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Semiotic Language Use in Schoolscapes on the Arctic Borderland

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Abstract: The article explores the visible, semiotic use of languages in two schoolscapes on the Arctic borderland and how these schoolscapes stimulate the learning of languages and cultures. The schools are situated in a historically multilingual area with several languages present. However, since the 17th century, the area has undergone Swedification, resulting in the current situation where all languages other than Swedish are endangered minority languages. The schoolscapes were studied through visual ethnography, and 229 photographs were analysed by qualitative content analysis. The results show that in one school in the middle of Sápmi, the Sámi languages were almost entirely excluded, despite their relevance and importance in maintaining bilingualism. Conversely, in a school where some pupils were from the Finnish side of the national border, the Finnish language was present in the form of various subject-relevant books. However, in both schools, all formal information is given to pupils in Swedish, with only a few exceptions permitted by the school management. Overall, the visual use of semiotic language is mainly teacher-produced, and the pupils' opportunities to use the schoolscape as an affordance for active bilingualism through social participation are minimal.

Keywords: schoolscape; the Arctic; semiotic language use; borderland; minority languages

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1. Introduction

This qualitative study delves into the linguistic landscape of two borderland schools in northern Sweden, Europe. One of the schools is surrounded by Sápmi,[1] the geographical area of the indigenous Sámi people in Europe, and the school's official instruction medium is Swedish. The second school is on the borderland between Sweden and Finland, and Finnish and Swedish are used in instruction. Both borderlands are linguistically exciting because two typologically different languages meet: the minority Finno-Ugric languages (Finnish, Meänkieli, and Sámi languages) and the majority Germanic language, Swedish. Both schools are in special administrative municipalities where citizens are entitled to use their national minority language (e.g., in contact with judicial authorities; ISOF (The Institute for Language and Folklore) 2023). These borderlands are still interesting in the 21st century, with challenges in retaining active bilingualism and language revitalisation.

From a historical perspective, the north and northeast parts of North Sweden have always been multilingual, with people using Finnish, various Sámi languages, and Swedish daily. However, only in 2000, when Sweden ratified the Council of Europe Charter for Regional or Minority Languages, did Finnish, Meänkieli[2] ('our language'), and the Sámi language, including all the five Sámi languages used in Sweden, obtain the status of national minority languages (abbreviated NMLs). These NMLs are historically bound to specific territories. Since 2009, Swedish has explicitly been the official lingua franca in Sweden (Ministry of Culture 2009, Language Act). Hence, Swedish is the official medium of instruction and is studied by all pupils as a first[3] (L1) or second language (L2). Besides Swedish, only the English language is mandatory for all pupils regardless of their L1.

According to the School Law (Ministry of Education and Research 2010, chap. 10, §7), the education organiser must arrange tuition in an NML if it is pupils' L1, regardless of geographical location. Regarding the NML, participating pupils are not required to

have prior knowledge of the language in question. However, participation in tuition is voluntary. There are five state-owned Sámi schools[4] in Sweden where the Sámi language is the language of instruction and taught as a subject. The other territorially bound NMLs are only taught as subjects in comprehensive schools in North Sweden, with one exception: this is a comprehensive school with pupils from Sweden and Finland, where both Finnish and Swedish are languages of instruction. Despite these educational resources, all NMLs are endangered and need revitalisation.

In our study of the learning environments in two borderland schools, we expect to find that the school premises are an active, supportive, and language-stimulating learning environment (cf. Shohamy and Waksman 2009). However, we are aware of the contrast between superdiverse societies and educational settings: Gogolin (1994) indicated that there is a contrast between the recognised multilingualism in society and educational institutions, which follow a monolingual habitus.

2. Background

The usual way to learn a (minority) language is to pass it through generations or obtain formal language education. When generational transmission has failed or is impossible, education is the most effective way of learning a language (e.g., Todal 2018). Besides these two explicit forms of language learning, implicit parts, such as the school environment or teaching material, play a role. The school premises are learning environments that provide, for example, possibilities for the authentic input of different languages, encouraging and enhancing bilingualism. Thus, they have a positive impact on pupils' identity construction (Cenoz and Gorter 2008; Dressler 2015; Szábo 2015; Garvin and Eisenhower 2016; Laihonen and Szabó 2017; Brown 2018; Amos 2019).

2.1. Semiotic Languages in Schoolscapes

School premises or schoolscapes correspond with a school's physical and material environment (e.g., Brown 2012). Earlier studies show that linguistic schoolscapes are not unimportant and play various roles. For example, Straszer and Kroik (2021) argued that the presence of cultural artefacts and the Sámi colours in a preschool environment signal 'a break from monolingual Swedish cultural norm' (p. 142). Schoolscapes are also learning environments, and they can be interpreted as reproducing language ideologies and reinforcing a language policy document or a so-called hidden curriculum (Krompák et al. 2021; Szábo et al. 2023). Nevertheless, schoolscapes are semiotic. They comprise images and artefacts. In particular, these include language-related signs, which are present in combination with other discursive modalities such as static inscriptions, and various urban signs comparable to street names or commercial shop names (Landry and Bourhis 1997; Jaworski and Thurlow 2010; Brown 2012). Savela (2022) summarises that the students' contributions to the schoolscape in primary (grades 1–6), lower secondary (grades 7–9), and upper secondary schools (a European secondary school) are primarily marked using images, with writing serving as a secondary mode.

Schools are for learning, and learning is possible when collaboration and mediation occur in a social world where people and/or different tools and artefacts exist (Cresswell 2004; Dufva 2013). According to Szábo et al. (2023), the semiotic schoolscape has a transformative power, which impacts the status management of diverse language resources, usually resulting in the elimination of minority languages. However, it is known that the linguistic schoolscape plays a scaffolding role in the form of authentic input when it comes to active (language) learning (Shohamy and Waksman 2009; Gorter and Cenoz 2024) in connection to identity construction.

In the learner-centred educational paradigm, pupils are seen as active participants in constructing meaningful knowledge and learning environments alongside others (e.g., Mäkelä et al. 2018; Nagels et al. 2019). The engagement of multilingual learners in school depends on the extent to which their identities are constructed and affirmed (Cummins 2017). When the experiences of language, culture, and identity are valued, learners are

motivated to participate more in school activities. According to Cummins (2017), promoting different languages has proven to be effective in terms of supporting a learner's identity construction. The visible and semiotic use of languages, such as in classrooms, might also be utilised as a way to facilitate interactions between school staff and pupils.

Studies have shown that a language's visibility is crucial: 'a sign confers meaning on a space' (Backhaus 2006, p. 55; see also Spolsky and Cooper 1991). Consequently, the visibility and non-visibility of a language in a public space already constitute a message. Backhaus (2006) summarised the previous research on the sources of various signs in linguistic landscapes and concluded that the difference between authority-produced and individual-produced signs lies in the language being made visible and in signs' functions and representations. For example, authority-produced signs make a limited number of languages visible, while the private and individual signs contain a greater variety of languages.

Garvin and Eisenhower (2016) compared the linguistic landscapes of two schools: one in Korea and one in the USA. They identified five functions of literacy objects: they were expressive, informational, interactive, navigational, and symbolic. The expressive function includes signs that refer to identity and personal agency, such as student-generated assignments and identity markers. The informational function encompasses signs that provide information, for example, about school grounds and health issues. The interactive function includes signs that, for instance, open dialogues. The navigational function involves signs such as room numbers and floor maps, while the symbolic function includes recognisable icons and logos with cultural significance, such as school logos (Garvin and Eisenhower 2016). Of these functions, the expressive and informational functions were most common in both Korean and U.S. schools. Gorter and Cenoz (2015) applied these functions and developed them into nine functions with supplements like teaching content and values. Later, Gorter and Cenoz (2024) introduced a five-component model, known as 'Multilingual Inequality in Public Spaces', where the core component involved the actual literacy object, a product of the language policy and sign-making process. The remaining components address the recipients of the sign and their reflections after seeing and reading the sign.

The visuality and existence of languages in schoolscapes are relevant to national minorities in Sweden because they might not be suitable for the hegemonic ideological scheme prevailing in Swedish schools and are, therefore, liable to being erased or rendered invisible in the schoolscape (cf. Irvine and Gal 2000; Szábo 2015). These minority languages have become even more important, as the study by Poromaa Isling (2020) shows that 'pupils are restricted in their engagement with their minority heritage due to the domination of Swedish language' (p. 104).

Lahdenperä (2017) highlighted three models that touch on the integration of minority languages: mono-, multi-, and intercultural integration models. These are found and interact with each other in educational environments. A school that makes the majority language visible displays monocultural integration, which shows an aspiration towards creating equality. A school that emphasises languages other than the majority language but isolates some languages represents efforts at multicultural integration. Lahdenperä (2017) believes that multicultural integration expresses a desire to know more about other languages and cultures. In contrast, the idea of intercultural integration involves supporting other cultures rather than merely tolerating the existence of different languages and cultures.

The schoolscapes examined in the present study are used by people living on the Arctic borderland for social and cultural activities, with languages present as an activity rather than a structure (cf. Pennycook 2010). Consequently, we understand the semiotic use of languages in two borderland schoolscapes to be intertwined with societal beliefs and attitudes (Creese and Blackledge 2010; Pennycook 2010). This allows us to understand semiotic language use as an opportunity for social activities, where language users engage to make meaning, learn, and, thus, construct their identity (García 2019).

This means that we continuously relate the semiotic use of languages to the pupils' possibility of feeling language and culture to be related to these schoolscapes, thus increasing their sense of belonging (cf. Cresswell 2004; Riley 2019). The primary place in this study, the schoolscape, is regulated by various policy documents, such as historical and in-force curricula, legislation, and possible local language policies. The secondary place is the geographical area, which has been the object of colonisation, Swedification, and various regulations since the 17th century. The Swedification process of historically multilingual areas is one of the implicit and historical forces studies are concerned with and also is probably the hegemonic ideological scheme, mentioned earlier, prevailing in schools in the area.

2.2. Aim and Research Questions

This study aims to enhance the understanding of semiotic language use on the Arctic borderland, focusing on two schoolscapes. Our research questions are as follows:

- RQ 1: By what means are these schoolscapes stimulating the learning of languages and cultures?
- RQ 2: By whom and for whom are the signs with semiotic language use in these schoolscapes put up?

The first question helps to reveal semiotic language use in relation to its different functions in the two schoolscapes, while the second question allows us to discuss the supposed sender and recipient of the signs in the schoolscapes.

3. Data and Methods

3.1. Data Collections

This study contains visual ethnography and visual field notes (i.e., photographs) to document the schoolscapes (Fors and Bäckström 2015; Pink 2021). The two schoolscapes were chosen to cover the linguistic richness and educational variation in a sparsely inhabited geographical area in the Arctic.

The schoolscapes were photographed over one week according to a scheme drawn up beforehand using a floor plan.[5] The principle was to take photos of the common areas, such as the (main) entrance and corridors, that school staff, parents, pupils, and visitors can access. Further, our interest was in areas meant only for pupils and school staff, like the canteen and classrooms for teaching different subjects. Areas and rooms intended for staff only were intentionally excluded. The photographing of these areas was guided by the (open-minded) idea of semiotic language use in these specific borderlands.

Both schools provide compulsory basic education, meaning they have classes ranging from preschool (6 years old) to the ninth grade (15 years old). School 1 is the northernmost, being located in the middle of Sápmi, and School 2 is on the borderland between Sweden and Finland, with pupils from both countries. To our knowledge, neither school has explicit written and generally available language policies. In this study, the teachers' educational or linguistic backgrounds are not considered.

For this study, we chose to include the premises for preschool (6-year-old) pupils up to third-grade (9-year-old) pupils in School 1 and the premises for lower secondary school (i.e., pupils from seventh [13 years old] up to ninth grade [15 years old]) in School 2. The medium of instruction in School 1 is purely Swedish, and the Swedish national curriculum applies (Skolverket 2022). In School 2, Finnish and Swedish are used, and the Finnish national curriculum (Utbildningsstyrelsen 2014) applies to pupils from Finland and the Swedish national curriculum applies to pupils from Sweden. However, some of the subjects, such as arts and physical education, are taught in mixed groups with pupils from both countries.

In addition, regardless of the L1, all pupils receive instruction in English in both schools. In School 2, pupils from Sweden learn Swedish as L1 and Finnish as L2, and the inverse applies for pupils from Finland (Finnish as L1 and Swedish as L2). This bilingual school also has teachers who are probably able to use both Finnish and Swedish.

In contrast, School 1 is officially monolingual, following the Swedish norm, with Swedish as the only language of instruction. The municipality where School 1 is located also has a long tradition of geographically bound NMLs that pupils can choose to learn as the subject called 'mother tongue'. Table 1 summarises the relevant facts about both schools.

Table 1. Relevant facts about the included schools.

School	Geographical Location	Borderland	Grades	Sample for This Study	Photographed Premises
School 1	Up north	Surrounded by Sápmi	Compulsory education	Primary school (preschool–3rd grade)	Main entrance, canteen, language classrooms, corridors, rooms for study groups, and classrooms
School 2	Northeast	On the borderland between Sweden and Finland[6]	Compulsory education	Lower secondary school (grades 7–9)	Entrance, cloakroom, corridor, classrooms, language classrooms, rooms for study groups, and canteen

After removing duplicates and blurry photos, we had 439 photographs left: 52 from School 1 and 387 from School 2. The number of photographs from School 2 was reduced to 177 photos because there were several photos of the same phenomenon, such as a notice board and the separate documents on it (e.g., Figure 1).

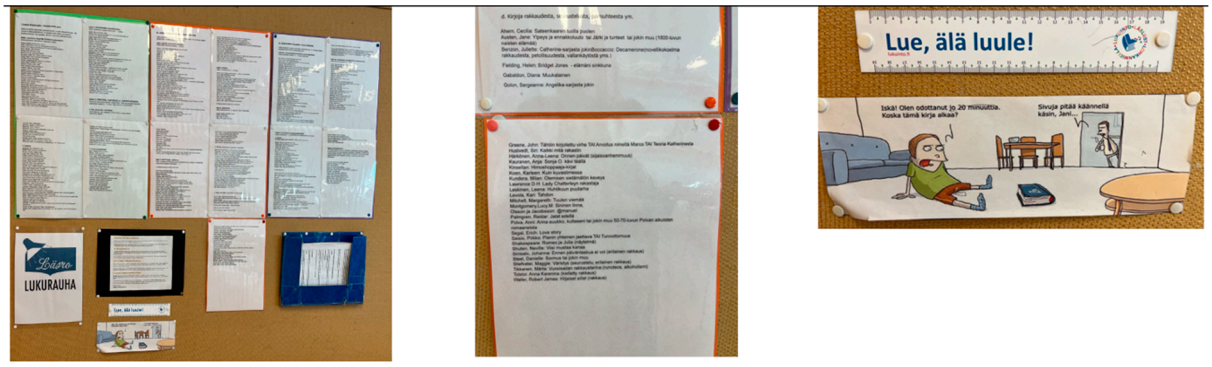


Figure 1. An illustration of units of analysis (School 2, copyright Essi Hentilä).

The photos of separate monolingual written documents and the notice board as a whole were finally understood as a single use of semiotic language (i.e., photos of 13 separate monolingual documents were excluded [Figure 1]). In contrast, multimodal or multilingual items were counted as independent uses of semiotic language (shown on the right in Figure 1). As a result, the number of analysed photos in this study is 229.

For ethical reasons, we chose to take photos with no pupils and school staff, except for the headmaster, even though we were aware of the limitations this exclusion might involve. Principally, no personal belongings of either pupils or the school staff were photographed. Thus, some drawings without names are included in the data. Further, the photographers of the schoolscapes belong to each national minority in Sweden and are, thus, both 'known' and 'knowers' in the actual study (cf. Moreton-Robinson 2004, p. 75). This study could not have been conducted without the two students, who both provided an access point to cultural understanding for the whole study (cf. Kwaymullina 2016). All data are handled and stored according to the regulations supplied by the university in Sweden. We follow

General Data Protection Regulation (European Union 2016) to ensure that unauthorised persons cannot access data.

3.2. Data Analysis

In our analysis, we used qualitative content analysis with quantifying elements and with distinct phases (Bingham 2023), focusing on the semiotic use of language(s) in the photographed signs. In the first phase, we organised our data school by school according to their primary functions in terms of five categories presented by Garvin and Eisenhower (2016). Additionally, we created two new categories (decorative and teaching) to obtain a more detailed categorization (also see Gorter and Cenoz 2015). The teaching category included photos related to teaching, such as textbooks, various teacher-produced signs on walls, and notes on whiteboards. The decorative signs included, for example, framed paintings and photos hung on the walls.

Second, we continued with these seven categories and examined the semiotic use of language(s) in the signs, working school by school and category by category. At this phase, we linked some of the semiotic use of languages within the photographs together and ended up with the following language-related categories: *Finnish/Meänkieli*, *Sámi*, *Swedish*, *several languages*, and *other*. The *several languages* category comprises at least two different languages, which can be, for instance, two NMLs or two NMLs together with English. The *other* category includes other geographically bound NMLs and signs without a verbal language. These two phases resulted in quantitative results being obtained (see Tables 2 and 3 in Section 4).

In the following phases, we coded and studied the photos' content in detail and focused on the means of learning languages and culture (RQ 1) and the possible senders and addressees of the signs (RQ 2).

4. Findings

Table 2 summarises the organisation of 229 photos according to seven functions. The functions are in the same order as they will be presented in Section 4.2, and the numbers show the sum of photographs in each category.

Table 2. The total photos in the seven categories.

Category	Number		Total	
	School 1	School 2	N	%
Teaching	16	136	152	66.4
Expressive	10	7	17	7.4
Symbolic	9	3	12	5.2
Informational	9	16	25	10.9
Interactional	4	5	9	3.9
Navigational	2	4	6	2.6
Decorative	2	6	8	3.5
Sum	52	177	229	100.0

Table 2 shows that the most frequent function of the signs in the data was teaching (66.4%). This was especially true in School 2, where 77% of the signs had a teaching function (136 of 177). The corresponding share in School 1 was 31% (16 of 52). This share could be as expected, because schools are meant for teaching and learning. Approximately 11% of the signs had an informational function. The number of signs with an informational function (n = 16) in School 2 was slightly higher than that for the other functions, except for teaching. In contrast, the signs with various functions had a more similar distribution in School 1, where, for example, the distribution between signs with expressive (n = 10), informational (n = 9), and symbolic functions (n = 9) was even. Some of the numbers in Table 2 can probably be explained by the age of the pupils in both schools. For instance, the signs with an informational function in School 2 make sense because teenagers are able

to read, and the signs with a symbolic function in School 1 make sense because pupils are learning to read.

4.1. Visible Signs of Languages and Cultures

When we categorised semiotic language use according to the seven categories recognised (Table 2), we noticed that Swedish and Finnish languages dominated, while the Sámi language was hardly visible (Table 3).

Table 3. Number of identified use languages according to function (S1 = School 1; S2 = School 2).

Languages	**Finnish and Meänkieli**		**Sámi Languages**		**Swedish**		**Several Languages**		**Other**		**Total**
Schools	**S1**	**S2**	**S1**	**S2**	**S1**	**S2**	**S1**	**S2**	**S1**	**S2**	***N***
Teaching	-	66	2	-	7	39	2	19	5	12	152
Expressive	-	1	-	-	1	-	1	-	8	6	17
Symbolic	2	1	1	-	1	-	1	1	4	1	12
Informational	1	2	1	-	3	11	-	1	4	2	25
Interactional	-	1	-	-	2	2	-	-	2	2	9
Navigational	-	-	-	-	1	1	1	-	-	3	6
Decorative	-	2	-	-	1	4	-	-	1	-	8
Sum	3	73	4	-	16	57	5	21	24	26	229

As Table 3 shows, the schoolscapes were dominated quite equally by signs in Finnish/Meänkieli (n = 76) and Swedish (n = 73). However, in School 1, Swedish (n = 16) was preferred over Sámi languages (n = 4) and Finnish/Meänkieli (n = 3), and in School 2, Finnish/Meänkieli (n = 73; 41.2%) was more frequent than Swedish (n = 57; 32.3%). This distribution of Finnish/Meänkieli and Swedish seems to align with School 2's location. In contrast, the absence of Sámi languages in School 1 is unexpected, with only four recognised signs; two were categorised as having a teaching function, one as having an informational function, and one as having a symbolic function, as Table 3 shows.

As expected, the Sámi languages' visibility was only relevant to School 1, where Swedish was present in all seven functions (n = 16). This illustrates the dominance of Swedish as the main medium of communication and instruction, even though the geographically bound NMLs have their legal place in the municipality (e.g., Ministry of Culture 2009, Language Act; Ministry of Education and Research 2010, School Law). School 1's schoolscape does not seem to be a supportive and language-stimulating learning environment for Sámi languages in the same ways as School 2's schoolscape seems to be for Finnish/Meänkieli (cf. Shohamy and Waksman 2009).

Moreover, in School 1, only the Swedish national curriculum (Skolverket 2022) is applied, and NMLs are taught as a second optional L1, for approximately one lesson (45 min) a week, besides the mandatory Swedish and English languages. In contrast, two national curricula are applied in School 2 (Utbildningsstyrelsen 2014; Skolverket 2022). Because School 2 offers only basic education (from preschool to ninth grade), Finnish pupils most likely continue their education in upper secondary education in Finland, where the requirements, for example in mathematics, are still higher than in Sweden. Therefore, Finnish pupils probably receive more instruction in mathematics than Swedish pupils, which might, for example, explain the number of signs in Meänkieli/Finnish in the teaching category (n = 66).

Furthermore, Table 3 shows the use of several languages in our data (n = 26). This use is unexpected because the schoolscapes could reflect, support, or promote active bilingualism even more explicitly. In contrast, the findings in the *others* category were quite extensive (n = 50), being distributed relatively evenly between the two schools. In School 2, these identifications emphasised teaching (n = 12), whereas in School 1, they were more evenly distributed between various functions.

If the teaching category was excluded, the signs with an informational function would become the most prevalent category. Information is given in Finnish/Meänkieli, in Swedish, and by other means in both schoolscapes, as Table 3 shows. The numbers of identifications in the decorative, interactional, navigational, and symbolic functions were relatively similar across the language-related categories. The expressive and symbolic functions were slightly more frequent in School 1 (n = 10 vs. n = 9) than in School 2 (n = 7 vs. n = 3). This might be because pupils in School 1 are younger, due to which the schoolscape includes more non-verbal language use, in contrast to School 2, where verbal and written forms are preferred.

4.2. The Language- and Culture-Stimulating Schoolscapes

4.2.1. Teaching Category

Because schools are places of learning, it is natural that various kinds of learning and teaching material characterise schoolscapes. This is why books seem to be central in School 2. Most identifications categorised under the teaching category were various books (97 of 152; 63.8%): fiction books, non-fiction books about science, and subject-related textbooks. In School 2, the presence of various textbooks relating to mathematics and Finnish was especially obvious, whereas non-fiction and fiction appeared in Finnish, Swedish, and English. An interesting detail about maths textbooks was that we recognised two corresponding textbooks in maths and science, one in Finnish and one in Swedish, with both prepared according to the Finnish curriculum (Utbildningsstyrelsen 2014). Further, we recognised comic books in both Finnish and Swedish in School 2. Some subject-related non-fiction books were also found as a corresponding series in Finnish and Swedish (Figure 2).

In contrast, in School 1, the non-fiction and fiction books were placed in the school library. Therefore, neither fiction nor subject-related books were located in the premises visited.

Figure 2. Maths textbooks, Donald Duck magazines, and popular science books in Finnish and Swedish (School 2, copyright Essi Hentilä).

Having Finnish and Swedish textbooks that follow the Finnish national curriculum, as Figure 2 (column 1) illustrates, implies the pursuit of language or mathematics learning. If language learning is also a focus, Swedish learning is emphasised for Finnish speaking pupils, which aligns with the recommendations of Content and Language Integrated Learning (Coyle et al. 2010). If learning maths is the objective, then this can be seen as an attempt to improve the math skills of Swedish pupils in their L1, who might continue, for example, in an upper secondary school in Finland where the language of instruction is solely Swedish.

Because bilingual textbooks, non-fiction books, and fiction hardly exist, books in either Finnish or Swedish were preferred in School 2. Textbooks and much of the fiction consisted of several similar books for the whole group, while the subject-related non-fiction existed in

both languages. The Swedish language was instead visible in fiction books. The selection of books in the local municipality library might affect the range of fiction books available in Swedish. Moreover, the selection of fiction books in Finnish seemed to cover the most central authors and books usually included in L1 Finnish teaching. The only fiction book for the whole group in both Finnish and Swedish was the novel Popular Music from Vittula by Mikael Niemi, which is also relevant to the local people. Even some books in English were recognised.

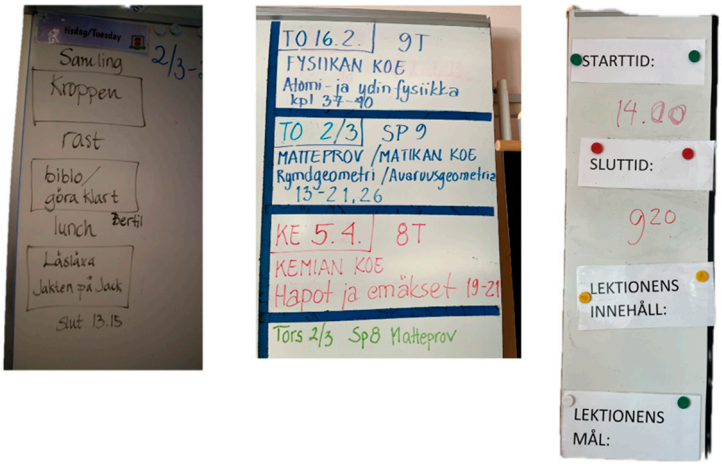
In addition to books, different kinds of lexicon-related games, mostly in Finnish and Swedish, were available in School 2. However, our data also contained multimodal teacher-made, crafted language-related teaching materials that seemed to be made for specific purposes, such as learning weekdays or numbers or singing Christmas songs (Figure 3).

School 1 School 1 School 2

Figure 3. Crafted multilingual and multimodal teaching material (School 1, copyright Josefine Inga and School 2, copyright Essi Hentilä).

The teacher-made bi- or trilingual signs shown in Figure 3 characterise the schoolscape in School 1 and their content is probably connected with the pupils' age (primary school). Because English and Swedish are the only mandatory languages in School 1, where the Swedish curriculum applies, these two languages are understandable. Interestingly, the Finnish language is also present (on weekdays in column 1 in Figure 3), whereas Sámi languages are consistently excluded. Teachers in School 1 probably use the weekdays as a teaching aid or as a reminder for pupils to use when needed. One disadvantage was that signs were small and impossible to read from a distance. Moreover, the colours used in the signs were similar, even though the languages varied.

In Figure 3, the photo on the right exemplifies how one culturally bound celebration, Christmas, includes songs in both Finnish and Swedish. The lyrics were pasted onto the backside of a star. The lyrics were for different traditional songs in Finland and Sweden. The signs in Figure 3 can be understood as teaching materials crafted to last for a relatively long time, while the signs in Figure 4 are short-lived because they become obsolete relatively quickly when, for example, the date of the tests passes or clock times change (column 2 and 3 in Figure 4).



School 1 School 2 School 2

Figure 4. Written teaching material on whiteboards (School 1, copyright Josefine Inga and School 2, copyright Essi Hentilä).

Information concerning the lessons' content, aim, and start and end times was given purely in Swedish in both schools (column 1 and 3 in Figure 4). When it comes to tests in School 2, teachers can give information in both Finnish and Swedish (middle photo; Figure 4), such as the information about the maths test on the geometry of spaces (MATTEPROV Rymdgeometri/MATIKAN KOE Avaruusgeometria). This kind of information was handwritten by teachers.

Furthermore, in School 2, we found notes left on a whiteboard from a lesson written only in Swedish and bilingual Finnish–Swedish. Handwritten information in Finnish and Swedish also existed in various folders. This may be extra teaching material, such as instruction on conducting a film analysis. Again, this kind of material appeared especially frequently in School 2, where pupils were teenagers and the classrooms were subject-related, compared to School 1, which had young pupils and grade-specific classrooms. However, in School 1, the North Sámi language appeared twice in a teaching and learning function, being discovered on a worksheet about suitable clothes and a sheet with a multimodal presentation about words related to a day (Figure 5).

Figure 5. Teaching and learning material for the North Sámi language (School 1, copyright Josefine Inga).

Furthermore, both schools had different exercise sheets, maps, and literature lists in various languages. Pupils were also informed, for example, about recommended fiction literature via several-page-long printed lists pinned on notice boards in related language classrooms (see Figure 1).

All the material we have presented so far was produced explicitly or implicitly by teachers. The handwritten or printed material is teacher-made, while, for example, books and games are brought in via teachers' initiatives. Unexpectedly, in these schoolscapes, little pupil-created material for learning was visible. In contrast, in School 1, we recognised pupil-created material, but as we were unaware of its production context, we interpreted most of it as having an expressive or symbolic function. The lack of signs related to teaching with pupils' explicit engagement or with a scaffolding role (cf. Cummins 2017; Gorter and Cenoz 2024) was unexpected. We expected to see, especially in School 2, signs that reflected language learning, pupil engagement, and collaboration, along with an explicit teaching function, to a greater extent, in line with the learner-centred educational paradigm (cf. Mäkelä et al. 2018; Nagels et al. 2019).

4.2.2. Expressive and Symbolic Functions

Some of the signs and exhibited objects reflected and appealed to the pupils as individuals and members of a minority. They all reflected the pupils' identity and were either collectively performed or individually expressed (cf. Cresswell 2004; Dufva 2013; Riley 2019). However, they usually seemed to be either purely teacher-created or created under the guidance of teachers and were hardly ever solely pupil-created.

In School 1, we found several visible items with an expressive function (Figure 6). All of them were created under a teacher's guidance, which implicitly illustrates that they also had a teaching function. However, as we did not include the pupils or staff in this study, we only interpreted what we saw and not what was explained about the various objects in the schoolscapes.

Figure 6. Examples of items with an expressive function (School 1, copyright Josefine Inga).

The first photo in Figure 6 represents the globe in a classroom in School 1. Primary school pupils place a visualisation of themselves on the globe, probably close to the region they come from. It is a good example of artistic work that combines collective performance and individual expression. The second photo has the same function, and this can be determined from the text above the world map (Härifrån kommer vi/This is where we come from). However, the regions and countries are only marked with small pins, and the possibility of individual expression is limited. This photo could also have an informative function to increase staff and pupils' intercultural awareness (cf. Gorter and Cenoz 2015).

The third photo in Figure 6 is an example of individual expression concerned with both identity and personal agency. The drawing consists of the Moomin troll, the blue Moomin house, and an old Nokia mobile phone—all connected to Finland. The pupil who drew it might have a connection to Finland, but it could also be part of a teaching event because the actual drawing is surrounded by drawings connected to other Nordic countries—but not to Sámi people or other national minorities in the geographical area. Interestingly, in both schools, pupils drew objects and characters from the Moomin family. This story has an origin in Finland and was produced by Tove Jansson. In School 1's canteen, there were some printed pictures of the main characters in Astrid Lindgren's books with a slogan from

Pippi Longstocking (Den som är stark måste vara snäll/Whoever is strong must be kind). The lack of references to Sámi culture is evident.

Nevertheless, the Moomins can also be interpreted as having a symbolic function, like (national) flags or icons with cultural meaning. Flags are used especially in School 1, where the national minorities in Sweden are referred to with flags (Figure 7).

School 1 School 2 School 1

Figure 7. Examples of items with a symbolic function (School 1, copyright Josefine Inga and School 2, copyright Essi Hentilä).

Flags are an easy way to refer to languages, countries, minorities, or ethnic communities. However, flags (especially national flags) do not reflect, for example, the diversity of languages in a specific country. In the first photo in Figure 7, there is one national flag, the Finnish flag, with a white background and a blue (Nordic) cross. This flag does not reflect that Finland has two official languages, Finnish and Swedish, and three endangered but vivid Sámi languages.

The other cross flag is for a national minority in Sweden that identifies with the Finnish language. In this flag, the colours of the Finnish and Swedish flags are combined in a similar way as in the flag with three stripes, which is a flag for people connected to a specific borderland area and Meänkieli. The multi-coloured flag with a circle in the middle is a flag for the indigenous Sámi people. All these flags were most likely printed and hung on the wall as a teacher-lead activity.

In contrast, the upper photo in the second column of Figure 7 represents Finland's national flag, which consists of white and blue palms, which, in turn, may belong to pupils in School 2. Blue and white colours in School 2 are also used on informative and navigational signs, such as one on the door to the classroom where Finnish language is taught or the school's logo, which contains three colours (white, blue, and yellow) that reflect the colours of the Finnish and Swedish flags (cf. Straszer and Kroik 2021).

The third photo in Figure 7 illustrates a painted copy of an old black-and-white photograph of two Sámi ladies on the corridor wall. The ladies wear the Sami traditional costumes, which are colourful ethnic markers and highly personal. The costume is an important unifying symbol still worn on festive occasions. In this context, when Sámi languages are excluded from classrooms in School 1, this specific photo, printed on a corridor wall, becomes like a museum for ancient items and people.

Teacher-made objects were a central part of the material categorised as having an expressive or symbolic function. This can be seen in (national) flags hung on a classroom's wall (Figure 7) or in some stereotypical objects, such as a miniature of a London double-decker bus, referring to the English taught in schools. However, items with expressive and symbolic functions can also exist outside classrooms, in corridors and entrances, such as

the world map in Figure 6 and the painting of two Sámi ladies in Figure 7. It is quite certain that these items are not teacher-made, but they represent a level of authority, such as the municipal and local school administration, and their teaching function is, therefore, implicit. Furthermore, the pupils' opportunities to participate and their agency are minimal regarding the world map. Nevertheless, this map could also have a pedagogical or informative function if the pins placed on the map were more visible. These kinds of signs could also be understood as efforts to raise intercultural awareness among pupils and staff.

The material we have categorised as having an expressive or symbolic function in the analysed schoolscapes indicates pupil participation in various pupil-made objects, such as the globe and drawing in Figure 6 and the flag made of blue and white hand palms in Figure 7. However, because all these were probably implemented under teacher guidance, they imply a teaching function. Further, they were observed in various classrooms, supporting the teaching aid idea. On the other hand, in our data, possibilities of pupil participation are bound to classrooms, suggesting that classrooms are prioritised teaching spaces. Learning is, however, even possible in other spaces if they provide possibilities for it.

4.2.3. Informational, Interactional and Decorative Functions

After closer analysis of the signs with informational or interactional functions, we noted that the difference between them is small: a central distinction is that an interactional sign opens up interaction opportunities, whereas an informational sign performs one-way communication like informative road signs.

Various printed informational posters shown on the walls were related to management, either of the school or of the classroom. The printed, multimodal posters represented the school management or concerned the wider society, such as the photo in column 1 of Figure 8, which provided information about CCTVs. The monolingual Swedish poster was not modified specifically for schools or local multilingual contexts, but was a commonly used version.

The multimodal poster in School 1 (column 2, top of Figure 8), informing people about how to protect themselves from the spreading infection (COVID-19) in six languages, was likely produced for a wider context than the school. In a primary school context, this poster seems irrelevant as the pupils are not necessary yet able to read, and if they read, they are likely to read only in Swedish, which is the official medium of instruction.

School 2 School 1 School 2

Figure 8. Examples of objects with an informational function (School 1, copyright Josefine Inga and School 2, copyright Essi Hentilä).

Corresponding monolingual and multimodal semiotic language use also existed in black-and-white A4 prints of schedules and emergency care and in exit plans for pupils and teachers, especially in School 2. These were less official and probably locally produced for school management purposes, but were informative in terms of their character.

In contrast, the multimodal but monolingual Swedish poster about how to behave in the toilet seemed locally produced (column 2, bottom of Figure 8) but could be understood as interactive. The seven-phase illustrative instruction starts with *go to the toilet* and ends with *throw the paper in the rubbish bin*. It is interactive because it gently reminds young pupils of the steps but does not utilise other verbal languages, such as Sámi languages or Finnish/Meänkieli. This could have been an opportunity to stimulate the learning and reading of languages other than Swedish.

The poster in the third photo in Figure 8 repeatedly appeared in School 2's classrooms and was always in Swedish. It is an invitation to the pupils to lift their chairs on the desks every Thursday, so that it is easier for the janitors to clean the floors. This sign concerns school management and was created by teachers or administrators. This interactive sign could have easily been adjusted for local bilingualism. We also recognised the corresponding monolingualism seen in informative posters, such as the (weekly) menu in School 2's canteen or School 1's break rules.

However, English is used for supportive or pedagogical posters or signs that remind pupils of values concerning, for example, reading in School 1 (Figure 9).

Figure 9. The importance of reading is consequently emphasised in English in School 1 (copyright Josefine Inga).

In School 1, surrounded by Sápmi and in a municipality responsible for protecting geographically bounded NMLs, the use of English language to encourage primary school pupils to read is surprising. These posters, with slogans and bullet lists, are colourful and decorative and are probably created by teachers or school administration. Further, they can be understood as informational and interactive, as they give reasons for reading and encourage pupils to read. In these kinds of signs, the use of NMLs could have been used with good reason. In fact, it is not obvious that national minority children learn to read and write in their minority language.

In School 1, the only visible use of Swedish and two of the NMLs was on a glass wall. These informative texts include positive utterances about School 1 in Finnish/Meänkieli, Swedish, and North Sámi. These utterances do not correspond, and there seem to be grammatical and orthographic errors in the translations to Finnish/Meänkieli and Sámi from the original Swedish text. The wall and texts were probably produced for a school management function in this specific municipality.

In common spaces, there were some signs that we categorised as having a primarily decorative function. These kinds of signs included, for example, historical Sámi objects, framed paintings, and aerial photos of the city where the school was located.

5. Discussion

This study aimed to enhance the understanding of semiotic language use on the Arctic borderland, with a focus on two schoolscapes. Using visual ethnography, we revealed the semiotic language use within these schoolscapes. We examined 229 photographs, first categorising them based on their function in the schoolscape and then according to the languages they reflect. Initially, we will address the two research questions of the study and then integrate our discussion with the earlier research and theoretical literature presented.

The results show that the signs explicitly related to teaching and Swedish and Finnish languages dominated the schoolscapes, whereas the two schools also had remarkable differences. Although School 1 is in the middle of Sápmi, it had few signs in Sámi languages. On the contrary, in School 2 on the border between Sweden and Finland, the presence of the Finnish language was obvious, especially in various books ranging from science to fiction. As the English language is mandatory for all pupils in Sweden, it is understandable that signs in English existed in both schools. Surprisingly, signs in English were more visible in our data than signs in Sámi languages in School 1, which is in fact in the middle of Sápmi (Figure 9).

Moreover, the schoolscapes stimulate learning via different means related to the pupils' age and different national and linguistic backgrounds (cf. RQ 1). However, the schoolscapes did not explicitly reflect active and supportive bilingualism even though it was reasonable to expect bilingual signs, including Finnish and Swedish, in School 2. However, isolated signs with different functions and content existed in Finnish and Swedish in School 2. In contrast, in School 1, bilingual signs were mainly in Swedish and English but not the Sámi languages. This way of isolating languages and cultures represents multicultural integration in School 2 and near-monocultural integration in School 1 as concerns Sámi and other NMLs (Lahdenperä 2017; see also Irvine and Gal 2000; Szábo 2015).

Another aspect connected with semiotic language use concerns teacher-produced school-specific teaching materials in both schools (cf. RQ 2). This material relates to long-lasting signs or temporary, short-lived whiteboard markings. In School 1, the Sámi languages were almost excluded from teacher-produced material (with some exceptions shown in Figure 5), but Finnish/Meänkieli was included along with Swedish and English. In School 2, the whiteboard markings existed in both languages, but durable and long-lasting teaching material excluded Finnish and was, thus, monolingual Swedish. An exception is the mathematics books in Finnish, whose relation to the current Finnish national curriculum is unknown (Figure 2). When learning is understood, as Dufva (2013) described, the semiotic language use in different classrooms in both schools provides few possibilities for pupils to collaborate in languages other than Swedish and, in some cases, Finnish. As a rule, all the visible material without any identity markers and with explicit language was crafted and written by teachers, and the pupils' agency (i.e., possibilities for involvement in this everyday social world) seemed limited.

This gives an interesting focus on the Arctic borderlands' schoolscapes, where language materials were given from above by teachers and school management, not created together. Further, this material had visible limited languages or cultural references (cf. Backhaus 2006). In turn, the data analysis provides an awareness that can be used to discern dominant structures in the schoolscapes. Backhaus (2006) also highlighted that the linguistic landscape can express something about expectations, norms, and roles. Concerning the studied schoolscapes, the use of several languages might be demanding for teachers, especially if they do not know languages. Moreover, some pupils surely have language skills. The result provides information about something other than language, namely, about the co-creators of the schoolscape. The schoolscapes reflect aspects of roles

within the school. The result implies that the teachers and school management are the dominant creators of the borderland schoolscapes.

Moreover, the result suggests that the majority function focuses on knowledge development in a way that is rarely connected with learners' identity construction. Language and identity are closely linked. Therefore, the starting point for knowledge development needs to be pupils' identity, especially in younger ages. The borderland schoolscapes do not reflect this to a great extent, especially if the books in School 2 are excluded. The possibility of feeling a sense of belonging at school also plays an important role in learners' identity construction and knowledge development. Moreover, the acceptance and recognition of a pupil's language skills contributes to their identity construction (cf. Shohamy and Waksman 2009).

Although the two municipalities containing the studied schoolscapes are responsible for (revitalising) the NMLs, they do not use their power and possibilities to teach pupils with age-appropriate methods via local languages (e.g., Figure 8). This monolingual habitus was also evidenced in the school canteens, where menus and opening hours were given only in Swedish. This habitus also hints at the language's position in the schoolscape (Brown 2012).

Semiotic language use mainly focused on the majority language, especially in School 1, indicating the legitimacy of languages and cultures within the school. Different factors in the school give implicit messages about what belongs to the majority and what does not. Staff in a school can consider that the schoolscape is based on multiculturalism, even though some factors intentionally override other languages (cf. Cummins 2017). Not paying attention to language in schoolscapes can make pupils perceive the school as being monolingual and make them think that no other languages are legitimate.

6. Conclusions and Implications

Recognising that education is one of the most effective methods of language learning, in order to maintain and revitalise the endangered NMLs in Sweden, pupils need diverse opportunities to use these NMLs. Therefore, as a practical implication that should be taken seriously, the municipalities, teachers, and school management in these borderlands should actively seek opportunities to include (national) minority languages into, for example, exit plans, weekly menus, and teacher-produced teaching materials in the schoolscapes. This visible use of semiotic language then provides opportunities for language learning and identity construction through pupils' possibilities for social participation and by recycling the visible linguistic and cultural affordances in the schoolscape (cf. Dufva 2013).

Because both schools in the present study are in the Arctic and on two borderlands, the schoolscapes should reflect the Arctic and the borderlands more effectively, for example, by code switching and translanguaging. Moreover, to strengthen a school's identity as a school on a borderland in the Arctic and in those geographical areas of Sweden where two typologically different and endangered minority languages meet, the role of the schoolscape should be understood as a meaningful and important learning space. Keeping or revitalising vital bilingualism in this specific geographical area requires deliberate and purposeful semiotic language use in schoolscapes to break the hegemonic ideological scheme and remove traces of Swedification. To further deepen and broaden the understanding of equivalent schoolscapes and their role as a learning space, teacher interviews and, if possible, auditive language practices are needed.

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Notes

1 Sápmi overlaps the national borders of Sweden, Norway, Finland, and Russia.

2 Meänkieli has its roots in a Finnish dialect from the northwest. It might still be very challenging to differentiate between Meänkieli and this dialect.

3 With first language (L1), we refer to the language that is learnt first (e.g., Abrahamsson 2017). Children may have several first languages, but they are obligated to participate only in instruction of Swedish as L1 or L2 (second language), whereas instruction in other L1s is voluntary.

4 Anyone with Sami origin can apply for a place at the Sámi schools (https://sameskolstyrelsen.se/skola-utbildning/inskrivning-skola/ (accessed on 12 November 2024)).

5 Two students own the rights to the taken photographs. Pictures in School 1 were taken by Josefine Inga (2020) and pictures in School 2 by Essi Hentilä (2023).

6 It is worth noting that Sweden is officially a monolingual country, whereas Finland is officially bilingual, with Finnish and Swedish. This means that a parallel school system operates in both languages in Finland (e.g., Kupiainen et al. 2016).

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