, such as using glacier equipment, interpreting weather forecasts, and driving a snowmobile, can be taught over a relatively short period, the acquisition of knowledge that serves as a mediating factor between competence and decision-making requires process of reflection.

Students' exposure to situational problem-solving, real-time scenarios, and real-life tour guide experiences should be included in training programs. By shadowing another guide and then taking on the actual role of guiding tourists' student have a much better change to develop their critical thinking together with key skills required in their job.

To conclude, this study contributes to existing research within outdoor education by providing an initial exploration of the use of EL in tour guide training programs. While the findings of this study indicate that the EL cycle can be used to evaluate students' safety competency development, more research is needed to better understand the curriculums of current tour guide programs, as well as their design and implementation. Follow-up studies on existing programs are also needed. This paper explores the use of EL theory and provides a foundation for future exploration of the use of EL as an analytical strategy for evaluating tour guide training programs. In this way, this study enables researchers to better understand the process of competence acquisition and retention and enhances knowledge transfer strategies.

7. Research Limitations

Given the scope of this article, it does not include all aspects of existing research on outdoor education. Experiential learning is often criticized for its lack of clear positioning: some consider it as a philosophy, others as a method of teaching, still others, as a field of science. Similar ambiguity exists in the Norwegian literature

on outdoor education, which is referred to as *frilustliv*. There are few publications in English that discuss *friluftsliv* and the development of safety competence, especially in the context of formal education. Some authors call for more integrated and in-depth research on program facilitation (Dahl et al., 2016; Dahl, Leirhaug & Moe, 2023).

The training activities described in this article are subjective ethnographic investigations of how safety competence develops. In addition to inherent subjectivity of participant observation, the presented findings reflect the subjective nature of data analysis, which was influenced by the author's personal beliefs and experiences, both as a former student of the program, an active tour guide and outdoor teacher in the Arctic region. While these shortcomings cannot be ignored when analyzing the findings of the study, it is the author's unique background that made it possible to include these various perspectives in her research.

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Rozwój kompetencji przewodników w zakresie bezpieczeństwa arktycznego: analiza doświadczeń uczestników programu Arctic Nature Guide

Streszczenie. W artykule przedstawiono wyniki badania przeprowadzonego na Svalbardzie, którego celem było zbadanie rozwoju kompetencji przewodników wycieczek w zakresie bezpieczeństwa na terenach arktycznych. Na podstawie obserwacji zebranych podczas jednorocznego programu szkoleniowego Arctic Nature Guide autorka opisuje, w jaki sposób program ten przyczynia się do rozwoju kompetencji kursantów w zakresie bezpieczeństwa arktycznego. Szczególną uwagę zwrócono na rolę uczenia się przez doświadczenie. Uzyskane wyniki wskazują, że ten rodzaj uczenia się może być skutecznym narzędziem rozwijania kompetencji w zakresie bezpieczeństwa. Niniejsze badanie zawiera wskazówki na temat tego, w jaki sposób organizować szkolenia z zakresu bezpieczeństwa, aby jak najlepiej przygotować przewodników wycieczek do pracy w ekstremalnych warunkach.

Słowa kluczowe: przewodnik turystyczny, kompetencje w zakresie bezpieczeństwa, uczenie się przez doświadczenie, turystyka arktyczna

Publication IV

Hild, B., Jackson, J. (2025). Arctic Guide's Mindset: Enhancing Safety Competence Development from the Perspective of Instructors. (*accepted with minor revisions at the Journal of Adventure Education and Outdoor Learning*)

Arctic Guide's Mindset: Enhancing Safety Competence Development from the Perspective of Instructors.

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Abstract:

This study focused on the fundamental importance of safety knowledge and competencies for adventure guides leading trips in the Arctic. With the challenging environment, remoteness, and limited resources, the safety of tourists underscores the necessity for land-based guides to possess skills that aid in preventing and responding to accidents.

The research aimed to critically assess existing Arctic adventure guide training programs in Svalbard, Iceland, and Greenland. Six instructors facilitating these curriculums were interviewed to examine the realities and strategies employed to develop safety competency in different study programs across the Arctic region. Despite the critical nature of these competencies, there is a lack of research on the education of adventure guides. The study examined how curriculum design and facilitation impact guides' training in fostering students' safety competencies and risk management strategies. Findings indicated that effective program facilitation hinges on interaction with the realities of the Arctic environment, a mutual understanding of the guide's role, and also revealed significant cultural differences in risk perception among Arctic guides. Moreover, the research identified a gap in existing curricula, suggesting future studies should prioritize knowledge sharing and the integration of diverse perspectives and Indigenous knowledge to enhance guide competency development across the Arctic region.

Keywords:

Arctic safety, arctic tourism, competence, guide training, curriculum design

INTRODUCTION

The significance of understanding how tourist safety is facilitated in the Arctic has become increasingly important due to the rising trend of tourism and expanded access to wilderness in harsh and remote environments (Hall & Saarinen, 2010). Arctic guides are viewed as an

essential part of wilderness tourism and ensuring tourists' safety (Berbeka, 2018). Rantala & Valkonen (2011) and Mason & Christie (2003) recognized guide's training, education and certification as essential in delivering safety skills. Yet, there is limited research on the acquisition of safety competencies among adventure guides. Tour guides are expected to ensure the safety of visitors while simultaneously providing a sense of thrill and excitement, crucial motivators for engaging in adventure tourism (Gilbertson and Ewert, 2015; Buckley, 2012). Visitors expect that their safety and health will take a high priority, but at the same time expect an enjoyable and rewarding travel experience (Weiler & Ham, 2002).

Safety in the Arctic is a function of remoteness, limited infrastructure, harsh and variable weather, and the effects of climate change (Albrechtsen & Indreiten, 2021). While operational challenges in the region have been discussed in various contexts such as marine traffic and search and rescue operations (Gendler & Prokhorova, 2021; Kruke & Auestad, 2021), applying risk management principles from other industries to guided excursions has limitations. The mediating role of the guide in tourist safety requires sound judgment and an ability to adapt to the physical environment and guests' abilities during outdoor activities (Hild & Weiler, 2024). Guide competency requires both proactive-active management for safety and reactive abilities should something go awry (Dickson & Gray, 2012). Arctic guide training curriculum design and competence development is questioned, then, in its efficacy in building required skills.

This research was designed as part of a line of research focusing on safety competence development in Arctic guide training programs. This paper intends to describe the current state of knowledge regarding guide education in the Arctic, with a specific emphasis on acquiring safety skills. Despite wide interest in the area of outdoor program risk management, most of the research is descriptive and quantitative (Mata et al., 2022). As of now, only one modern study (Chowdhary & Prakash, 2009) comparing and analyzing tour guides program curriculums was conducted, evaluating the general program outcomes in Indian tour guide training. This research uses a similar methodological framework, using expert's opinion (instructors and trainers in guide training courses) in understanding the learning and skill acquisition process.

With an overall focus on the learning process in Arctic tour guiding training programs, this research aims to explore the following questions:

1. What are the primary challenges associated with guiding in the Arctic environment, particularly regarding safety?
2. How is safety competence and risk management addressed, facilitated, trained, and assessed in the guiding training programs?
3. What are the current challenges related to guide's education and training facilitation?

Previous research on guide education and safety competencies required in the Arctic environment is briefly considered as context before introducing current Arctic guide training programs on offer in Iceland, Svalbard and Greenland. The data collection and analysis is described, before presenting findings and discussion of current strategies in guide competency development, and the challenges in related to educating guides in the Arctic. The paper concludes with recommendations for future research.

LITERATURE REVIEW

Adventure and wilderness guiding, as a large segment of the professional adventure pursuit industry (Martin et al., 2017) shares the same safety concerns as many outdoor educational programs. Despite similar foundations in experiential learning, environmental awareness, leadership and risk management, outdoor or adventure education programs and guide training programs serve different objectives (Ewert & Wu, 2007). Guide training programs often involve higher risks to challenge participants, while educational programs feature more structured risks to facilitate learning. In his research analyzing injury data from college guide training programs in Canada, Jackson (2017) emphasized the inherent differences in risk tolerance within supervised programs. A career-oriented guide training program will necessarily expose trainees to greater risks—and, consequently, a higher potential for injury—compared to a youth-based wilderness expedition program or a front-country recreation-based outdoor club.

Safety concern and safety competence in the Arctic

Mata et al., (2022), in a systematic review of safety measures and risk analysis for outdoor recreation facilitators, introduced 28 recommendations, including, "(xiv), develop risk management strategies suited for insecure terrain or adverse climate during the activities" (p.11). In the context of Arctic safety, risk management strategies cannot be copied and applied from other tourist destinations but were recommended to be designed specifically with consideration of the local conditions and capacities (Hild et al, 2023). This corresponds with studies on Arctic guide's safety competencies (Hild et al, 2023) where local situational

knowledge served as the mediating factor for guides' risk management competency. Arctic safety was described as complex (Albrechtsten and Indreiten 2021), with factors such as remoteness, lack of infrastructure, extreme weather events and climate change as interconnected. This was found to be a challenge for guides when balancing proactive-active risk management and reactive safety (corresponding to foreseeing, preventing, responding to tourist injuries), common risk management strategies (Dickson & Gray, 2012).

Arctic guide education

Despite the initial development of tourism in the Arctic dating back to the late nineteenth and the first half of the twentieth century (Jóhannesson et al., 2010; Kaltenborn & Emmelin, 1993; Søndergaard, n.d.), education in tourism, especially guide's education in the Arctic region, remained non-existent within the last two decades. Before this, guides were "typically marginal native, local, who were thoroughly familiar with the environment" (Cohen, 1985, p.18). In the absence of established Arctic guide training programs, during periods of high demand, individuals with limited prior knowledge and experience often assumed roles as guides. This occurred either through in-house training provided by tourism companies or, in some cases, with a notable absence of any specific knowledge or training related to Arctic guiding (Hild et al, 2023). Given the young age of arctic guide's training, studies have yet to examine training program outcomes. This paper addresses the development of safety competence among Arctic outdoor guides, exploring program design and facilitation's importance from the teacher's perspective.

METHODOLOGY

Research context

This study targeted guide training education in Svalbard, Iceland and Greenland, similar as small states with Arctic environments, sparse population with great distances between the communities, and all with increased tourism in the recent years. All three locations were between 59 to 79 degrees North, in the Arctic Circle. The guide training programs were delivered through public education schools. The length of the educational programs ranged between 5 to 10 months, with both vocational and academic levels. Guide training programs in Iceland and Greenland are part of the post-secondary education system, requiring applicants to have completed high school to enroll, while Arctic Nature Guide program in Svalbard operates at the university level.

Arctic Nature Guide program in Svalbard

The Arctic Nature Guide (ANG) program in Svalbard is part of the Arctic Friluftsliv bachelor program at the Arctic University of Norway, which offers 60 credits within the European Credit Transfer and Accumulation System. The program can be completed as a one-year degree or as part of a three-year bachelor's degree. The program at Svalbard is the northernmost specialized tour guide program at the university level in the world. Developed in close cooperation with local tourism industry stakeholders, the program consists of four main subjects: Arctic safety and field leadership, safe tour guiding in the Arctic, value-based guiding and Arctic nature education, and Svalbard history.

Adventure Guide Program in Greenland

The Adventure Guide program in Greenland is a five month training program at Campus Kujalleq, which offers 30 credits within the European Credit System for Vocational Education and Training. The program in Greenland is the only guide training in Greenland offered by government and is free of charge for anyone elicitable to apply. The program consists of the following courses: adventure guide technique course, culture, communication, English, wilderness first responder, history and nature of Greenland, tourism and service, and boat license to drive and guide up to a 12 passenger boat in Greenland's waters.

Mountaineering Program in Iceland

The Mountaineering Program in Iceland is the longest existing program out of the above, but only recently got more popular, due to increasing tourism in the country. The program is offered in two alternatives: one year training program with a focus on developing basic skills related to the guided activities, as well as more detailed course related to Iceland culture and history, as well as guided activities skills. The hands-on activities include climbing, mountaineering and glacier skills, mountain biking, first aid training, skiing, winter camping, avalanche awareness and kayaking. Students receive 56 educational points. The program curriculum was evolving at the time of this research and was subject to change. The language of instruction is Icelandic.

Research methods

This research utilized semi-structured interviews to examine instructors' perspective and mind-set in training guides for the Arctic setting. The qualitative approach was intended to "to explicate the ways people in particular settings come to understand, account for, take action, and otherwise manage their day-to-day situations" (Miles, Huberman, & Saldana, 2014, p. 7). The researcher had extensive guiding experience, and approached this study with

insider knowledge, against which coding bias was checked at each stage of data analysis by ensuring personal assumptions were not filling in gaps in informant instructor perspectives.

Stratified purposive sampling was used to identify key individuals in Arctic guide training education (Gall, Gall, & Borg, 2003). Six instructors agreed to take part in the research: three from Greenland, two from Iceland and one from Svalbard. This sample size represents approximately half of the individuals involved in guide training education across these three countries. There are approximately 5 full-time instructors working in Iceland, 1.5 full time positions in Svalbard, and between 3 to 5 teachers with an outdoor training role in Greenland in the part of the study that focus on guide technique and outdoor competence. The selection of the possible research participants was based upon the researchers' familiarity with the training programs, hence, the instructors that play significant role in the outdoor teaching were approached.

Instructors were invited to participate in the interviews in-person in Greenland, where the data collection started, then continued in Iceland and Svalbard. Two interviews with instructors in Greenland and one interview with instructor from Iceland took part in-person, while three remaining (instructor from Greenland, Iceland and Svalbard) were conducted online via Zoom. An invitation including a short description of the research project and the interview questions were sent out, allowing potential participants to gain familiarity with the topic, before consent was signed, and interviews conducted. The interviews were undertaken between August 2022 and October 2023.

The interviewees were between 30 to 65 years old and had between 1 to 30 years of experience leading trips in the Arctic and between 2 to 20 years of experience in teaching guides in the outdoor programs. The participants' training and background varied, ranging from medical studies, military experience, business education and professional sport's career background, combined with years of guiding and arctic experience, including high alpine climbing and mountaineering. Some of them were guides or aspirant guides in the International Mountain Guide Federation, while some had other professional affiliation with sports associations. Two instructors were part of search and rescue teams in two different countries, involved in several rescue missions in the Arctic region. Despite various backgrounds, none of the instructors had mentioned safety or risk management education as part of their formal education.

All the interviewees were male. Three female instructors were employed in the guide training programs full-time across the three countries at the time the studies were conducted, all of whom declined to participate in the study.

The interview guide was designed based on previous Arctic guiding research, starting with an understanding of the physical attributes characterizing Arctic conditions in relation to the operational challenges of working and guiding in the Arctic. After identifying the context, safety hazards and risks, instructors were then asked to list the skills and abilities they thought guides should have to manage risk in the Arctic. From there the discussion moved to program design and facilitation. In the final stage, the instructors were asked about training program limitations, which helped to outline challenges and constraints in the overall competence development implementation process.

Interviews lasted between 1 to 2 hours. The interviews were audio recorded, transcribed, and analyzed. Atlas.it software was used for coding and analysis. To ensure anonymity of the interviewees, personal identifiers were removed, and transcripts were coded with marking of T "teacher" and designated number for each passage or quote.

Coding took place in three phases (Neuman, 2014): 1- open coding of the initial transcripts, 2 -axial coding linked together the initial coding and identified 3 - the key themes that emerged (Figure 1). By this process the value of qualitative analysis emerged, and the research moved from what was said to what the researchers found (Eisenhardt, 1989). This iterative process focused upon the instructors' perspective of the guide trainees' learning process and challenges associated with facilitating adventure guide training program curricula in the Arctic environment.

The research draws on recently introduced arctic guide's safety competence model by Hild et al. (2023) by proposing safety competencies' framework, in which the theoretical base of the study came from the guide's experiences. This study draws upon voices of instructors facilitating the guiding programs.

FINDINGS

Five themes emerged from the guide training instructor interviews:

1. Weather and emergency preparedness
2. Competencies required
3. Teaching methods

4. Training Limitations

The first two themes – weather and emergency preparedness and required competencies – could be considered the Arctic context of the interviewees' experience. The remaining two themes dealt more specifically with perspectives on the training program curricula.

Context of Arctic guiding

In the interviews, the common point of departure was to define Arctic adventure guiding and to explore the participant instructors' understanding of the relationship between the working environment, the guide's role, and competencies. Interviewed instructors listed harsh, rapidly changing weather, unstable sea ice conditions, moving glaciers, high winds, cold sea, wildlife encounters (including polar bears), and remoteness as challenging work conditions in the Arctic region. Such environmental challenges affect both guiding in the Arctic and teaching guiding there.

> *Remote location, I guess that's a big part. You really have to think, you have to plan for the uncertainty as much as you can, because there's probably gonna be lots of uncertainty and the weather. You know the weather how the weather is going to be for the first two days, and then you know you have to make plans, backup plans. (T5)*

Beyond the unique environmental demands of the location, the Arctic was an overriding context shaping the mindset of the instructors, the guide role, and guide training, that emerged throughout the interviews. The training discussion focused very much on the Arctic, with some evidence that the environment shaped the instructors' thinking as much as it did their required training.

> *If you go into that environment, you know how small you are. Just you're just part of it. You can't go against it, you have to play with it, (…) In that environment, awareness is definitely #1 on my list. (T6)*

> *Logistic wise in many places in the Arctic, it's not as easy to get the rescue from. We're talking about Greenland, the rescue helicopter takes 3-4 hours or so, that is considerable amount of time. And therefore all the planning associated with this, how autonomous you want to be with your group. (…)To summarize it, I think the characteristics of the Arctic environment are the cold environment and higher degree of exposure because of how difficult it can be to get help. (T1)*

1 Weather & emergency response

Within the context of the Arctic environment, the first theme to emerge was the overriding role the weather plays, and how that specifically influences safety and emergency response. The Arctic's fast changing weather combined with remoteness from civilization created prolonged waiting time for external rescue. For this reason, concern for the weather and emergency response were identified in unison – one went with the other.

> *Remote location, (…) You really have to think, you have to plan for the uncertainty as much as you can because there is probably going to be a lot of uncertainty and the weather. (T5)*

Interviewees provided that when the weather turned, emergency response options became very limited. Instructors noted unreliable and fast changing weather forecasts make for difficult planning, especially for longer expeditions and days out.

> *You might have a week of forecast, take 48 hours and to be honest, only 24 hours to say that's the weather we can count on and sometimes, that's not even possible. (T6)*

In the Arctic obtaining assistance was more challenging due to unpredictable weather, leading to increased risk of injury from the cold environment and prolonged exposure while waiting for help. Instructors found that challenging, as the majority of guide training activities were delivered outdoors, mainly on multiday trips in the wilderness.

> *…It's very important that these [guide training] students also can see that this is reality [in the Arctic], it is nothing you can just step out of. Sometimes it's possible to step out into a helicopter, of course. But if you have the harsh weather, then it's really hard reality that nobody can help you out. (T4)*

Greenland in particular had teaching challenges, with vast distances between towns, lack of connected roads, and what instructors saw as limited Search and Rescue (SAR) capabilities. This was identified as a major safety worry for teaching in the backcountry. The main issue, according to instructors who taught there, was the lack of coordinated response between rescue agencies like Joint Arctic Command and Greenland Police, making it complicated to access outside help in emergencies.

> *If you have an emergency accident here in town, and you call the health service, you always end up in an argument with them because they really don't want to do anything. They want the police to do it instead. And the police want the health*

> *department to do something instead. And if you're outside, out in the ocean or in the mountains, not everyone knows that they should just call Arctic Command*. (T3)

Instructors encountered particular challenges in navigating the rescue response system, expressing that seeking assistance can pose difficulties not only for foreign tour operators in Greenland but also for local guides guiding in unfamiliar areas. The variations in rescue resources and responding strategies across the country further compounded these challenges. Accidents on land fall to the police, Arctic Command responds mainly accidents on the sea, but often they work together and their roles overlap. Personal, local knowledge made the difference, having to know the right people to call.

> *Emergency calling is person oriented, not system oriented* (T3).

Harsh weather and limited emergency response were a given to be incorporated into the instructors' mindset and woven into the fabric of the guide training, with self-reliance emerging as a primary objective.

> *A problem in our modern society, not only when guiding, is that people think – well, if I get into problem, somebody can help me out. It is not real reality; students have to learn that. (…) We often had a polar bear at the camp, and we usually manage to scare them away, but then it looks very easy. So, we have to focus on that with students – this one [polar bear] he disappeared now, but maybe next time he won't. You nearly have to touch the border, so they [students] can realize that, that there is a difference between the real reality and fake reality. (T4)*

Although the majority of statements came from Greenland and were related to early stages of tourism expansion that has been already experiences in Iceland and Svalbard, in the eyes of the instructors, the challenges across the Arctic region remained the same.

2 Competencies required

The second theme to emerge identified the ability to guide independently and knowing ones' capabilities as key in leading groups in the Arctic, and therefore in guide training. Instructors discussed how they attempted to build guides' competency through the development of knowledge and skills, and students' attitude and mindset.

Knowledge and skills

When asked about their own individual education and competency, the instructors mentioned diverse educational backgrounds and practical experience. However, none listed risk

management or safety training as part of their own formal education. Instead, they described their risk management strategies as "informal," developed through experience and sharing best practices. The novelty of instructor's perspective was often focused on local knowledge. As a part of the Arctic context, direct local knowledge was listed as crucial, described as familiarity with the terrain, local culture and weather:

> *You will have to build up an experience that you know - OK, if it's blowing northeast in that area, you know how that mountain is going to affect the wind. You know we have a glacier there, that's definitely one of the factors that changes the wind direction, etc. (T6)*

A prevailing trend in statements came from instructors teaching in Greenland, emphasizing the role of the local Greenlandic guides as fundamental support for operations led by foreigners. The contributing of traditional and local knowledge complements the often well-experienced but externally educated (or experienced) adventure guides.

> *You need local knowledge on different places in Greenland for sure to be safe out in that area because some parts can be dangerous. And if you don't have it, if it's your first time, you need to talk with local people and get that knowledge*. (T2)

> *I know of some rescue operation where many local people went out looking for somebody who got lost. They were very angry because it was the ones who were coordinating the rescue that were not local, and only after they came back to the office they learned that they were searching in the wrong part of Greenland, because they did not know that there were mountains with the same name as here in the South Greenland*. (T3)

In the interviews, guide knowledge was directly associated with local expertise. Gaining access to this knowledge was difficult to train, as it typically demands years of trip experience and a deep connection or understanding of the surroundings.

> *We need to be able to create our own localized guides, and those people can come from whatever, it doesn't matter. But what they should be learning is about our environment. All the tactics they can use, all the technical stuff and skill and improvement, but number one should be - How can they work in the environment? And that's always going to be the challenge. T6*

Attitude and mindset

Future guides were expected to adopt a mindset that enabled them to "predict the outcome" (T3) of various situations and when navigating uncertainty. Guide decisions have direct effect on tourist safety, and it can be especially tricky when the guests place high expectations on the guides in delivering experiences. The instructors discussed how the guide must distinguish between the acceptable level of risk for guests participating in adventures and situations where the pursuit of risk overwhelms the well-being and safety of the guests.

> *The very first thing you have to realize as guide is that you can take risk for yourself, but you cannot take risk on behalf of your guests. You can think, that is okay for me, but you have to look behind and think what is okay for your guests. You cannot ask them to take the same risk as you are willing to take (T4).*

Instructors perceived their role in the training programs as guardians of safety and as the individuals responsible for establishing the boundaries within which learning unfolded. With different background, education and risk tolerance, their role was to stay within acceptable safety limits:

> *There's nothing that escapes the instructors because an educational program is no different than service from a guide where the responsibility of the group is on the guide and the responsibility of a group of students is on the instructor. Ultimately, the decisions about safety will always be on the instructors. But this doesn't mean that we cannot involve the students in the process. (T1)*

Ensuring safety, "knowing your own limits" (T1), and "taking good care of yourself, while facilitating guests' experience" (T5) was referred to as *guide mindset*, in which guide had as constant awareness of the environment, the situation, assessing risk and acting accordingly.

> *We are constantly looking on the coastline, seeing what's around the corner, seeking places we know we can land [on shore], if we all have to go back. It can be really tiring trying to do that mindset for maybe two weeks, but it's quite important when you build the experience, you know exactly what your brain is thinking all the time and after long expeditions I sometimes come home and just sit for half a day. My brain is not thinking. I'm done. (T6 teaching kayaking)*

One instructor explained that safety competence involved not solely concentrating on safety and avoiding danger, but rather guide's capability to facilitate experiences. By doing so, the guide had the ability to deliver experiences in meaningful and controlled environment. In further explanation, the guests' desire to experience the Arctic did not solely rely on the Arctic's extreme characteristics, but also on the guide's ability to convey those unique characteristics into the living and memorable experience of the guests.

> *The main thing is the picture and the frame. How to deal with safety? If you all the time focus on the frame which is safety and risk is outside, then it's easier to cross the line, because somebody wants to be on the border. So, focus on the real picture inside the frame. If you are a really clever guide, you can focus on the good experience inside this frame. Then you don't need to touch the border (T4).*

Program Curriculum

Three further themes emerged which could be categorized as guide training program curriculum. Teaching methods, assessing trainee competence, and recognizing the limitations of guide training were all discussed by the interviewees.

Instructors pointed out that the key to competence development was to train guiding skills for the Arctic conditions. The programs were designed with collaboration with the local tourism industry, focusing on desired competences that guides utilized in their daily operations. Working at the front line, guides were expected to "manage the risk, take all the actions to identify, prevent and deal and minimize the consequences when accident happen" (T1). To develop such competence, instructors utilize the local environment to create similar conditions to those in which students will guide upon graduation.

> *The main thing in the program is to be in the Arctic. Its extremally difficult to learn those things if you are not on the spot. It has to do with how you feel the wind, the cold, you have to be familiar with terrain and all those things. (…) You can't sit in another place in the world and listen about it. (T4)*

Instructors emphasized that developing competence and gaining experience takes time, therefore the programs should require a minimum one year, allowing students to progress from novice to confident leader in most areas of guide's competence. The provided training was viewed as a foundation for students to build upon through practical experience. All programs included a mix of theoretical and practical training. One another instructor suggested that for acquiring practical guide skills internships should be part of the training program, "having enough practical experience" (T3) before becoming a program graduate.

> *Maybe that is the one thing that people often forget about or don't know how important it is, you do a course, but you must get the experience as well. (*T5)

Currently, the guiding program in Svalbard is the only one that mandates students to complete a five-week practice placement as part of the program requirements.

3 Teaching methods

The interviews were structured to allowed instructors to describe their educational philosophy and their beliefs regarding guide training, forming the third theme: teaching methods. None

of the insturctors identified a specific teaching philosophy or approach, howerever, the discussion on teaching consistently focused on exposing students to their future working environment, including leadership roles and the Arctic setting.

It was evident that despite different educational background of the instructors and areas of teaching, all highlighted the importance on in-field scenarios, stressing leadership role of the guides, as well as students' participation in decision making process in the studies. Making mistakes with an instructor safety net was identified as student's opportunity to experience the responsibility of the guide job without the full consequences of making errors.

> *There's a lot of different ways to do things. I think, the more tools that we have in our toolbox, the better that we're going to be and the better the program. I think it's very important that we take them (students) into the environment, we give them a certain amount of tools and say let's go and try it out. Let's see what happens. (T6)*

Instructors in Greenland and Iceland shared similar approaches, viewing environmental challenges as the best tool for developing competence in leading groups in the Arctic. Teaching activities included trip planning and trip leading, where each student has an opportunity to take the guide's role and guide their peers, learning how to manage a group and about their own leadership ability:

> *Put them in position where they have to make decisions. Push them at their limit in the safe environment, where students have to really think they are making or believe they are making decision that affect the whole group. (T5)*

An example was provided were a student group mistakenly traveled off route for some time. Once corrected and later in camp, the instructors facilitated a group discussion on the decision making that lead to the route finding error, and what lessons were learned from that. Instructors emphasized the importance of group work, as well as stages of group development as crucial in enhancing the human interaction part of guiding.

In the 5-week Adventure Guide Technique class in Greenland (the first course within the 5-month program), the transition from novice student to assuming the role of a student-guide within the group typically took 2-3 weeks. This underscored the concerted efforts invested by both students and instructors and the progression of skills over time. In contrast, in Svalbard where the program extended over the course of a year, certain skills, such as winter camping or snow-covered glacier travel, were structured to leverage skills acquired in the earlier part

of the school year. As the winter semester unfolded, students progressively engaged in more protracted and challenging tasks culminating in leading multiday excursions under extreme conditions. Longer exposure to the environment served the opportunity to enhance skill acquisition, with one instructor believing, “The one thing is to experience the full year, the other thing is that it takes time to learn these things.” (T4)

Based upon the interviews, all of the school programs adopted a similar approach to building guide competency, emphasizing individual proficiency in self-management and equipment mastery within the Arctic environment, and cultivating the awareness of personal limits and the guide mindset to assume a leadership role in guiding others. Understanding those personal limits, also explained as “being able to take care of yourself” (T3) was an important part of developing the guide mindset and staying withing the safety frame:

> *We start by focusing on the individual of the guide himself or herself and on building up their own skills to deal with equipment and to deal with environment before they take the leadership role (T1).*

Instructors highlighted diverse methods and strategies for growing the student-guide competencies, including approaches to problem-solving and learning and acknowledging varied standards and practices for the same activities. Therefore, the integration of diverse knowledge systems and experiences from various instructors could be viewed as strengthening students' ability for critical thinking. All instructors favored the concept of having a diverse group of teachers and students, bringing together local and international viewpoints. This diversity encompassed individuals new to guiding as well as those with significant experience. The Icelandic guiding program was developed based on the experiences of the teachers’ learning through various system from other parts of the world, particularly Canada and New Zealand:

> *In Iceland there are not so many teachers, it’s a small island and it’s just really easy to be doing your own stuff. I think that was a good thing with the Canadian school that came to Iceland, [teaching] completely different aspects of the same thing [activities]. It has challenged the industry as well. I think it’s very important to have different teachers, to learn from different places.* (T5)

Some instructors expressed their opinion on necessity of rotation of teachers within the guiding school, to have constant flow of fresh approaches, various and diverse knowledge that helps students to acquire skills:

> *The main thing has to be within that structure that anyone can come in and do it. I think the goal [of an instructor] is not to make yourself that important, that [the program] is going to fall if you're not there. (T6)*

Instructors perceived that their role in the training programs was as guardians of safety and as the individuals responsible for establishing the boundaries within which learning unfolded. They regarded the training as an opportune means to cultivate student competence, especially related to the risk management within school learning environment. Their support was crucial for facilitating students' learning progress but was more restricted in areas such as situational leadership and cultivating safety awareness, due to the nature of learning – those competencies were developed by students practicing their leadership roles and making the decisions in the field.

> *They [students] will go out, do sometimes the stupidest thing they've ever done. Because they know that we are there, they always say like- I would never do this if I wasn't with someone like you here. And I was like, well, thanks a lot, you made hard life for me for the past 20 minutes. But that's the point - if you don't do it in that environment, you're never going to do it, and you're never going to grow. (T6)*

4. Training limitation

Upon evaluating the constraints of the three different country's training programs, two main issues were identified across the different schools. Firstly, the absence of industry standards for guiding and guide education, and secondly, the difficulties in assessing the competencies of future guides. Instructors expressed mixed opinions about regulations, noting that guiding in the Arctic demands flexibility to accommodate for dynamic environment. This flexibility, coupled with the need for sound decision-making, makes implementing rigid regulations for guiding a challenging task. Despite instructors' belief in the importance of the training, the schools faced challenges related to lack of structure within the government which would support their mission.

Unregulated profession

The lack of regulations regarding guides education comes from a broader lack of general regulation governing guiding and operating tourist trips. Knowing that "*anybody can start guiding with no education" (T3)* did not help the mission of the school to keep high standards.

> *In general, it's a very limited knowledge of the statistics, safety protocols of many of the tour companies operating. There are no certificates, no demands on how much knowledge the managers or coordinators should know about safety. (T3)*

Despite the awareness of the lack-professionalism within the industry, instructors related to it more as a known reality rather than situation to complain about. While the profession remained unregulated across the region, many guides, after completing their education or training, become involved in guide associations that often work toward standardization. Instructors were enthusiastic about various initiatives of establishing guides standards, and general movement of self-established guides associations in the region that aim to improve safety in the field.

> *It has to be the guides, has to be the company owners as the joint force to change the situation. At least that is the one thing that bothers me, that you don't need any qualification to work as a guide anywhere here. But that's gonna [sic] end up badly, and I mean it, it has ended badly in some of the places. (T6)*

Integrating the various stakeholders to establish standards was seen as a challenge:

> *We're talking about trying to find an agreement or shared understanding between the tourism industry, the education and the guides. Its important that all of these parts feel heard and listened, taken into account, especially the guides that are often left alone* (T1).

While most instructors supported the idea of introduction of governmental regulations and stricter rules for guiding, they also expressed concerns about the challenges of assessing competence—particularly the skills evaluated within guide training programs and how training effectively prepares guides for the real-world situations after program completion.

Competency assessment

The challenge associated with competency assessment arose primarily because the school practice often can never accurately reflect the work environment, where a guide's decisions

can directly impact guests' well-being and safety. Despite showing great performance in many areas of skill development during the course, it was indicated by instructors that students' performance during the course could never ensure their ability to deal with stressful or challenging situations once taking the guide's role in real life.

> *You can see some of the students are very competent when you're talking about making a camp, finding a good route, facilitating the group. But the real difficult thing is, what will this guide do in a real life, in difficult and scary situation? How will this person perform? (T4)*

Some instructors expressed concern regarding competency assessment and qualification recognition, particularly in the context of providing diploma for guides. Primarily, the admission criteria for the program relied upon high school grades and achievements rather than outdoor experience. This approach had resulted in challenges in the past, manifesting in instances where students lacked foundational outdoor knowledge at the commencement of their studies, as well as in cases where outdoor-driven students encountered difficulties meeting academic requirements associated with university-level assignments during school assessment. While the academic program requires development of academic skills, such as revieing literature and writing comprehensive writing assessments, the schools on lower educational levels are more geared towards practical assessments. Completing the program within the allocated time proved challenging for both students and instructors, due to uneven pace of learning among individuals. Although meeting the pass/fail or grade criteria was essential for the evaluation, instructors felt it was important to recognize that completing the training program represents just one step in the journey toward becoming a professional guide. In the eyes of instructors, the training programs should be viewed as strong foundation upon which students can develop further competence.

> *In the guides associations issuing certificates we can evaluate each person, and we can also say after, if this person just does stupid things, we can take back your certification. You cannot do it with the university degree. That is the problem with qualifying studies in the university, that they get their exams and papers. But you [instructor] might think, I hope this person doesn't start work as a guide. (T4)*

Various methods of learning assessment were identified, such as continuous monitoring of students' skill development over the course span, through discussions, reflection, utilizing various exam formats, both written and oral, and direct feedback.

The issue of competence recognition comes hand in hand with the lack of structure for instructors hired in the guiding schools. Instructors often lack formal methods to assess students' competence, while the schools they work for lack tools to evaluate instructors' knowledge and practices. Notably, in Iceland and Greenland, the majority of instructors do not have formal teacher training. While this has raised concerns—often linked to the limited ability of instructors to adopt professional teaching methods instead of relying solely on personal experience, only a few instructors in Greenland and Iceland highlighted the importance of knowledge sharing within or beyond their instructor groups as a way to enhance their teaching strategies. A suggestion was made that knowledge exchange between practitioners and a more structured approach to guide education (both at the student and teachers' level) could positively impact teaching methods, assessments, and the overall organization of the teaching process. In interviews, instructors emphasized best practices and years of experience as their primary teaching tools. However, some have noted the limitations of drawing their teaching just on their own practices.

> *I was first focusing on not replicating, but in a way doing it in very similar way I was educated, the way I was teaching the same guiding courses abroad. It took me same time to realized it doesn't work in Greenland. (T1)*

Complicating assessment were considerations such as cultural subjectivity, particularly with regards to risk and differing mindset on what rick actually:

> *Each of us has a different perspective on safety. Why is this? It's very much shaped by surroundings by the people and the environment that we live in. (…) I think it goes directedly with how much risk or uncertainty you are able to cope with. (…) For generations [Greenlanders], didn't have satellite phones and they didn't bring a first aid kit. That was just their reality. They accept much more uncertainty and life in a more fragile way. At the moment the society we live in, especially in Western developed countries, it's a bit the opposite. There's very tight grip on life, we have all this technology that is very wonderful and it saves many lives. But at the same time, it allows very little tolerance for uncertainty in a way.* (T1)

DISCUSSION

This research sought to find out how safety competency acquisition is designed and facilitated by instructors in three Arctic tour guiding schools.

The Arctic context

The physical characteristics of the Arctic environment, often labeled by the interviewees as "exposure"- harsh weather, remote locations, combined with limited search and rescue capacities, drove the pedagogical priorities of the guide training programs. Instructors listed these factors as creating requirement to develop students' sound judgment and risk management on trips, beyond the technical, interpersonal, and operational competence as crucial in guide's work. Most of the desirable competencies listed by the instructors corresponded with previous research on Arctic safety (Albrechtsen and Indreiten, 2019) and Arctic guide´s competence (Hild et al, 2023). These priorities also aligned with general leadership competences in the wider field of outdoor leadership (Priest and Gass, 2005), when removed from the Arctic context. This alignment could be predicted, given that all instructors teaching in guiding schools have broad experience as guides in the field, and that base level guide skills transcend any one environment or activity. In instructors' reflection on guide 's competence, guiding was viewed as not just about the physical surroundings, but also about how to interact with people in groups; being a guide meant not only navigating through the physical space but also connecting with guests on a personal level (Weiler & Black, 2015; Mason & Christie 2003). However, it is important to conclude that the environmental challenges related to living and working in the Arctic were emphasized by the instructors, as crucial in teaching and guiding in the region. Local knowledge and understanding the environment were only to be gained by direct exposure during the training, and yet, the training itself was described more of a foundation to further skill acquisition.

Teaching guiding skills

In relation to the research question specific to risk management competencies, the informants revealed that ensuring tourists' safety in the Arctic required not only skills and knowledge but also a combination of the leader's attitude and mindset. While instructors did not identify differences in the general outdoor leadership competencies for Arctic leaders compared to adventure guides elsewhere, they emphasized that an Arctic guide's mindset—especially regarding self-reliance—was crucial. Students developed this leadership attitude through participation in hands-on scenarios and time in the field, including group management in the Arctic environment. Key factors around which instructors facilitated learning included exposure to environmental factors and the role of the guide. Student learning depended upon instructors' ability to engage students and encourage them to explore their abilities within their own limits in an instructor-managed environment. These findings aligned with the

principles of Adventure Experiential Learning, which emphasizes that educators must be aware of their biases, judgments, and preconceptions, as these can influence learners (Ewert & Sibthorp, 2014, p. 8). This was particularly noted for instructors from outside the local culture. In interviews, instructors highlighted the mutual benefits of knowledge exchange between learners and instructors. While many instructors bring extensive expertise in their subject areas, they might be lacking the ability to adapt their knowledge within to local conditions. It could be the local resources available only to those fluent in the local language, or missing the local knowledge gained with experience of living in those places, such us understanding the weather patterns or sea currents. A similar, yet distinct perspective on knowledge exchange came from instructors in Iceland. Having received their guide education through foreign training providers, they expressed interest in bringing knowledge from abroad and adapting it to local conditions. They emphasized that building local capacity through knowledge exchange is essential for the industry in developing standard and to gain international recognition.

Assessing guiding skills

Instructors referred to the process of assessing skill development as involving regular monitoring, reflection, and feedback from both teachers and peers. Interviewees were unanimous that such a process should be performed during extended period of time, allowing students to gain confidence in the Arctic and guiding environment before taking on the leadership role. The findings indicated that instructors emphasized the students' guide mindset and attitude development. This aligns with Mason and Christie's (2003) assertion that effective guide training should lead to changes not only in knowledge and skills but also in attitude and behavior (p. 1). Hild (2023) found that student and guide reflection on practices was a crucial element of developing safety competence.

Evidence suggested that assessing safety competence presented challenges for instructors, as evaluating situational leadership can vary significantly between school-based programs in controlled environments and guiding in real-life situations. Instructors suggested that situational decision-making could be better evaluated if the students had undergone practical work placements or internship during their studies. This somewhat draws a parallel to the formal lack of safety and risk management education among instructors working with safety competence development, highlighting the need for more comprehensive training and evaluation methods that reflect real-life guiding, and teaching scenarios.

Furthermore, interviewed instructors stated that the process of skills acquisition and development of the guide's self reliance and mindset can be difficult to achieve within the program's time frame, much less pose challenges when assessing the students' competency transfer from classroom to real-life. The instructors' concern does raise the interesting question of how much training is enough, and if there exist meaningful assessments available to gauge guide readiness for difficult work conditions.

Guiding training and culture

Our research provided new insights into guide risk perception across different cultures in the Arctic. The findings showed that, despite encountering similar environmental challenges, Greenlandic guides were generally more accepting of higher levels of risk in their daily and work lives. This acceptance may be perceived as negative or risky behavior by Western cultures and tourists. Recognizing and understanding these cultural differences is critical for designing and facilitating effective learning experiences, particularly for open-minded and well-informed instructors. Given the limited research on safety among Indigenous adventure guides, these differences are crucial for shaping future studies and educational programs on guide training in the Arctic. The findings also suggested that future research should prioritize Indigenous methodologies over Western approaches to better understand this phenomenon.

Lastly, the results highlight the value of exploring guide training education beyond simplistic curriculum comparisons, and to encompass the experiences of practitioners to enhance a holistic approach to curriculum development and implementation. The research found that knowledge sharing directly impacted practices among both student guides and teachers. However, with limited research on educational program curricula for adventure and Arctic tour guides, and there is little in the way of research conducted to evaluate guide training program design and facilitation to determine whether the objectives of the programs are being achieved. Future research should explore ways to conceptualize and utilize the sharing and co-production of various knowledge systems across the Arctic region, focusing on teaching methods and quality skills assessments between educators and practitioners, cultural differences, and program efficacy. As informant T1 mentioned, simply replicating teaching strategies from other guiding schools might not support students learning, especially when risk perception and understanding of safety competence varies across cultures. Knowledge co-creation among the educational practitioners with focus on diversity and inclusion of Indigenous knowledge should be examined in future research and policymaking regarding shaping guide's competence development and education.

Limitations to this study are recognized. The limited extent of guide education in these three Arctic countries resulted in a small sample group, one where individual personality can have outsized effect on the findings. Also is a consideration that all informants were male, creating potential gender bias in the findings. Researchers were aware of these limitations at the outset, and sought to minimize their potential effect during interviews and coding of data.

CONCLUSION

The Arctic environment is the over-riding factor driving Northern guide training, with expressed needs for extensive skills training and the development of a guide's mindset focussed on safety. Limitations of the training programs identified that instructors struggled with integrating a holistic approach in their education design and resources. More knowledge sharing between the educators and a structured pedagogical approach in facilitating the programs could enhance professionalism and evaluation of the learning process. The development of assessment tools and strategies could help teachers with students' evaluation and assess job readiness are required. The extension of the length of the program and integrating work placement experience could positively influence the students and their ability to perform as guides. Cultural aspects need to be respected and incorporated into country-specific guide training, especially in regard to perceptions of risk.

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Appendix: INTERVIEW GUIDE

1. What are the safety concerns for guides working in the Arctic and how would you describe safety competent arctic guide?
2. What are the main strategies in achieving those goals?
3. What strategies are used in exposing students to environmental risks, yet delivering safety competence?
4. How safety competence is being evaluated in the program
5. What are the limitations of the program, what you don’t teach about safety?

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Complexity of tourist safety in the Arctic: stakeholder's knowledge co-production

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1. Introduction

In light of growing demand on tourism in the Arctic, it is imperative to strengthen the knowledge base, skill set and competencies of the tourism labour force by strengthening tour guide professionalism and safety in the region. Complex logistics, rapidly changing weather, and remoteness, as we as the effects of climate change play significant role in field practices, especially for tour operators in the Arctic. With growing interest in the region, the likehood of accidents increases, leading to stress on limited local emergency services. Recent findings show that local knowledge, experience and training have been recognized as essential in ensuring safety Hild at al.,2022) while there is limited data on knowledge exchange between local stakeholders. Knowledge on relationship and interaction between the stakeholders, such as tourism boards, rescue services, academia, tour guiding schools and guiding companies is essential in the coproduction of knowledge; phenomena of ensuring tourist's safety in the Arctic. The objectives of this research are twofold: (1) to explore current state of safety- related knowledge and (2) to map recourses for fostering collaboration between practitioners, theorists, researchers, educators, company owners, government representative and tour guides.

By exploring stakeholder's capacity and standpoints related to issues on safety tourists operations, we seek to explore the possible ways to collaborate in knowledge co-production, with focus on enhancing tour guides education. Hence, our study sought to address literature gaps by examining:

1) What are the safety concerns related to extreme weather events for stakeholders operating in the Arctic environment?
2) What is the current state of safety-related knowledge exchange between the rescue services and tourist companies?
3) What strategies and resources are needed to establish collaboration between the rescue services, tourist companies, and guiding schools in the Arctic?

The research contributes to the knowledge of tourism management in the safety field, giving insights into a process of potential collaboration in the Arctic, building resilient infrastructure, promoting knowledge sharing and enhancing safety practices, while addressing the importance of cooperation of various stakeholders, including research, and local communities in tourism destination development in the polar regions.

2. Tourists' safety in the Arctic

Extending the tourism seasons, together with increased accessibly to new locations, as a results of climate change pose thread to the commercial operations and tourist safety. The exposure to new hazards, such as extreme weather events or changes within the existing visited sides (such as moving glaciers, new crevasses, unstable sea ice) becomes a challenge for guides and tour operators. With limited regulations and standards on operating land-based tourism activities, such as certification or mandatory training for tour guides, there is inconsistency in approaching

tourist safety as shared responsibility of guides, educators, company owners and policy-makers. While factors, such as harsh climate conditions, remoteness, limited infrastructure, climate change and lack of data and knowledge are considered as fundamental in operational safety (Albrechtsen & Indreiten, 2021), it is imperative to explore how tourism stakeholders approach safety concerns.

Research shows that tour guides have responsibility of ensuring tourist safety. Guides training as an imperative for development of safety competencies (Hild at al.,2022) should be developed in the dialog between theorists, researchers, educators, company owners, government representative and tour guides with emphasis on joints understanding of the safety complexity.

3. Collaboration between Arctic tourism stakeholders

With an aim to address the complexity of tourist safety, more research integration, implementation and participatory processes is needed. In order to respond the research needs Arctic Guide Safety Education Collaboration (AGSE) was established as transdisciplinary project based on knowledge exchange between field of Safety, Tourism and Education, hence represented by researchers, educators and practitioners. The project focus on knowledge co-creation and curriculum development of guide education in the Arctic environment brining attention to increased involvement and integration of research on tourist safety in the Arctic. Working together across educational level creates and opportunity to link and transfer knowledge and experiences between tourism educators in the Arctic, thus preparing the ground to produce materials for teaching development and continue transitional collaboration in the field.

3. Material and methods

In order to address the research questions, workshops with stakeholders are taking place during Arctic Guide Safety Education (AGSE) Collaboration meetings in Iceland, Svalbard and Greenland between February – September 2023. Representatives from companies, tourist boards, emergency services and academia are invited to participate in 3hours workshop divided into 1h presentation about the network, learning about guiding schools in each location, followed by group discussion. Data collection includes 4 meetings with stakeholders, 3 AGSE seminars and one guide seminar in Svalbard. Data triangulation was used and included following sets of data: participatory workshop, stakeholder's survey, and guide's survey after Svalbard Guide Seminar. With an aim to understand the safety concern faced by the stakeholders, the workshops included discussion on enhancing collaboration on guides education between various stakeholders. The meetings are recorded, transcribed, and organized in thematic themes. We aim to analysed the findings with a theoretical approach of complexity and collaborative research theories.

4. Preliminary findings

Preliminary findings revealed that remoteness, climate change and limited resources are contributing factors in approaching tourist's safety in the Arctic by stakeholders. In addition, findings indicate the need for more integrated research on guides education and knowledge exchange between stakeholders, especially from the top-to bottom approach.

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