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ARTICLE

Pupils' perspective on education outside the classroom in Greenland: experiences from an action research project

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Abstract

Kalaallit Nunaat (Greenland) faces a shortage of qualified professionals, making educational improvement a national priority. Yet research reveals persistent challenges in academic achievement and pupils' motivation within Greenlandic primary schools, where book-based, in-classroom teaching predominates. This study reports findings from an action research project exploring the potential of *Education Outside the Classroom* in a Greenlandic primary school. During a period of over 14 months, the researcher collaborated with teachers to develop, implement and evaluate *Education Outside the Classroom* designs. Analysis of teaching plans, observations, field notes, and semi-structured interviews with 18 pupils indicates that integrating outdoor experiences with classroom theory fostered intrinsic motivation through authenticity, physical activity, and positive peer relations. However, inadequate planning reduced motivational benefits, underscoring the need for careful design and sustained teacher support. High teacher turnover further emerged as a challenge, highlighting the importance of addressing teacher recruitment and retention in Greenland's small, remote communities.

Keywords: Greenlandic primary school, education outside the classroom, place-based education, action research, outdoor learning

Introduction

Challenges in the Greenlandic education system

Kalaallit Nunaat (Greenland) is a self-governing country within the Kingdom of Denmark, and approximately 89% of Greenland's population is Inuit, with *Kalaallisut* (Greenlandic) designated as the official language (Statbank Greenland, 2024). Despite being the world's largest island with just 57,000 inhabitants, 20,000 of whom live in the capital Nuuk, Greenland is remarkably sparsely populated (Statbank Greenland, 2024). Due to an uninhabitable ice-covered interior, all settlements are coastal, predominantly located in the south and west. There are no roads connecting settlements, necessitating transport by boat, plane or helicopter.

Greenland's geography and settlement structure give the education system a distinct organisation that presents certain challenges. For instance, most pupils live in larger settlements (more than 700 inhabitants), many of which are characterised by primary schools with large classes, but two-thirds of the schools are located in small, isolated settlements with fewer than 50 pupils (Ministry of Education, Culture, Sports and Church M-ECSC, 2024). As a result, these schools employ fewer teachers who must then cover multiple subjects, often outside their areas of expertise. The professional environment for teachers in these rural schools is limited, requiring them to teach multi-grade classes (M-ECSC, 2024). In addition, recruiting and retaining qualified teachers in small and remote settlements is challenging, leading to high turnover and frequent reliance on unqualified staff. As such, teacher shortages are a widespread problem in Greenland, where only 88% of teachers in urban schools hold a formal teacher qualification, and only 56% in rural schools (M-ECSC, 2025). Children start school at the age of 6 years old, and they must complete ten years of compulsory schooling. Greenland follows a Nordic welfare model, offering free education from primary school to university.

Educational attainment is low in Greenland, with 53% of the population aged 25-64 years having no education beyond the primary school level, a percentage that has stagnated over the past 15 years and that is twice that in other Nordic countries (M-ECSC, 2024). However, education is crucial for individual wellbeing and societal development (Chan, 2016), so the Greenlandic Government has proposed its aim to raise educational standards to promote a sustainable society (M-ECSC, 2024).

Studies show that academic achievement is often compromised in Greenlandic primary schools (Lennert, 2021), with book-based 'reading-writing' tasks dominating classrooms, despite being perceived as monotonous and demotivating (Demant-Poort and Andersen, 2022). Thus, it is necessary to develop a pedagogy that can improve motivation and learning in Greenlandic primary schools.

Theories

Motivation and learning

Research suggests that students' intrinsic and extrinsic motivation through identification or integration of the topic as meaningful are linked to learning outcomes (Ryan and Deci, 2020). Ryan and Deci (2020) distinguish between intrinsic motivation—driven by interest and enjoyment, and extrinsic motivation, which can either support or hinder learning depending on its form. While extrinsic motivation stems from internalised values (identification and integration), promoting engagement and positive attitudes

towards school and education, external regulation through control or rewards may, in contrast, undermine intrinsic motivation.

Intrinsic motivation flourishes when students' basic psychological needs — autonomy, competence, and connectedness — are met, according to Self-Determination Theory (Ryan and Deci, 2020), a concept considered universal across cultures and ethnicities (Ryan et al., 2022). Educational practices must therefore address these basic needs, including for Indigenous students, who often face barriers in traditional schooling (Demant-Poort and Andersen, 2022; Martin et al., 2021). Thus, if learning outcomes for pupils in Greenlandic primary schools must be improved, it is important to enhance their intrinsic motivation.

Education outside the classroom

Research has shown that Education Outside the Classroom (EOtC) can increase motivation and learning (Bølling et al., 2018; Fägerstam and Blom, 2013; Otte et al., 2019). Place-based education and land-based education, which share similarities with EOtC (Føns, 2025b; Lee et al., 2022), have demonstrated their potential among rural and Indigenous pupils, as they connect the school with pupils' culture and community, strengthening their identities and feelings of belonging at school (Føns, 2025b; Harrison and Skrebneva, 2020; Stansberry et al., 2023). These pedagogies can break monotonous in-classroom and book-based teaching, which appears to dominate primary schooling in Greenland (Demant-Poort and Andersen, 2022).

EOtC is characterised as a pedagogy that regularly involves learning activities outside the classroom: in nature, urban environments, museums and workplaces. It connects school with the world pupils know outside school by being situated, place-based and practice oriented. Learning goals are defined within the curriculum, confirming that outdoor activities are closely connected to classroom teaching (Bærenholdt and Hald, 2020; Ejbye-Ernst et al., 2017). In Scandinavia, EOtC has been developed by the Norwegian pedagogical professor Arne Nikolaisen Jordet (Jordet, 1998, 2010). It is theoretically based on the American philosopher John Dewey's learning theory, which argues that learning occurs when school alternates between direct, practical experiences and secondary, reflective experiences and that learning happens in social contexts, where students are active and can engage in dialogue, guided by a knowledgeable teacher (Dewey, 2000, 2013).

Place-based education

Dewey's pedagogical theory has also been inspiration for place-based education and critical pedagogy of place, which was developed mainly in North America (Gruenewald, 2003; Gruenewald and Smith, 2007; Smith, 2002; Sobel, 1996), and which merges place-based education with critical pedagogy (Freire, 1970), insisting on the importance of addressing age-appropriate local social and environmental injustice issues (Gruenewald, 2003). EOtC, place-based education, and critical pedagogy of place share many similarities and overlap by including local surroundings, nature, and the community in teaching, having a responsible and caring agenda (Gruenewald, 2003; Jordet, 1998, 2010; Lee et al., 2022; Smith, 2002).

Land-based education

Land-based education likewise shares many similarities with EOtC, place-based education, and critical pedagogy of place by incorporating the land, nature and cultural traditions into learning activities (McDonald, 2023; Stansberry et al., 2023). Land-based education is Indigenous-led, originates from Indigenous knowledge and epistemologies, and shares a strong relationship with land and nature (living and non-living), with ancestors being essential to the pedagogy. Land-based education has a decolonising agenda and encompasses spiritual dimensions (McDonald, 2023; Stansberry et al., 2023).

This study draws on practices and theories from EOtC, place-based education, critical pedagogy of place, and land-based education, and guided by a recognition that students' basic needs for autonomy, competence, and connectedness must be fulfilled to promote and preserve intrinsic motivation (Ryan et al., 2022; Ryan and Deci, 2020). As such, grounded in the philosophy of science that integrates pragmatism and critical realism (Heeks et al., 2019), this study takes inspiration from these learning approaches and in close collaboration with teachers and schools seeks a path forward that fits the Greenlandic context.

Development of education outside the classroom in Greenland

In Greenland, the vast arctic nature dictates everyday life and the strong Inuit culture, where hunting, fishing and gathering from nature are widespread, is an identity marker essential for quality of life for many Greenlanders (Poppel, 2015; Steenholdt, 2019).

Many families engage in holiday camping where they go trout fishing, berry picking or reindeer hunting – activities that cultivate informal learning environments – where knowledge, rooted in social practice and tradition, is passed down from the older generation with nature as a teacher. This was described by Christensen (2012, 2019) after spending time in a Greenlandic reindeer hunting camp, where families exchanged their modern town life for reindeer hunting for a period every summer. Christensen (2012, 2019) observed how children thrived and were highly motivated to learn at the hunting camp, contrasting their school experiences. Based on these experiences, she recommended using ancestral lands as an educational resource (Christensen, 2012, 2019).

In the Greenlandic context, this has not traditionally been referred to as land-based learning, but it encompasses many of the same elements, enabling inspiration-taking from these theories and practices. Most teachers and principals in the Greenlandic primary schools are *Kalaallit* (Greenlandic Inuit) and can choose to draw on Indigenous and land-based perspectives in their teaching. Some do so already (Føns, 2022, 2025a), while others would like to do so, if provided the necessary setting and support.

Given this context, place-based and culturally responsive EOtC appears highly suitable for Greenland. As such, this study aims to investigate its possible development and potential effectiveness by answering the following research question:

How can EOtC be developed in a Greenlandic context to support motivation and learning?

The study

Participants and place

The study was conducted at an elementary school (grades 1-10) in a Greenlandic settlement of approximately 500 inhabitants. Collaboration between the researcher and school was established after an invitation from the school principal, who sought to enhance physical activity and outdoor learning to improve the pupils' wellbeing and motivation to learn at school.

During the 15-month study period from August 2020 to October 2021, the school educated around 60 pupils and employed approximately 10 teachers, though both numbers varied slightly. Behind these numbers hides a high teacher turnover, with all but one teacher, including the principal, having been replaced during the study period due to relocation for other employment. The school operated multi-grade classes, typically teaching two age groups simultaneously.

Residents of the settlement are employed in various sectors: full-time hunters, public service, tourism, small private business etc., and most are *Kalaallit* (Greenlandic Inuit) with a minority of Danish or other foreign descents, many in mixed families. The school reflected this demography, with most Greenlandic teachers and pupils and a high percentage of Danish teachers. Both Greenlandic and Danish were used as teaching languages, and the teaching material was available in both languages.

The research team comprised the author and two student teachers who served as research assistants. The researcher, of Danish descent, had lived in Greenland for a total of six years at the study's commencement. The student teachers, one male and one female, are Kalaallit (Greenlandic) with Kalaallisut (Greenlandic) as their mother tongue. They participated in the fieldwork exclusively in August both years, as their studies precluded participating during semesters. This was a strength in the research design, as they could understand conversations among pupils and teachers during observations and furthermore, had a more intuitive cultural understanding of social dynamics compared to the researcher. After each observation day, the student teachers and the researcher discussed the day's events and reflected on their experiences and understandings of what had occurred.

Methodology

This qualitative study employed an action research approach in combination with design-based research (Andriessen, 2007; Bakker and Eerde, 2015; Borgnakke et al., 2019). The framework involved the collaborative development, implementation, evaluation, and iterative redesign of EOtC designs by teachers and the researcher. Where desired, the researcher provided suggestions for EOtC designs to inspire practice. The analytic strategy followed an abductive reasoning process, alternating between deductive theory-driven and inductive data-driven approach, searching for generating context-responsive theorisation.

This methodology is consistent with pragmatist-critical realism (Heeks et al., 2019), acknowledging the underlying psychological mechanism, self-determination theory (Ryan and Deci, 2020), and the need for social and environmentally sustainable development, while also aiming for achievable goals by being pragmatic. Action research offers teachers ownership of the project and allows them to define the most

urgent challenges. It also benefitted from teachers' knowledge about the pupils, the local community and nature, encouraging them to use personal skills and preferences in the EOtC designs.

The most pressing challenges, according to the teachers, were that they found it highly challenging to teach in multi-grade classes with large variations in academic level and motivation among the students. It was also difficult for them to cover such a wide range of pupils' capabilities, from high-achieving and motivated students to low-achieving students who they found difficult to encourage.

Action research design

In August 2020, a week before the pupils returned from summer holidays, the teachers participated in a course and workshop organised by the researcher, introducing them to EOtC. The workshop allowed time for teachers to integrate EOtC into the curriculum for the upcoming school year. The researcher, who was educated as an EOtC-instructor and holds practical experience, including one year of teaching in primary school in a Greenlandic settlement, acted as a supervisor. Collaboration and knowledge-sharing among teachers was encouraged and facilitated in the project, though it was voluntary for the teachers to include EOtC in their teaching, as ownership and commitment were important to the project.

The researcher visited the school five times: August 2020, February 2021, August 2021, October 2021 and September 2023, the first four of which lasted two to three weeks each. During these visits, the research team conducted observations of lessons in- and outside the classrooms, evaluation meetings with teachers, and knowledge-sharing and collaborative planning of new EOtC designs based on previous experiences. Comprehensive information on data collection is explained in the data collection section. The fifth visit aimed to present preliminary conclusions and discuss potential future collaboration. The action research cycle is illustrated in Figure 1.

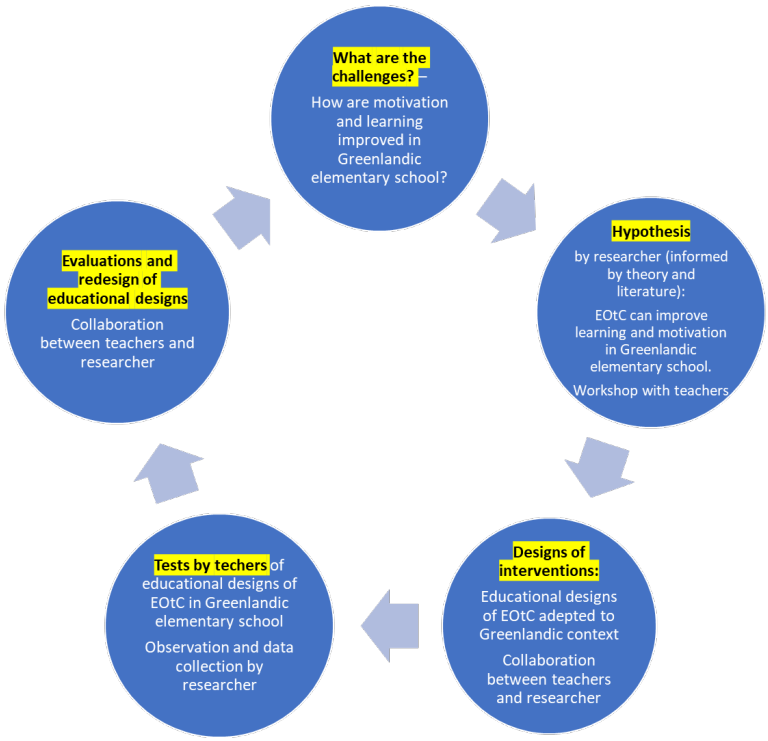

Figure 1: Action cycle in this project (inspired by Lewin, 1947)

Redesigning EOtC interventions based on evaluation

Like most Greenlandic schools, classes followed a fixed schedule with 90-minute modules, but one challenge identified during the first year of EOtC was that this schedule hindered longer excursions, desired for older pupils. To address this, a framework for preplanned whole-day excursions was created, and at a collective evaluation meeting in February 2021, the teachers, researcher and principal decided to implement this into the curricula for grades 6 through 10 the subsequent school year.

Every Tuesday, from the start of the school year until the autumn break (August to October 2021), was reserved for whole-day excursions for grades 6 through 10, an arrangement that allowed at least two teachers to participate, enhancing safety and collaborative planning. The aim was to prepare, process and reflect on the EOtC day in relevant lessons before and after the excursion. Thus, this study focuses on their experiences with the EOtC design of these whole-day excursions and the pupils' perspective on EOtC.

Collaboratively developed plans for EOtC

The following is based on workshop plans, teaching plans and field notes from the visit in August 2021, where on August 5, teachers planned whole-day excursions for grades 6–10 for the first weeks until October, with EOtC day designated as being every Tuesday. However, due to high teacher turnover, new teachers were hired at the school who had not been involved in the previous year's decision about the weekly field trip. As a result, the new teachers lacked ownership of the project and were unfamiliar with the EOtC pedagogy, which led to initial frustrations.

The researcher emphasised that teachers must decide whether excursions should be implemented as previously planned, but it was mandatory to attend the workshop so they could learn more about what this entailed before making a final decision. It was important for the study that the teachers were intrinsically motivated to teach using the EOtC pedagogy, as this would lead to greater engagement from the teachers (Ryan and Deci, 2020).

Fortunately, these frustrations subsided, as they learned more and began concrete planning. The workshop concluded with an enthusiastic plan for the subsequent seven weeks, resulting in a collaboratively conducted plan for grades 6–10 excursions every Tuesday. The plan was documented on a whiteboard, and Table 1 shows a copy of the plan, translated from Danish to English, with the fourth column omitted for anonymity.

On 6 August, teachers planned subsequent weeks individually or in groups, with the researcher acting as a supervisor by offering consultation, advice and ideas. In the afternoon, everyone convened for a final meeting where teachers presented their plans for discussion. This session, featuring a supportive atmosphere, allowed colleagues to provide feedback and share new ideas, significant differences in the teachers' competencies and plans for EOtC implementation were evident: one teacher had no plans yet, some had general plans, while others had specific plans for both outdoor and classroom activities, whether single-subject or interdisciplinary.

Table 1. Activity plan for excursions as part of the EOtC-plan for the first seven weeks. Copied and translated from Danish by the author (researcher)

Outdoor school calendar		
Date	**Destination and activity**	**Subjects**
August 10	Excursion to the lake, berry picking and plants	Outdoor education, Biology, Food knowledge
August 17	Visit a foreign ship in the harbour that is on a mission to put spot on climate changes	[empty in the picture, but *Science, English* was added later (fieldnotes)]
August 24	Reindeer hunting	Personal development, Social science, History, Biology
August 31	Hiking to a historic site for overnight camping in tents	Social science, History, Outdoor education
September 7	Building a traditional peat house or smokehouse	Social science, History, Craft, Math
September 14	Hiking to a mountain to collect a special mineral	Geography, Geology
September 21	Hiking to a glacier	Geography, Geology

The first outdoor day on 10 August was a 'back-to-school' socialisation day following summer holidays, a longstanding tradition at the school. Therefore, no observation notes were taken.

Thereafter, the first planned curriculum-based EOtC excursion was the visit to the foreign ship in the harbour, where pupils in English class should prepare questions in English for the crew. However, this visit was cancelled a few days prior due to COVID-19 restrictions. Plan B was to conduct the excursion to the mountain with the special mineral earlier than intended. Unfortunately, the day before the excursion, two teachers who were responsible for the excursion fell ill, creating uncertainty about their return and the excursion's viability. This led to frustration among the other teachers, who lacked time to prepare on such short notice. To ensure field observations, it was decided in accordance with the teachers that the research team would prepare them, demonstrating the crucial need for flexibility in fieldwork, as circumstances can change suddenly.

The alternative was to a plan for an EOtC day divided into two events: a morning excursion to a nearby tundra area and a small lake, to study small aquatic animals in the lake and terrestrial tundra plants, with a focus on biology. After lunch, the afternoon featured an outdoor math lesson with physical activities.

Before the EOtC-day, the research team met with the participating teachers to introduce the lesson and assign roles. The researcher, who is a biologist and nature interpreter, oversaw the terrestrial plant activities, while a science and math teacher led the activities fishing for small animals in the lake and the outdoor math lesson, and the other teacher assisted pupils needing help while the two research assistants (student teachers) took observation notes.

Data collection

this case study was analysed through the triangulation of data from semi-structured interviews (Steiner and Brinkmann, 2015) with 18 pupils (11 girls and 7 boys aged 11 to 15 years, Table 2), observation notes from teaching, whiteboard notes of excursion plans, teaching plans, field notes and reflection notes (Brinkmann and Tanggaard, 2020). The interviews with pupils from grades 6-10 were held in October 2021, after nine weeks of weekly excursion days every Tuesday.

Table 2: The distribution of gender and age across the 18 informants is shown in this table

Age (years)	*Girls (individuals in the age groups)*	*Boys (individuals in the age groups)*
11	1	3
12	3	1
13	5	2
14	2	0
15	0	1
Total	11	7

All parents granted permission to participate and signed an informed declaration of consent before the pupils could be observed and interviewed. It was also crucial for the pupils themselves to choose to participate after being informed of the project and of their rights, such as confidentiality and anonymity and the right to withdraw at any time.

Guided by ethical guidelines (Ilisimatusarfik, 2024) and knowledge of the process for interviewing children (Kampmann et al., 2017), the following choices were made: due to their young age, the pupils were interviewed in groups of two or three classmates to ensure comfort. Biscuits and juice were served to create a cosy atmosphere. Teachers grouped pupils with close friends to make them feel safe and more comfortable with expressing their opinions. Besides the interviewer (the researcher) and the informants (pupils), a translator was also present due to the researcher's limited proficiency in Greenlandic (*Kalaallisut*), the native language of most pupils, though a few pupils were native Danish speakers. While it was not possible to recruit a professional translator from the settlement, the employed translator spoke both Kalaallisut and Danish fluently, and worked at the recreation centre nearby, where younger pupils spent their afternoons. This choice aimed to ensure pupils felt comfortable with the translator and could speak freely about school and their teachers. The researcher, who did the interview, spoke Danish.

Data analysis

Fieldnotes were handwritten and subsequently typed up on a computer the same evening or, at the latest, the next day and, saved in a word-processing programme. Upon returning from fieldwork, the notes were imported into NVivo (www.lumivero.com) for coding and analysis.

The initial coding of the observation notes in NVivo involved open, grounded coding to determine '*what is going on'* (Boolsen, 2017, p.138). In a second coding phase, the notes were categorised according to where the teaching took place and analysed for insights into pupils' learning and motivation. New child codes overlooked during the first phase were also registered. NVivo tools were utilised to run queries and to explore code frequencies and code comparisons to identify themes.

Interviews were audio recorded and transcribed using Whisper 1.3, and transcriptions were manually quality-checked by the researcher, who listened through the recordings while reading the transcriptions, noting when the informants, interviewer and translator spoke. Checked interview transcripts were imported into NVivo 14 (www.lumivero.com) for coding.

Interviews were coded based on informants' responses to questions in the interview guide. In addition, informed grounded coding was conducted (Charmaz, 2014; Glaser and Strauss, 1967; Thornberg, 2012) to ensure unexpected findings were not overlooked, while also considering the research question, '*How can EOtC be developed in a Greenlandic context to support motivation and learning?'* in mind. Finally, concerning the analysis of the observations, themes were identified with help from NVivo by running queries and a cluster analysis and by exploring code frequencies and code comparisons.

To identify themes, a Jaccard's coefficient cluster analysis of word similarities between codes was conducted in NVivo 14 for both the observations and interviews. This qualitative study acknowledges the limitations of cluster analysis, which must be used cautiously, and similarity scores behind clusters should also be studied carefully, as they reveal more connections than the cluster image shows. However, Jaccard's coefficient provides a quantitative lens through which to view qualitative data, suitable for analysing binary data such as texts, and it identifies codes that frequently co-occur, helping to confirm patterns and themes (Chatzopoulou, 2024).

It is important to emphasise that NVivo analysis does not provide answers itself and cannot stand alone. Instead, it is a tool obtaining an overview of the dataset to identify dominating themes and connections. However, it must always be interpretated thoroughly before making conclusions.

Analyses of the observations and interviews were performed separately, because the observation notes were taken during the field work in August and the interviews were conducted in October, at which time the pupils were asked about their experiences with learning outside the classroom and school in general; thus, they would not only discuss the observed EOtC lessons but also refer to other EOtC lessons in the interview. However, in the Discussion section, these findings are synthesised, and data are triangulated and discussed together to obtain a more holistic view of the field.

Findings

Observations of the EOtC lessons

This section contains a short description of the EOtC lessons and analysis based on observation notes. Five observations describe outdoor lessons, with one lesson observed by two research assistants following different groups.

Biology: excursion to the lake and surrounding tundra

The day began with a brief introduction at the school, where gear for the field activities was distributed among pupils and teachers. Everyone then walked together to the site, approximately 20 minutes away. Upon arrival, the first activity involved forming a circle, holding hands, closing their eyes, and remaining silent. This exercise aimed to ground everyone in the place, using senses other than vision: listening to nature's sounds, sensing smells, and feeling the wind and the sun. After opening their eyes, a 'talking stick' was passed around, allowing pupils to share their sensory experiences.

Pupils were then divided into groups of 3-4 each to complete two activities:

1. Fishing for small aquatic animals, observing them in catch trays and aquariums, identifying them using boards and books and releasing them back into the lake.
2. Collecting specific tundra plants; learning to recognise them and their names in Greenlandic, Danish and English; and reading about their traditional uses in Greenlandic culture.

The plant activity concluded with a memory game using pictures, where groups competed to recall the names of the plants that they had studied.

Mathematics

The lesson took place in the afternoon, following a lunch break after the biology class at the lake. The learning arena was a large open square near the school, where groups of pupils ran between posts to solve maths problems. The first task involved grouping mathematical expressions of squares of varied sizes and then measuring and drawing them to scale, while the second task required correctly grouping decimals, percentages, and fractions, and illustrating them in a pie chart drawn in the sand.

In this EOtC lesson, the space was used as a learning arena rather than a knowledge source, unlike the morning's lake lessons, the focus was on physical activity and embodied cognition (Fredens, 2018). The next day, the maths teacher reviewed the problems in the classroom, allowing pupils to recall and reflect, which are both crucial to the learning process (Millousheva-Boykina, 2021).

Danish

This section describes the Danish lessons for grades 6-7 that incorporate both classroom and outdoor activities. Danish, the first foreign language in Greenlandic primary schools, is taught from grade 1, with one morning session of 90 minutes and an additional 45-minute session in the afternoon. The morning class focused on classroom learning, including literature reading and grammar, with the teacher introducing parts of speech on the blackboard. Physical activity was also performed in the schoolyard, where pupils ran with newspapers placed on different body parts, practising prepositions and parts of speech in Danish.

The afternoon outdoor lesson, planned by student teachers in agreement with the teacher, included two activities:

1. Repeating parts of speech through a relay race in the schoolyard, where pupils competed in groups.

2. A game called 'Police and Robbers', where pupils designated as robbers had to steal morphemes written on pieces of paper and avoid being caught by the pupils designated as police. If caught, they could free themselves by creating words from the morphemes.

Interdisciplinarity in a class for pupils with special needs

At the time of the fieldwork, the class for pupils with special needs consisted of two pupils who were assigned to this class by *Meeqqanut Inuusittunullu Siunnersuisarfik* (MISI), (the children's social authority in Greenland), due to psychosocial challenges. The pupils had the same teacher throughout, who primarily practised interdisciplinary EOtC teaching.

During the observation, the teaching plan involved visiting a typical Greenlandic tent and picking specific herbs in the area. The teacher engaged the pupils in preparing for the excursion by having them collect the necessary equipment. Upon arriving at the tent, they were treated to hot chocolate while the teacher explained how to build a Greenlandic tent. The pupils asked questions and shared experiences about cabin trips, after which they collected herbs and identified their names. The teacher also shared childhood stories about her mother making herbal remedies from plants gathered in nature.

The lesson concluded back in the classroom, where the teacher asked the pupils what they had learned and what they enjoyed. One pupil mentioned learning the names of some plants and enjoying the tent visit and hot chocolate.

Analysis of the outdoor lessons based on observations

Jaccard's coefficient cluster analysis of word similarity between codes occurring in three or more observations was conducted in NVivo 14, the pattern for which can be illustrated as a dendrogram, where codes that often occur simultaneously cluster together (Figure 2). When studying the dendrogram, it is important to maintain consideration of limitations in this analysis, as stated in the Method of data analysis section and to remember that a code is shown only once; codes not clustered closely may still co-occur, just more frequently with other codes. As such, the author has added the read rectangles to identify codes with a high similarity score.

The most dominant codes in outdoor lessons were Focus on schoolwork, Motivation for schoolwork, and Signs of learning, present in all six observations. A closer look at the codes behind the dendrogram shows that the most common child code for Motivation for schoolwork was Curiosity and interest, while Joy and Positive relations between pupils were observed in all EOtC lessons.

Focus on schoolwork was registered when pupils concentrated on the learning activity, but in this study, *Motivation for schoolwork* means intrinsic motivation or motivation through identification or integration (Ryan and Deci, 2020), which were registered when the pupils showed persistence, joy or interest in the activity; however, these codes often overlap naturally.

Signs of learning was coded when pupils solved tasks, demonstrated the ability to answer questions related to the topic, posed questions that indicated an understanding in the field, or engaged in substantive conversations about the task or topic, the latter of which was defined as pupils discussing the topic, exploring possible solutions or deliberating how to approach a task, with their comments and

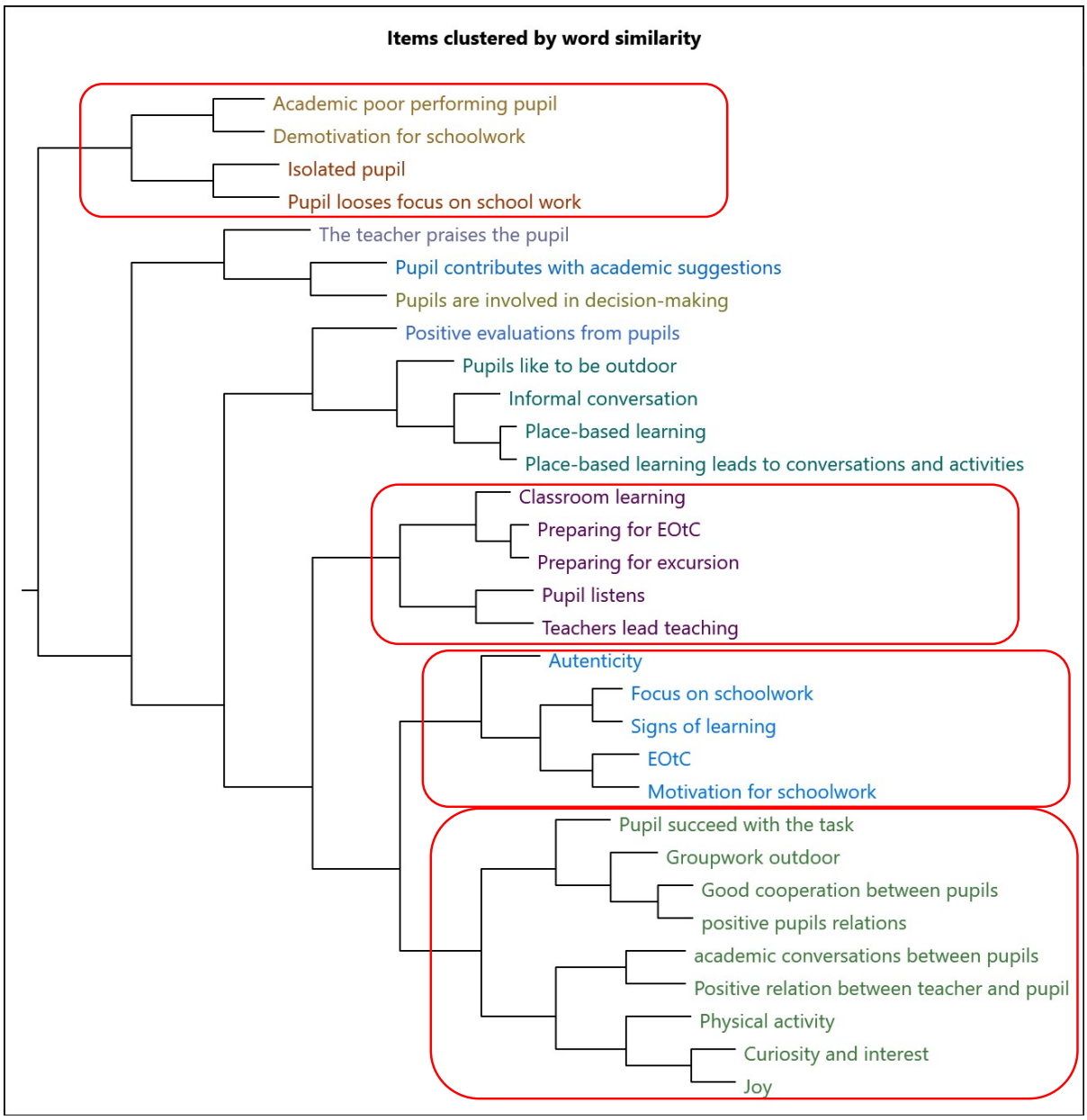

Figure 2: Dendrogram of a Jaccard's cluster analysis of codes from observations describing lessons and pupils' reactions to them

interactions reflecting an understanding of the subject matter. These assessments were typically made by the observers (the researcher and research assistants), although teachers also contributed by providing feedback to the research team indicating that pupils were learning. It is not always possible to assess whether students already possessed the knowledge or skills; however, we know from research that repetition strengthens learning outcomes (Millousheva-Boykina, 2021; Smedemark, 2014).

Examples of observation notes categorized in the most common codes are presented in the following. All examples have been translated from Danish to English by the author, and the names are pseudonymised.

Below are observation notes that were coded as *Focus on schoolwork*, *Motivation for schoolwork*, and *Signs of learning*:

> Carla and Paninnguaq are very focused on finding the herb. After 10 - 15 minutes they are still focused. Paninnguaq takes the initiative to read aloud [from a textbook about the herb]. (observation notes from the biology lesson at the lake)

> The pupils are having a good time doing the activities in EOtC lesson, and they talk about that they learnt something new, for example about the herbs and how they can be used, and what the animals are called. (observation notes from the biology lesson at the lake)

> The student teacher gathers the pupils in a circle and introduce a new game: Police and robbers. They seem happy. They get into the game. They try to create words. There is a lot of talk about what words exist. There is laughter, and they get into it. (observation notes from EOtC in Danish).

These examples illustrate the self-directed and intrinsic motivated engagement that the pupils showed during these learning activities.

Demotivation occurred once during the outdoor lessons, and it occurred in three observations of classroom lessons *demonstrating a potentially* close link to *Academically poor-performing pupil;* both from both lessons in and outside the classroom (Figure 2). Below are some examples:

> Two girls are completely absent, Pia and Ukaleq. They don't want to [participate in the learning activity]. The teacher says it's because they are academically weak. (observation notes from EOtC lesson, Danish)

> Pipaluk are completely silent and doesn't write anything. Aleqa doesn't do anything either. They both look out in the air. (observation notes from classroom teaching, English)

These pupils were also considered academically weak by the teacher:

> Some of the boys don't seem particularly involved. One of them is very silent and also seems academically weak. (observation notes from classroom teaching, Physical Geography)

The code *Academically poor-performing pupil* builds on assessments from teachers and the observer and should be assessed with this caveat in mind. However, the teachers knew the pupils well, and other observations of the pupils gave the same impression.

It is notable that Aleqa, who was very passive in the English classroom lesson, was highly active in the EOtC biology lesson at the lake, as the below observation note shows:

> Aleqa is the one who controls most of Team 3 and gives orders about where they should go. Ukaleq talks a lot about private things with Aleqa, and she does not help find herbs when the others are searching. She is very passive throughout the activity and follows Aleqa the whole time. Aleqa reads aloud to Team 3. (Observation note)

However, as the note illustrates, Ukaleq is not engaged in the learning activity, as in the previous example from the Danish EOtC lesson.

Focus on schoolwork and *Signs of learning* are also found in all the classroom lessons, but *Motivation for schoolwork* is only registered once indoors, when the pupils prepared questions in English class for the visit to the foreign ship. Based on observations, it seemed as though the pupils were looking forward to the visit; they were interested in the crew's mission, focusing their questions on climate change. The authentic setting, which allowed the preparation of questions for real-life use and discussion with interesting people about important topics, was motivating. Generally, *Authenticity* clusters with *Motivation for schoolwork* and EOtC in the dendrogram, indicating its influence.

The Demotivation cluster not only supported *Poor academic performance,* but also *Isolated pupil* and *Pupil loses focus on schoolwork*, suggesting a connection. In the observed incidents of isolation, pupils withdrew from the activity, as in the following: "Ukaleq keeps a little distance from others, and she is in her own little world where she doesn't listen" (Observation notes).

Interview with pupils

Concerning the observation notes, codes occurring in three or more interviews, reflecting pupils' experiences with and perceptions of school were analysed using Jaccard's coefficient cluster analysis of word similarity in NVivo 14 (Figure 3). It is important to emphasise that the cluster analysis is not definitive; the dendrogram serves as a tool to identify possible patterns and connections between codes (Chatzopoulou, 2024). As such, the similarity score and code content must be analysed before being crystallised into themes. The author has added red rectangles and text fields to identify patterns and codes with high similarity scores.

When asked what is good about school, all pupils answered that it is to learn. Two other reasons mentioned were because of friends and because it is fun. The cluster dendrogram illustrates this (Figure 3).

Sixteen pupils had positive experiences and view about EOtC. All stated that it was because it was an enjoyable way to learn, and 14 said it was because they appreciated the physical activity. They enjoyed EOtC when it was well prepared and they learned something, but they did not enjoy unpreparedness.

Below are some examples of how quotes from the interview were coded and identified into themes. All quotes were translated from Danish into English by the author.

The analysis shows that *Authenticity*, *Signs of learning*, and *Signs of learning in EOtC* cluster together with a high similarity score, with *Authenticity* coded when pupils worked with real-life tasks, such as first-hand experiences with animals in the lake or plants on the tundra or when visiting a scientist demonstrating their equipment and discussing their research. Meeting an authentic person (the scientist) was highly inspiring to one girl, who said:

> They talked about climate and stuff. Because one of them, he was one of those people who works with the ocean and water. It was very exciting. And I think they inspired me a lot.
>
> Interviewer: Okay. Would you like to be a climate scientist?
>
> Pupil: Yes. I really want to.

However, the same 16 pupils also had negative experiences with EOtC, all due to poor learning outcomes. The pupils referred to the same two outdoor lessons when describing negative experiences, feeling they did not learn enough and that it was a waste of their time. These were two whole-day excursions planned collaboratively at the workshop and listed on the whiteboard (Table 1): The walk to the mountain with the special mineral and the trip to the glacier. No observation notes exist for these lessons, as they occurred between the researchers' visits in August and October.

Interviews with pupils indicated that these EOtC days were poorly prepared by the teachers, both in terms of pre- and post-excursion teaching and during the EOtC days. Pupils expressed a lack of information about the purpose before the excursions, and they wished the teachers had better prepared and had taught them more about the landscape and geology. For example, on the mountain excursion,

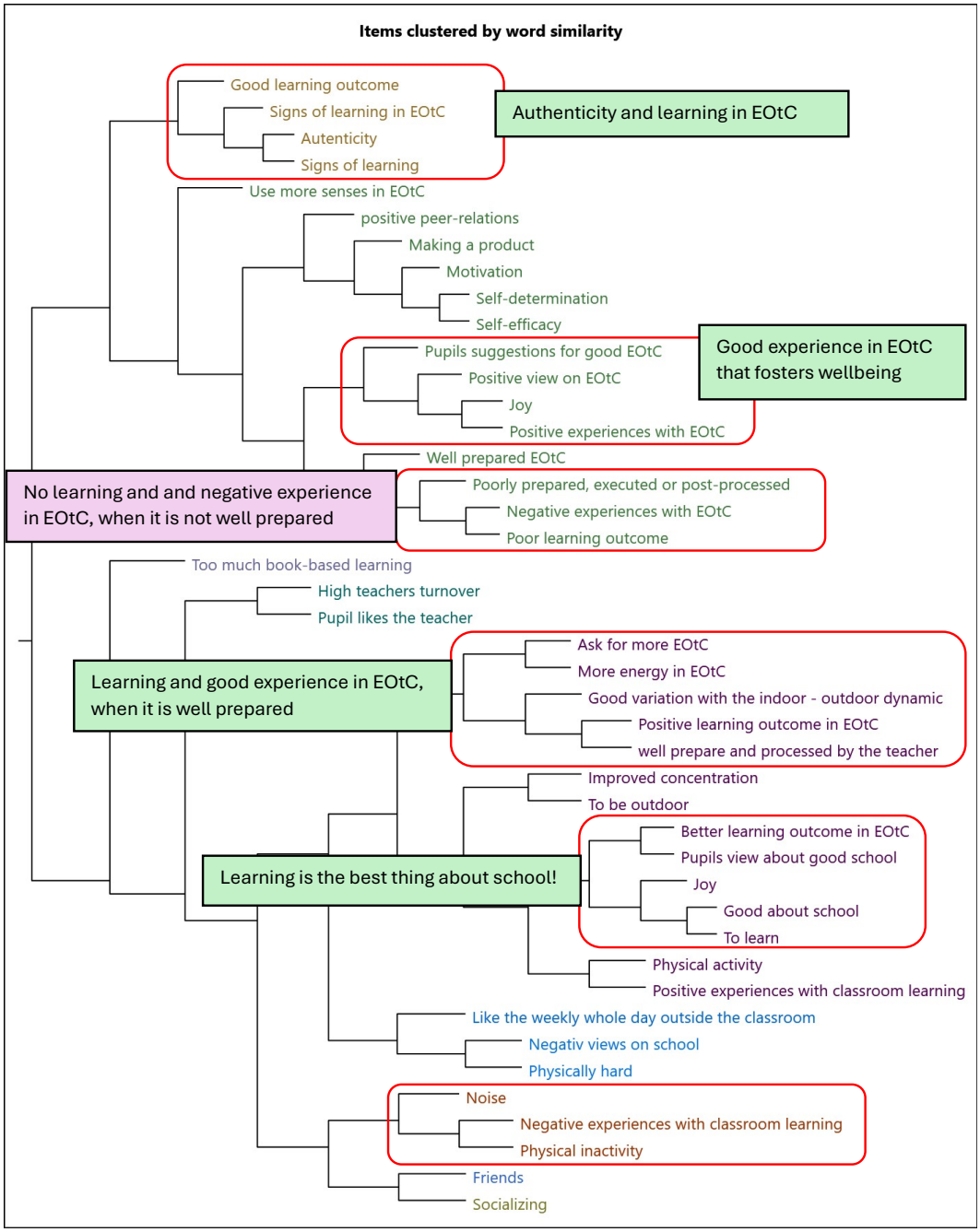

Figure 3: Dendrogram of a Jaccard's cluster analysis of codes from pupils' interviews describing lessons and pupils' reaction to them

teachers forgot geologist hammers and chisels for collecting rock samples. Despite promises of assignments during the glacier excursion, nothing occurred besides walking, and nothing was taught. As one pupil expressed:

> And then like that, and then the trip where we were out by the glacier, that was also very much like that, we went out there, then we sat and ate, and then we left.
>
> And then, when we got to the place where we were supposed to be, we would have waited an hour there. So, we had to walk from there all the way to the valley. From the bridge down to the valley. It was the kind of trip where you just thought, 'Why did we go on this trip'?

This stands in contrast to the excursion day in biology, where 16 of the 18 pupils participated and all expressed enjoyment with the learning activities. All showed *Signs of learning*, as registered when pupils could recall and discuss their work during the outdoor lesson, give examples of animals caught in the lake and plants collected on the tundra or directly state what they had learned. For example, when asked if they learned something during the lake lesson, one girl replied: "*Yes. I didn't know there were these snail-like creatures in the lake"* [Freshwater Snail].

While pupils' statements regarding their learning or their ability to discuss activities and name collected specimens are not definitive proof of learning, they indicate learning, thus the code *Signs of learning* was chosen. The interview took place several weeks after the lessons, and pupils' ability to recall details strengthened the indication positive of learning outcomes. For example, Pitaq remembered finding *Kakilisak* and *Minnguaraq* in the lake (Stickleback and Small Water Beetle in Greenlandic).

Several of the pupils could also recall other excursion days, including many details, showing *signs of learning*. In September, they focused on climate change, visiting workplaces and professionals with a climate change focus. One event was a race for cars charged by solar panels, while another involved scientists researching climate effects on glaciers. About the visit to the electric car race crew, one girl said, "We got a tour there and got to know a lot of things. The things they did, and why they did all the things they did".

As with EOtC, the pupils had both good and bad experiences with classroom learning. The dendrogram shows that a lack of physical activity and noise could be problematic in the classroom. Behind the code *Positive experience with classroom learning* are the child codes *Good when having writing assignments*, *Good blackboard teaching*, *Easy access to help from the teacher* and, *Easy access to learning tools*.

Informal learning

An interesting discovery from the interview, not shown in the dendrogram, is how informal settings outside school hours contribute to learning and motivate children. A boy spontaneously started discussing how he and his three friends had been building a car in his father's garage during their spare time. The conversation is reproduced below:

> Rasmus: Now, we've built a car with one of those...
>
> Interviewer: You built a car?

> Rasmus: Yes. Now we're building a...a small... I can't quite build a car. It couldn't drive at all. Now we're making it work.
>
> Pitaq: And the engine too.
>
> Interviewer: Well, where did you build it? In school, or did you build it at home?
>
> Rasmus: We're just building it at home.
>
> Pitaq: Yes.

The boys discussed their homemade car for about two minutes, clearly engaged and proud of their accomplishment. Assisted by Rasmus' father, who is an auto mechanic and who functioned as a mentor for them, the activity provided informal learning and fostered positive relationships among the four boys and across generations. The interviewer asked if they would like to work on similar projects at school, and Rasmus promptly replied: “I really would like to!”.

When asked for additional suggestions for activities in EOtC, both boys proposed hunting. They shared their extensive knowledge of reindeer hunting, including techniques for moving silently through the terrain and considering wind direction when approaching reindeer within shooting range, given the animals' acute senses. They recounted their experiences of shooting reindeer, detailing the precise shot placement for a quick, humane kill that preserves meat quality. They also described their ability to remove the entrails and their understanding of the animals' diet. Their narrative demonstrated a profound interest and expertise in hunting, nature, and wildlife, showcasing numerous skills and a sense of pride in their mastery.

These examples illustrate the potential of drawing on pupils’ interests as a starting point for teaching and for incorporating informal learning settings into school, a direction that can be further developed within EOtC and one that merits closer exploration.

Overall summary of the findings

A holistic view of the analysis of both the observations and student interviews, including Jaccard's coefficient cluster analysis, illustrated that pupils were motivated and showed signs of learning during authentic, well-prepared outdoor learning experiences, such as hands-on science fieldwork and meetings with real experts. Authenticity was also an important factor in the examples during informal learning, and the children’s spontaneous, enthusiastic accounts revealed both intrinsic motivation and learning. In this study, ‘authenticity’ refers to real-world contexts beyond the classroom and it was coded when students participated in such activities as fieldwork in nature, studying plants and animals, interacting with experts like scientists or learning through social practices, such as hunting, or through experimentation and guidance from a knowledgeable parent.

Furthermore, outdoor groupwork seemed to impact peer relations positively, and the physical activity fostered joy and wellbeing. Contrastingly, poorly planned outdoor lessons led to demotivation and poor learning outcomes, and long walks with no visible purpose felt tiring, according to the pupils. Meanwhile, in the classroom, structured activities and easy access to help were valued, but a lack of physical activity and excessive noise were drawbacks.

Discussion

Interviews, observation notes, and fieldnotes indicate that EOtC can enhance motivation and learning, and key factors include authenticity, physical activity, interest, and positive peer relations. The former is an important characteristic of EOtC (Bærenholdt and Hald, 2020 p.183) and Place-based Education (Smith, 2002) that along with good relations with both peers and the teacher was found to be important factors in a case study of Greenlandic school class for children with special needs that used EOtC (Føns, 2022). The impact of authenticity is reinforced in a literature review about EOtC in Indigenous communities, which found that in 27 of 29 empirical studies of culturally responsive EOtC, authenticity played a role in promoting learning at and motivation in school (Føns, 2025b).

Authenticity was also at play in the informal learning settings, much like in Christensen (2019) at the reindeer hunting camp and for the boys in this study when they built a car or went hunting with their families. These examples illustrate the learning potentials that these settings possess.

However, authenticity alone does not guarantee motivation and learning, as observed in the poorly planned excursions, where even in informal learning settings, knowledgeable adults guided the learning process (Christensen, 2019). It is worth noting the children who engaged in the learning activities of their own initiative, illustrating their desire to learn; this was confirmed in the interviews with the pupils, all of whom stated that learning is the favourite part about school.

This study highlights the importance of well-planned and executed EOtC lessons for positive outcomes; effective EOtC requires thorough preparation and in-and out-of-classroom integration, which Jordet (2010) also emphasises. Unfortunately, poor planning leads to disengagement, while well-prepared lessons are preferred over textbook learning and they encourage addition EOtC. This resonates again with the pupils' desire to learn.

The data in this study suggest that demotivation and disengagement are linked to poor academic performance in pupils, where lack of motivation in school and poor academic performance seem to reinforce each other, underscoring the importance of addressing this. Jørring et al. (2020) observed that high-performing students excelled in EOtC, while low-performing students struggled with self-directed learning in distracting environments.

Nevertheless, in this study one pupil, Aleqa, who was disengaged in the classroom and could be characterised as academically weak by the teacher, was actually highly engaged during an EOtC lesson, as the following observation notes, already presented in the section Analysis of the outdoor lessons based on observations; "Aleqa is the one who controls most of Team 3 and gives orders about where they should go... Aleqa reads aloud to Team 3" (Observation note). In addition, well-scaffolded EOtC can engage academically weak pupils, as seen in the Greenlandic class for children with special needs (Føns, 2022), indicating EOtC can be a path forward in motivating academic challenged pupils.

These opposing experiences, that demotivation occurs both when there are no requirements and when demands are too high, stress the necessity for optimal challenge in learning (Ågård, 2018, p. 32). When demands are too high, pupils want to protect themselves from failure, causing them to avoid engaging

in the learning activities (Ågård, 2018). Conversely, when challenges are optimal, meaning the pupils have a chance at accomplishment after putting in effort, they develop feelings of mastery and competence, one of the basic psychological needs according to Self-determination Theory (Ryan and Deci, 2020). The optimal challenge in combination with authenticity, rendering the learning activities more meaningful and fostering autonomy as the pupil voluntarily engaged in learning. When this is achieved in a safe environment with positive relations between peers and teachers, which also clustered with motivation in this study, the third basic need for relatedness is also fulfilled, boosting the pupils' intrinsic motivation (Ryan and Deci, 2020).

Regarding fostering positive relations among pupils and between pupils and their teachers, EOtC also appears to have this potential. On the EOtC days, many informal conversations between pupils and teachers occurred, strengthening their relations (observation notes), which is crucial for the pupils (Klinge and Brandt, 2022). It was a common experience among the teachers, that the classes that practiced much EOtC were well functioning, with no bullying (fieldnotes), but this was not possible to investigate systematically during this study, positioning it as an area for future research.

It is also not possible to conclude why the two whole-day excursions to the mountain and the glacier lacked preparedness and were conducted poorly based on this dataset. However, informal discussions with the teachers and principal revealed conflicts between teachers, and this seemed to have played a role. In addition, a lack of experience with EOtC and weak feelings of ownership over the EOtC development project were observed, because some teachers began work on the project later, as expressed to me during the workshop.

High teacher turnover and teacher shortages are unfortunately a widespread problem in Greenland (M-ECSC, 2024), and this study illustrates why it can hinder the development of new pedagogical teaching methods. For this reason, as well as many others, teacher shortages pose a challenge for the Greenlandic society, and it must be addressed urgently.

Conclusion

The research question of this study was: How can EOtC be developed in a Greenlandic context to support motivation and learning?

This study indicates that EOtC has a significant potential in Greenlandic primary schools to enhance student motivation and learning through authenticity, physical activity, interest, and positive peer relations. When embedded in outdoor practice, learning draws attention to the relevance of knowledge situated within specific contexts and places, thereby fostering motivation. This includes the real-life connection and interaction with authentic professionals outside school.

Learning in nature and informal learning situations born from pupils' interest in or connection to Greenlandic culture and traditions, such as gathering herbs or hunting, seem to have potential. It is therefore necessary to investigate whether culturally responsive outdoor education should take inspiration from land-based perspectives in the path forward for Greenlandic primary schooling.

The whole-day excursions developed as a result of the action circle with the teacher, worked well with a teaching design that connected it with classroom theory, emphasising outdoor activities and classroom learning are inseparable parts of a EOtC pedagogy. However, a lack of planning led to poor learning outcomes and a feeling of purposelessness among pupils. This confirms that pupils do not simply want out of the classroom; they want to have clear learning goals and a well-planned pedagogical design.

Inadequate planning appeared to stem partly from some teachers' limited experience with implementing EOtC, emphasising the need for targeted support and professional development. A further barrier was likely attributable to high teacher turnover, which underscores the importance of maintaining a stable and experienced teaching workforce. This situation highlights the pressing need to address teacher shortages in Greenland to enable the effective adoption of innovative pedagogical approaches.

This underscores the need for further research into effective strategies for supporting teachers' professional development, as well as approaches to recruiting and retaining educators in Greenland's remote communities.

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