



# Scaffolding or side-tracking? The role of knowledge about language in content instruction

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## ABSTRACT

Teachers who teach content to immigrant language learners are often asked to attend explicitly to linguistic features of texts dealing with disciplinary knowledge. This study uses the theoretical frameworks of Systemic-Functional Linguistics and Legitimation Code Theory to explore the role of language, more specifically technical terms, grammatical metaphors, and genre structures, in knowledge building. The study is based on observations and voice recordings during a curriculum area about maps and population in grade 6 with the participating teacher employing genre-based pedagogy. The studied interaction shows that an initial focus on technical terms within the field of geography in later phases shifts to features of language: genre structures, logical connections and instances of grammatical metaphors. However, these features of language are modelled in texts and wordings belonging to everyday experience rather than disciplinary knowledge. By closely examining the relationship between field knowledge and metalinguistic knowledge, the study contributes to the discussion about the role of language in content learning.

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## 1. Introduction

In this article, I explore the role of knowledge about language in the teaching of disciplinary content knowledge. Scholars with an interest in the linguistic side of literacy – as a symbolic, structured practice (see Muller, 2001) – often stress that knowledge about language can support the development of academic content knowledge (Christie & Derewianka, 2010; Colombi & Schleppegrell, 2002; Gibbons, 2006a; Rose & Martin, 2012; Schleppegrell, 2013; Turkan, de Oliveira, Lee, & Phelps, 2014). They also argue that explicit attention to knowledge about language is crucial for achieving equity in education. Knowledge about language can be seen as a central component in a visible pedagogy (Bernstein, 1990/2003, 2000; Norlund, 2018) which sets out to promote access to powerful forms of discourse for underprivileged student groups (Christie, 2002; Morais & Neves, 2001; Rose & Martin, 2012, p. 318). This is also very much a concern in Sweden, where this study was conducted, especially in relation to the educational needs of immigrant language learners. Ideal teaching practices are often described as combining a high level of cognitive challenge with a high degree of support (Cummins, 2000; Gibbons, 2006a; Mariani, 1997; discussed in Nygård Larsson, 2018). A widely implemented method is genre-based pedagogy, which through Systemic-Functional Lin-

guistics (SFL) sets out to model how disciplinary registers and linguistically defined genres are used to express academic content knowledge (see section 1.3). The teaching observed in this study admittedly precedes the years in secondary schooling mostly associated with challenging content knowledge. Nevertheless, the focus on features of texts evident in the studied interaction can still contribute to a more general understanding of the role of metalinguistic knowledge in the negotiation of subject-specific content.

In this study, I conduct an analysis of the relation between knowledge about language and disciplinary content knowledge within a process of genre-based instruction. The empirical basis is a classroom study of a curriculum area about maps and population in grade 6. While I believe there are strong arguments for a visible pedagogy which, as in genre-based pedagogy, focuses on the metalinguistic side of learning content knowledge, there is also a need for further critical discussions about the role of knowledge about language in the larger knowledge-building process. When the value of certain methods and perspectives in education are taken for granted, they may be recontextualised in ways which counteract their original premises. As shown in a design-based research study by Moore, Schleppegrell, and Palincsar (2018), misalignments can occur in instruction when SFL concepts are used in instruction for their own sake rather than for talking about meanings in texts. With the present article, I contribute to a critical discussion about what is needed to enable metalinguistic knowledge and genre-based pedagogy to be infused in content instruction in ways that sup-

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port the learning of academic content knowledge. The study builds on my doctoral thesis (Walldén, 2019), which showed an explicit attention to features of language that did not seem to promote a deeper engagement with disciplinary knowledge. The present study elaborates on the findings by using Legitimation Code Theory analysis (see section 1.1) – along with the concepts of technicality, grammatical metaphor and genre structures (see section 1.2) – to examine the instruction in greater detail.

The purpose of this study is to explore how knowledge about language relates to the negotiation of content knowledge in a curriculum area about maps and population. The specific research questions are as follows:

- In what phases of the instruction and through which modes does the teacher bring technical terms, abstract language and genre knowledge respectively into focus?
- How do technical terms, abstract language and genre structures contribute to the negotiation of field knowledge?
- How do technical terms, grammatical metaphors and genre structures contribute to shifts between disciplinary language and everyday language in the instructional process?

Terms and theories used to answer these questions are described below (sections 1.1 and 1.2).

### 1.1. Legitimation Code Theory: describing shifts in technicality and abstraction

The terms *semantic density* and *semantic gravity* are sociological concepts originated in Legitimation Code Theory (LCT) (Maton, 2009), which elaborated on Bernstein's later work on knowledge structures (Bernstein, 2000). They have proven useful for both theorising about knowledge structures and describing the negotiation of content knowledge in classroom discourse (Macnaught, Maton, Martin, & Matruggio, 2013; Maton, 2013; Nygård Larsson, 2018). In the present study, the terms *technicality* and *abstraction* will be preferred, as they are more transparent and directly relatable with the SFL terms used in the analyses.

Semantic density, or *technicality*, is of particular relevance to the natural sciences, since it concerns the condensation of meanings in schemes of classification or composition (Maton & Doran, 2017). If many meanings are condensed, as in higher levels of classification (e.g. "mammal"), the degree of technicality is high while it is weaker in lower levels of classification (e.g. "cat"). Semantic gravity, or *abstraction*, is of greater relevance for the less technical instruction studied in this article. It concerns the degree to which meanings are context-dependent.<sup>1</sup> The concept makes it possible to discuss shifts between, for example, general and abstract ideas to specific events or cases.

The use of LCT in the present study can be seen as restricted, as it does not draw upon concepts developed in recent phases of the theory (e.g. Hipkiss & Varga, 2018; Maton & Doran, 2017). Instead, the analysis is largely mediated through SFL analysis (cf. Martin, 2013; Nygård Larsson, 2018). A high degree of abstraction and technicality will be associated with occurrences of *technical/abstract* terms and *grammatical metaphors*, while a low degree of technicality and abstraction will largely be connected with the absence of such linguistic features. Also, the term *abstract language* will sometimes be used to cover both abstract terms and grammatical metaphors. The relevant terms, along with other ones used in the linguistic analysis, will be discussed below (1.2).

<sup>1</sup> The term is used uneasily, in awareness that technical and abstract language is highly dependent on the context of their relevant knowledge disciplines, including their academic communities (Gee, 2014, ss. 68–69; Street, 1984, s. 75).

### 1.2. An SFL perspective: technicality, grammatical metaphor and periodicity

Throughout the years, there has been a fruitful dialogue between Bernstein's inquiries into the sociology of education and SFL's attention to processes of meaning making and knowledge negotiation (Bernstein, 1971, p. 20; Halliday, 1988/2007; Hasan, 1999). During the developments of LCT theory, the dialogue has been ongoing (Martin & Maton, 2017). SFL-oriented LCT analyses and teaching interventions offer three concepts to describe linguistic features contributing to high degrees of technicality and abstraction: power words, power grammar and power structures (Macnaught et al., 2013; Martin, 2013). This "power triplet" is not used by the teacher participating in the present study, but it correlates to the linguistic features she brings attention to in the curriculum area about maps and population: technical terms, instances of grammatical metaphor and genre structures (along with "linking words").

*Technical terms*, or power words, are defined as terms contributing to building the field of knowledge. In the natural sciences, they are often characterised by high density meanings only fully grasped through their role in taxonomies and implications sequences (Martin, 2013). As more frequently seen in social sciences (Martin, 1990/1993; Martin, J., 1993; Martin, 1990/1993), technical terms can also be abstract terms such as "trade", "economy" and "culture". Their meanings are less clearly defined than the technical terms of the natural sciences (Martin, 2013, p. 29), but nonetheless denote a field-specific view of the world which must be learned through text. The concept of *grammatical metaphor*, or power grammar, describes how written representations of disciplinary knowledge depend on tensions between lexicogrammar and semantics (Halliday, 1989/1993; Martin, 1992). This means that logical relations are often not expressed congruently as conjunctions (e.g. "because") but as logical metaphors through processes ("lead to"), participants ("consequence") or prepositions ("due to"). Similarly, events and actions tend to be expressed as participants (e.g. "movement"), constituting *experiential* metaphors, rather than as processes ("to move"). How grammatical metaphor conjoins with technical terms to formulate specialised knowledge is exemplified below in a formulation from a Wikipedia entry about Apartheid.<sup>2</sup>

**Apartheid sparked significant internal resistance.**

A technical term ("apartheid") is through a logical metaphor ("sparked") put into a causal relationship with a nominal group, "significant internal resistance", which in itself is an example of grammatical metaphor. Here, the experiential metaphor "resistance" (cf. "resist"), is described ("significant") and classified ("internal") through the unique affordances of nominal groups. This abstract and highly integrated wording is far removed from concrete happenings. A more spoken wording would be as follows:

Many people and organisations inside the country were protesting and resisting the government because of how Apartheid affected their lives.

Now, the relation between lexicogrammar and semantics is *congruent*, with actions as processes ("were protesting and resisting") and logical relations as conjunctions ("because of"). In addition, the participants in the processes are more specific, indicating a lower degree of abstraction: "[m]any people", "the government", "their lives". In other words, the original abstract wording is unpacked in a more spoken mode, giving a common-sense view of the world

<sup>2</sup> <https://en.wikipedia.org/wiki/Apartheid>, subheading "internal resistance", accessed 2018-04-12.

through the resources of everyday language.<sup>3</sup> Martin (2013) and Maton (2013) note that teachers do perform such unpackings in class, when negotiating fields of knowledge, while it is a much rarer occurrence that the spoken, common-sense meanings are re-packed into written mode. An absence of re-packings is also shown in a Swedish classroom study employing LCT concepts (Hipkiss, 2014). This seems unsatisfactory, as the resulting common-sense perspectives are less likely to be valued highly in specialised and reflexive knowledge domains (cf. Macken-Horarik, 1996). Conversely, instructional processes which model the active use of power words alongside power grammar may expand the students' meaning making potential for subject-specific discourse (Nygård Larsson, 2018).

Finally, disciplines tend to draw upon various genres to communicate knowledge, such as explanations, reports, arguments and discussions. Martin (2013) argues that the use of these genres requires power composition, that is organisation of text according to "rhetorical sandwich structures" through which the writer introduces what is to be written, writes it and finally reiterates what has been written. This relates to the discourse system of *periodicity*, which describes how texts are organised in predictable waves of information (see Martin, 1992, p. 456; Martin & Rose, 2007, pp. 187 ff.). On a macro-level, the employment of periodicity can correlate closely with using the relevant genre structure, especially genres which are structured "internally" by organising perspectives and arguments (Martin & Rose, 2008, pp. 118 ff.). The teacher participating in the present study focuses on one such genre: discussions (see section 3.2). Periodicity interacts with both grammatical metaphor and technical terms, as these resources are crucial for introducing high density and low gravity meanings which are unpacked and re-packed as the texts moves through different stages. Such introduction and unpacking are exemplified below, using the same Wikipedia explanation about Apartheid.

Apartheid sparked significant internal resistance . . .

In 1949, the youth wing of the African National Congress (ANC) took control of the organisation and started advocating a radical black nationalist programme . . .

In 1959, a group of disenchanted ANC members formed the Pan Africanist Congress (PAC), which organised a demonstration against pass books on 21 March 1960

The power grammar evident in the introductory sentence, where "significant internal resistance" was "sparked" by Apartheid (see above), is thus unpacked in more concrete terms, denoting a shift to a lower degree of abstraction. This allows the historical account to move from a general background to the description of specific events (Martin & Rose, 2008, pp. 134–135). The role of technical terms, grammatical metaphors and genre structures in the studied instruction will be explored throughout the result section of this article (see section 3).

### 1.3. Genre-based pedagogy

An instruction method which sets out to model the use of genres, including the linguistic resources they draw upon, in content instruction is genre pedagogy, or genre-based instruction. It originated in Australia as a visible and interventionist pedagogy grounded in both Systemic-Functional Linguistics and sociological theory (Rose & Martin, 2012, p. 318; cf. Bernstein, 1990/2003; Bernstein, J., 2003; Bernstein, 1990/2003). This was in reaction to loosely framed and classified progressive approaches

(Feez, 2002; Rose, 1999; Rothery, 1996). Close attention to the linguistic features construing knowledge and realising communicative goals was seen as crucial to narrow the gaps in school achievement between student groups (Christie & Misson, 1998; Martin, 1999). In Sweden, genre-based instruction has entered the educational field mostly as a way to scaffold immigrant language learners' simultaneous development of linguistic skills and content knowledge (Acevedo, 2010; Hipkiss & Varga, 2018; Kuyumcu, 2011; Polias, 2006; Sellgren, 2011). The linguistic view of genres and writing present in genre-based pedagogy has also influenced the national curricula for the subjects Swedish and Swedish as a Second Language (Liberg, Wiksten Folkeryd, & af Geijerstam, 2012), with attention to "[s]trategies for writing different types of texts" and broadly defined genres, or text types, such as "[d]escriptive, explanatory, instructional and argumentative texts . . . and typical language features"<sup>4</sup> (Swedish National Agency for Education, 2018, pp. 264–265). Moreover, the curriculum draws attention to how other subjects needs to be handled through language, for example by prescribing teaching of "[k]eywords and concepts needed to be able to read, write and discuss geography (Swedish National Agency for Education, 2018, p. 201). This echoes the importance of technical terms, or power words, as discussed above. The significance of grammatical metaphor, genre structures and other ways of managing the information flow is not explicitly formulated, but the curriculum stresses various ways of dealing with content knowledge. It is evident in the quoted wording about keywords ("read, write and discuss") and also in assessment criteria. The example below is a criterion for "E", a passing grade, for Geography in grade 6 (my markings).<sup>5</sup>

Pupils can **reason about questions** concerning sustainable development and then **give** simple and to some extent informed **proposals** on ethical-environmental choices and prioritisations in everyday life. In addition, pupils **apply reasoning** to the causes and consequences of unequal living conditions in the world and **give** simple and to some extent informed **proposals** on how people's living conditions can be improved. (Swedish National Agency for Education, 2018, p. 204)

Criteria such as "apply reasoning" and "give . . . proposals" are metalinguistic expressions that outline how the students are expected to engage in disciplinary literacy practices and show their knowledge through language (cf. Turkan et al., 2014). While the criteria describe how the students are to be assessed rather than how the teaching is supposed to be conducted, criteria such as these tend to be foregrounded in teaching in line with ideals of assessment for learning and visible learning (Black & William, 1998; Black, William, Harrison, & Lee, 2003; Hattie & Timperley, 2007; discussed in Carlgren, 2015; Walldén, 2017). The focus on linguistic means of displaying knowledge in the curriculum is likely to have bolstered the traction of genre-based pedagogy in Sweden.

Criticism directed towards genre-based pedagogy is largely pre-occupied with how communicative goals are linked to linguistic features, most notably specific genre structures (Hasan, 1995/2016; Freedman, 1994; Luke, 1996; Ivanič, 2004; Watkins, 1999; Kress, 2003; Holmberg, 2012; cf. Martin, 1992; Martin & Rose, 2008, pp. 118 ff.). While such concerns may be valid, as seen also in Walldén (2019), they limit the scope to writing pedagogy and do not give

<sup>3</sup> A logical metaphor persists in an embedded clause, showing the challenge of unpacking abstract wordings completely: "how Apartheid affected their lives".

<sup>4</sup> However, these typical features are not described in the curriculum. The orientation to knowledge about language seems formal rather than functional, when the educational content is described as "[s]tructure of language and construction of sentences, main clauses, subordinate clauses, spelling rules, punctuation, word inflection and parts of speech. Structuring text by using linking words" (Swedish National Agency for Education, 2018, p. 265; cf. Derewianka, 2001).

<sup>5</sup> Hedges such as "to some extent" are marked in the original wordings and scaled up in the otherwise similarly worded criteria for higher grades.

attention to the relationship between knowledge about language and academic content knowledge (cf. Halliday & Martin, 1993; Wignell, Martin, & Eggins, 1989/1993; Martin, 2009; Martin, 2009; Macnaught et al., 2013). The present study gives primacy to the latter, and arguably more important, issue.

A notable feature of genre-based pedagogy is the teaching/learning cycle (TLC) (Callaghan & Rothery, 1988; Rothery, 1996). While this model of instruction has undergone changes throughout different phases of development (Rose & Martin, 2012, pp. 63–67), influential textbooks that made this model known in Sweden describe the teaching/learning cycle in terms of four phases (Gibbons, 2006b, pp. 91–92; Hedeboe & Polias, 2008; Johansson & Sandell Ring, 2012):

1. Building field knowledge
2. Deconstruction and modelling target genre exemplars
3. Joint construction of a target genre exemplar
4. Individual construction of text

In contrast to pedagogical approaches which limits the question of language in academic content instruction to vocabulary (discussed in Bruna, Vann, & Escudero, 2007), the TLC ideally provides both input and output opportunities as part of disciplinary practices. The model is relevant to the study mainly because it is used as an organising principle by the teacher participating in the study. Thus, it is useful for identifying the phases of instruction in which technical terms, grammatical metaphor and genre structures come into play. In line with usual descriptions of TLC (Martin & Rose, 2005; Rothery, 1996), one hypothesis is that technical terms would be introduced in the initial phase and then figure prominently in the deconstruction and joint construction phases, as the teacher highlights how they are understood and used in writing. In these latter phases, the instruction can also be expected to unpack and re-pack abstract language, including the power grammar of grammatical metaphors, while also conveying metalinguistic knowledge about the relevant genre. This includes stages of genre structures and other features deemed relevant by the teacher. Since the metalanguage draws upon the “hyper-technical” terminology of SFL (discussed in Martin, 2017), teachers are likely to need tutoring to appropriate it successfully (e.g. Hipkiss & Varga, 2018). Thus, an added element of technicality in the classroom discourse is to be expected when teachers employ genre-based pedagogy.

## 2. Method

This study explores the negotiation of knowledge in a curriculum area about maps and populations in grade 6. The instruction is cross-curricular, as it is geared towards goal attainment in Geography as well as Swedish as a second language. In other words, one can expect features of language to be treated both as an end in themselves and as means to engage with the content knowledge of Geography. The study takes place in a school where the great majority of students have migration backgrounds, which means that many of them learn Swedish as a second language. The school was chosen because it has implemented genre-based pedagogy to scaffold the students’ simultaneous development of language skills and content knowledge. The teacher who consented to participate in the study has had an important role in this implementation, for example by arranging and leading courses for colleagues both at the local school at a municipal level. She is certified to teach both Swedish as a Second Language and Geography.

The material consists of approximately 17 hours of observations and voice recordings throughout the seven weeks the instructional process lasted. The focus of the analysis is on how the teacher shapes the interaction and uses model texts and other mediating

resources to communicate knowledge about language and academic content during phases of genre-based instruction (see 1.3).

Field notes, voice recordings and photos of teaching materials were examined with particular attention to the use and modelling of technical terms, grammatical metaphor, genre structures and shifts between disciplinary language and everyday language (see sections 1.1–1.2). The study follows the ethical guidelines stated by the Swedish Research Council (Swedish Research Council, 2017). A specific consideration has been to not track students individually in the analysis but regard them as a collective counterpart.

The analysed interaction has been translated from Swedish to English by the author of this article. Since the languages are structurally similar, the translations have not affected the linguistic categories used to analyse the data. Particularities regarding term usage and views on what counts as school knowledge about geography in Sweden are commented on as they appear in the analysed interaction.

## 3. Results

This section explores the relationship between knowledge about language and disciplinary knowledge during the different phases of the teaching/learning cycle. In other words, I present how the teacher engages the students in building field knowledge and in the deconstruction and joint construction of model texts. Finally, I show how the teacher introduces the task of independent construction.

### 3.1. Building field knowledge

During the initial phase in the instructional process, the teacher introduces a number of terms central to the curriculum area about maps and population. She labels them as “expert words” and puts them on the classroom whiteboard as laminated cards. The words shown at an early point are displayed below.

Climate	Precipitation	Equator	Map Type
Cardinal points	Terrain	Continent <sup>6</sup>	Greenhouse effect
Lines of latitude	Lines of longitude	Climate Zones	Temperate Zone
Tropical Zone	Subtropical Zone	Arctic Zone	

These words clearly take a geographer’s view of the world, constructing a distinct field of knowledge (cf. Wignell et al., 1989/1993). Accordingly, they may be considered as technical terms, or power words. The meaning of these words is largely negotiated not through writing, but through speech and visual modes. The following exchange takes place after the students have been asked to arrange cut-out continents in relation to each other. The task is followed up by the teacher arranging the continents on a digital whiteboard:

T: And which part is located like kind of below Asia?

S: Australia.

T: Australia. And now we can say that it is really called something else this continent. Can anyone tell? I was taught Australia when I went to school, but today it is usually called something else.

S: Oceania.

T: And that’s where you’re from, isn’t it? Oceania. And then we have the part which is located below Europe.

S: Africa.

<sup>6</sup> In Swedish, the term *kontinent* means a landmass which is physically demarcated, whereas a continent which is politically demarcated is called *världsdel* (“world-part”). Thus, Asia and Europe are separate in terms of *världsdel* but share the same *kontinent*. Both words are introduced by the teacher.

T: Africa. Is anyone from Africa here?

The teacher asks known-answer questions and follows up the students' responses (Mehan, 1979; Sinclair & Coulthard, 1975). It can be noted that the correction of the answer "Australia" to "Oceania" is made mildly and non-dismissively, as the teacher concedes that she herself had been taught "Australia" but that the continent now is named otherwise. As the teacher acknowledges students with origins from the different continents, the degree of abstraction is lowered since the concept of continents gets grounded in the lived experience of the multicultural classroom.

The different climate zones the teacher introduces are noteworthy because they comprise a field-specific taxonomy, where each zone must be understood by its oppositional relations to the others rather than through simple definitions (Halliday, 1989/1993; Wignell et al., 1989/1993). Thus, there is a condensation of meanings signifying a strong semantic density (Martin, 2013; Maton & Doran, 2017). These meanings are also primarily negotiated through speech. The exchange below shows how the teacher reads definitions of climate zones, which the students are asked to write on mini white boards.

T: Ok, number 1. Most of Europe and our own country, which is Sweden, is located here. Here, there is a big difference between summer and winter. There is precipitation during all seasons. What am I talking about? . . . The temperate zone. Our country and most of Europe is located in the green here in the temperate zone where we have a large difference between winter and summer, where there is precipitation, rain, hail, snow and so on, throughout the year.

Wordings in this definition ("our country, which is Sweden") serve to make it context-dependent. After the students respond by showing the correct zone on their whiteboards, the teacher uses additional context-dependent wordings ("in the green here . . . where we have") and also unpacks the condensed meaning of precipitation: "rain, hail, snow and so on".

Thus, when technical terms are introduced and unpacked in spoken interaction the communication around these "power words" is mostly characterised by a low degree of abstraction and use of everyday language. There is also a notable lack of written and abstract wordings to unpack in the definitions read by the teacher and the other activities surrounding these power words. When the teacher introduces written reports about different terrains, there is a potential for a higher degree of technicality and abstraction. The texts are to be used by the students in jigsaw group work, which means that each group gathers knowledge about a specific topic which is later shared in mixed group constellations. The jigsaw technique is a method advocated for stimulating knowledge-sharing and communication between immigrant language learners (Cazden, 2001; Gibbons, 2006b). According to the teacher, she has composed the text based on texts found on the Internet. One of the texts is reproduced below.

### Steppe

A steppe is a big plain where grass or bushes grow but no trees. Steppes may be formed in areas with cold winters, hot summers and little precipitation all year round.

On the steppe there is a dry climate and there is a lack of precipitation. The summer is very dry and warm, and the winter is cold. It is often very windy. On the steppe there are only plants which can cope with drought. That means that no trees or big bushes can grow. Steppe climates can be found in inner Asia, in Australia, western North America, southern South America and southern Africa, among other areas.

On the steppe there is little precipitation. Steppes have receded due to people cultivating the soil. In many places the steppes form transitions to deserts.

Although the text conforms to the structure of a report by introducing and describing a phenomenon (Martin & Rose, 2008, pp. 141–142), it affords little technical knowledge about steppes. The term "steppe" is merely defined as "a big plain" without any technical elaboration of how it may be understood taxonomically in relation to other geographically and biologically defined areas. The text is more concerned with underscoring the dryness of steppes: "little precipitation all year round . . . a dry climate . . . lack of precipitation . . . very dry . . . drought". Despite these repeated wordings, the final paragraph states that "there is little precipitation" as if it were new information. Therefore, there is no clear sense that the definition moves through different phases in a structured description of steppes. As for grammatical metaphor, a logical metaphor is evident in the formulation, also from the final paragraph: "Steppes have receded **due to** people cultivating the soil." How steppes are affected by human activity is not further explored. Instead, the text concludes with an unrelated and likewise unelaborated, statement about how steppes mark transitions to deserts, giving a brief hint of relations between members of the terrain taxonomy. In sum, the text's undeveloped field limits its possibilities as a resource for acquiring expert knowledge. Its potential for modelling power composition, that is how technical terms and grammatical are arranged in predictable waves of information, is largely unfulfilled.

With its focus on natural rather than cultural environment, the instruction has so far been oriented towards features of physical geography (cf. Wignell et al., 1989/1993). In Sweden, however, geography is classified as a subject of Social Studies (Swedish National Agency for Education, 2018). Therefore, it is not surprising that the instruction shifts to features of human geography after the work in expert groups, focusing on living conditions in different countries. This limits the role of the technical vocabulary previously introduced.

At this point, the teacher introduces a web page called *Livets Lotteri* (The Lottery of Life).<sup>7</sup> The page is provided by the Swedish Save the Children, as part of a UN-awarded campaign,<sup>8</sup> and lets the visitor spin a virtual lottery wheel to give a picture of how life might have been if they were born in another country. Corresponding to the country's small population, the likelihood of the wheel stopping on Sweden is less than one per cent. The teacher demonstrates the game twice, using an interactive whiteboard, by borrowing students' names and leading a discussion about the countries where they would be "born". The result page shows different, and primarily deterring, facts about the "winning" country. In the following excerpt, the teacher comments on the result page of Ivory Coast.

Fourteen percent are undernourished, meaning you don't get enough vitamins. There are thirty-five percent child marriages. Female genital mutilation, which is when they sew together the women's genitalia. That's thirty-six percent. Orphanhood, thirteen percent have no parents. And it is permitted to smack children [commenting on information about physical punishment of children being legal].

Terms such as "undernourished", "child marriage", "female genital mutilation", "orphanhood" and 'physical punishment of children', listed on the result page, are abstract terms that border on technical terms as they convey a specific view of the social world.

<sup>7</sup> <http://www.livetslotteri.raddabarnen.se/>, analysed as designed in late 2015 and early 2016.

<sup>8</sup> <https://news.un.org/en/story/2011/05/374202-swedish-lottery-life-campaign-wins-un-award-public-service-advertising>.

**Table 1**  
Spoken unpackings of abstract terms.

Abstract term	Spoken unpackings
undernourished	you don't get enough vitamins
FGM	they sew together the women's genitalia
orphanhood	have no parents
physical punishment of children	to smack children

Several of them are constructed by grammatical metaphors which are unpacked by the teacher, as shown below (Table 1).

The unpackings show a shift to everyday language, as these abstract terms are given more concrete shape. Linguistically, the shift is most clear when grammatical metaphors are recontextualised congruently through processes and specified participants:

you participant	don't get process	enough vitamins participant
<i>undernourished</i>		
<i>female genital mutilation</i>		
they participant	sew together process	the women's genitalia participant

The instruction thus involves grammatical metaphors and, depending on where the line is drawn between technicality and abstraction, technical terms (cf. Martin, 1990/1993; Martin, /, 1993; Martin, 1990/1993). However, these are not used in texts giving coherence to academic content knowledge, but merely listed on the result page of a browser game. How these living conditions arose, as well as how they relate to each other and to more privileged ones in countries such as Sweden, is unexplored.

The picture shown below (Fig. 1) is an example of such a result page and contains some of the concepts unpacked above: *kvinnlig könsstympning* ("FGM"), *föräldralöshet* ("orphanhood"), *barnaga* ("physical punishment of children"). The page also displays a factual text about one of the facts, but it is not focused on in the interaction.

In this initial phase of genre-based instruction, it is quite clear that the teacher involves the students in negotiating content knowledge about maps and population. While the analyses show instances of technicality and abstraction instrumental in constituting this content knowledge, the relevant terms have not yet been represented in coherent, written texts. Instead, they are mainly subject to spoken unpackings. Even in cases where definitions are read by the teacher, and when written texts were handed out as resources for expert knowledge, the instruction relies on resources of everyday language and primarily shows movements towards a low degree of technicality and abstraction.

The remaining instruction in this phase is concerned with modelling how the students are to use an online resource to find knowledge about population, availability of clean water, availability of internet, and rate of child mortality for the following countries: Ethiopia, Afghanistan, Iraq and Poland. This knowledge is later to be used in an individually constructed text about one of the countries. In order to accomplish this, the students are also required to apply knowledge of the discussion genre. This metalinguistic knowledge is the focus of the following phases of deconstruction and joint construction. During these phases, which typically are concerned with on how meanings are conveyed through features of language, the level of technicality and abstraction can be expected to increase. However, in this process of genre-based instruction the teaching unfolds in a different manner.

### 3.2. Deconstruction and joint construction

At this point, the teacher introduces the discussion genre as a structure for the students' individual writing. Using this genre structure is one of the language goals the teacher formulates for this curriculum area, relating to the subject Swedish as a second

language. Discussions are argumentative text which explores two contrasting sides of an issue as they move through stages of the corresponding genre structure: *issue*, *sides* and *resolution* (Christie & Derewianka, 2010; Macken-Horarik, 1996; Martin & Rose, 2008, pp. 118 ff.). The first model text the teacher introduces describes advantages and disadvantages of moving to Luleå, a town in northern Sweden. The first stage of this text, which introduces and previews the discussion (*issue*), is shown below along with a part of the second stage, which states arguments for and against moving there (*sides*).

I live in southern Sweden and have thought about moving to Luleå. Now I ask myself if I really could live in Luleå? Since I like winter I could maybe live there. What speaks against it is that I hate the dark.

On the one hand, living in Luleå seems lovely because both summer and spring are bright, and in the summer, there is even midnight sun. In the winter there is lots of snow and you can do winter sports. You can go cross-country skiing, skating, snowboarding, do slalom or ride a snow scooter. In central Luleå, there is a beautiful ice street which is ploughed every year where you can take a stroll or go skating.

On the other hand, it is dark and cold . . .

As expected, the discussion finally reaches a position statement (*resolution*). It is evident that the text has little relevance for the disciplinary knowledge about maps and population previously explored. Rather, it relies on resources of everyday language. In a sense, the text deals with living conditions, but it does not take a geographer's view of the world. This is made evident by the lack of such technical terms and power grammar as seen in the previous, knowledge-building, phase. Instead, the text takes a personal view, shaped by the writer's preferences and apparent need to make a decision. Therefore, this exemplar of the discussion genre marks a shift to even lower degrees of technicality and abstraction. In other words, the focus on knowledge about language does not seem promote a deeper engagement with academic content knowledge.

The text does, however, display features of writing which are useful for rhetorical organisation of texts according to principles of *periodicity*. Since it moves through stages of introduction, contrasting perspectives and position statement, it follows a rhetorical sandwich structure: previewing what is to be said, saying it and concluding what has been said (Martin, 1992, p. 456). Such planned language use, sometimes called *power composition*, has an important role for the aggregation of meaning in texts (Martin, 2013, 2017). Moreover, the text introduces the contrasting perspectives through conjunctions such as "on one hand" and "on the other hand". These are conjunctions internal to the text, guiding the reader through its different stages (Martin & Rose, 2007, pp. 187 ff.). The interactions around the model texts (as well as other, similar ones) show that such knowledge about linguistic features are the focus of instruction at this point, rather than technical and abstract knowledge about maps and population. An example is given below.

T: [reading from the text] On the one hand, living in Luleå seems lovely . . . So, what does she tell us there, what's good about Luleå or what's bad with Luleå?

S: What's good.

L: What's good with Luleå . . . So you can say like it's sort of a side of the issue you tell there, a side of the issue. And she has chosen what's good.

The exchange shows how the teacher leads the deconstruction of the model text, focusing the metalinguistic term *side* to describe

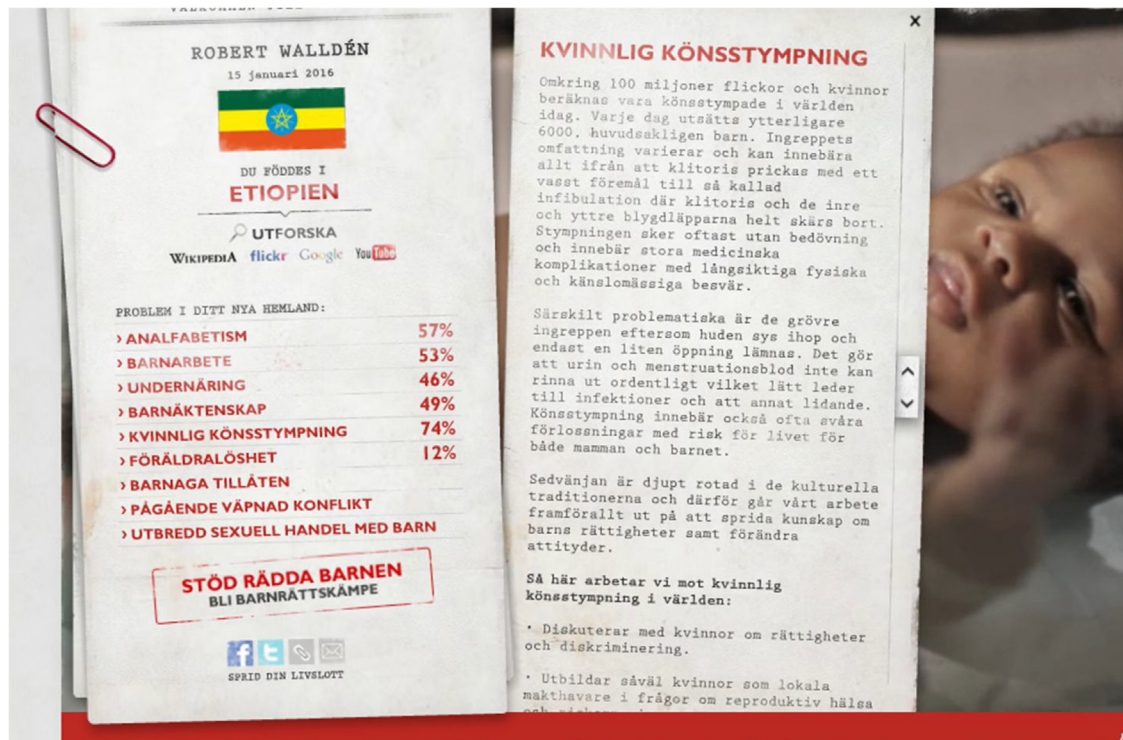


Fig. 1. Example of result page from Livets Lotteri.

a genre stage. This knowledge about language is later applied in the joint construction of a discussion, on the topic of allowing the use of smartphones during school breaks:

T: And what should we write first you think, the positive or the negative?

S: Positive.

T: The positive. How do we start then?

S: On the one hand.

The teacher also prescribes the use of linking words. These include internal conjunctions, such as “on one hand”, and other kinds of logical connections. This is exemplified below.

T: [reading from the jointly constructed text] On the one hand, it is good to have mobile phones during breaks because if you are bored you have something to do.

S: Which leads to.

T: Which leads to.

S: Less fighting.

T: Perfect, less fighting.

The teacher has repeatedly stressed how the phrase “which leads to” is a useful linking word, for elaborating ideas in texts. As it expresses a causal relation through a process instead of conjunctions or adverbs, it constitutes a logical metaphor. Another instance of such power grammar occurs while negotiating arguments against mobile phone use during breaks, after a student raised the possibility of being exposed on social media:

T: So, what does that lead to? Should we say which leads to again or [...] can we make use of another linking word? [...] Which causes. Which causes what? More fighting, or how would you feel? How could it make people feel?

E: Bullied.

T: Causes students to feel bullied.

The logical processes “leads to” and “causes” co-occur with other grammatical metaphors in the negotiations above, such as “fighting” and “bullied”. These represent processes (“to fight”, “to bully”) as nouns and qualities respectively. Even if they comprise instances of grammatical metaphor, they are used to describe everyday experiences rather than disciplinary knowledge. In this sense, the interaction can still be characterised by low degrees of technicality and abstraction. However, it seems untenable to view the instruction and interactions in the context of Geography at these phases of deconstruction and joint construction. The focus seems to have shifted to writing pedagogy in a more general sense: it is now linguistic terms from the genre-based mode of instruction, such as “side” (as part of a genre structure) and “linking words” (cf. [Hipkiss & Varga, 2018](#)), which comprise instances of technicality, rather than technical terms belonging to Geography. The teacher describes using linking words as a goal for developing disciplinary knowledge about maps and population rather than as a goal for Swedish as a second language. However, the focus on these logical connections still seems to draw the attention away from the technical discourse of geography.

This phase of instruction also includes activities where the students are required to use logical connections to complete or expand sentences. In some instances, like the following wording used in a digital quiz constructed by the teacher and displayed on the digital whiteboard, the knowledge field about maps and population resurfaces.

Subtropical zones are hot ..... to many deserts.

The students participate in the quiz by using tablets. They are asked to select an appropriate linking word to complete the sentence: “due to”, “because”, “which leads to” or “and”. As previously discussed, “subtropical zone” is a technical term, while the correct answer, “which leads to”, is an instance of grammatical metaphor.

**Table 2**  
Criteria for developed reasonings.

simple	developed	well-developed
There is not a lot of food in Ethiopia	There is not a lot of food in Ethiopia <u>because</u> it is a poor country.	There is not a lot of food in Ethiopia <u>because</u> it is a poor country. <u>This causes</u> many to die <u>because</u> there are not any medicines.

However, they are not deployed in writing but in a digital quiz, with the main purpose of modelling logical connections.

In a similar exercise, relying on pen and paper rather than digital tools, the students are asked to elaborate clauses by using linking words. The first example eschews the disciplinary field of geography in favour of a more quotidian one, by asking students to elaborate why “dogs should not be allowed to poop outdoors”. The excerpt below shows how the teacher considers different options.

T: Maybe I can write like this: Dogs should not be allowed to poop outdoors which leads to dogs having to poop indoors. And that maybe, which leads to dogs having to learn how to use the toilet.

The logical metaphor “lead to” is a frequent option when the teacher models the use of logical connections, and it is an example of grammatical metaphor. It could potentially be useful for expressing causality when communicating disciplinary knowledge about living conditions, but it is ascribed a general and intrinsic value in this genre-based instructional process. The remaining clauses, which the students are asked to elaborate by themselves, are concerned with school matters similar to the model text about mobile phone use discussed above. Hence, the reliance on resources of everyday language and experiences persists throughout these phases of deconstruction and joint construction, while the technical terms has shifted from the field of geography to the metalanguage of genre-based pedagogy. Once again, the focus on knowledge about language seems misaligned with learning content knowledge about geography.

### 3.3. Preparation for individual construction

As initially stated, the instruction is cross-curricular as it incorporates goals related to Geography as well as Swedish as a Second Language. In the final phase of instruction, the students are required to use both disciplinary knowledge about maps and population and metalinguistic knowledge by producing texts which discuss advantages and disadvantages of moving to a selected country. The analysis cannot account for how the students accomplished this task but takes an interest in the support given by the teacher. While previous analyses has shown that the focus on knowledge about language did not seem to promote engagement with academic content knowledge, there are instances preceding the individual construction where the teacher models how the students should use linking words to elaborate their writing in the context of geography. One such instance occurs when the teacher presents assessment criteria for “developed reasoning” before introducing the model texts. She negotiates examples of “simple”, “developed” and “well-developed” reasoning together with the students, grounded in knowledge about living conditions in Ethiopia. The examples are shown below (Table 2).

These examples indeed employ logical connections, or “linking words”, to elaborate on living conditions. However, they seem unsatisfactory in the context of geography since they convey a simple and common-sensical, rather than informed, perspective of the topic. As such, it risks perpetuating a stereotypical view of life and people in Ethiopia and Africa as a whole. The well-developed example in Table 2 employs complex linking between

clauses and sentences, including the logical metaphor “causes”. This, however, hardly makes it coherent – the relation between poverty and deaths because of lack of medicines seems unclear, something which is also mildly called into question by the teacher – while the statement of “there are not many medicines” is highly contestable. Thus, it seems that the ambition to highlight the value “linking words” takes precedence over informed considerations of living conditions.

A similar occasion of modelling logical connections occurs just before the students’ individual construction:

T: Don’t write like this: It is hot in Afghanistan. What’s good is that it’s hot in Afghanistan. You must also give consequences. That is, what’s good? Explain why. What’s good about the heat? Well, because I might feel better in my body for example. I could, like, if you for example are sick and have something called rheumatic pains, then it’s good to be in the sun, because then it’s like good for the joints. But you could also think that it’s not so good to be exposed too much, you know that the rays of the sun can cause cancer, can’t they? So, there are both advantages and disadvantages.

This explanation touches upon two concepts explored in the initial knowledge-building phase: climate and living conditions. However, it does not elaborate on either in a technical sense. Rather, it is concerned with how a country’s climate may relate to diseases and the feelings of well-being. This is potentially an area for content knowledge in itself, but it relates very weakly to the instructional field previously negotiated. Thus, the tendency to foreground knowledge about language at the expense of field knowledge persists in this concluding phase of genre-based pedagogy.

## 4. Discussion and conclusions

This admittedly limited qualitative study contributes to the understanding of the role of knowledge about language in content learning by showing that explicit attention to linguistic features does not necessarily promote deeper engagement with disciplinary knowledge. Instead, it can lead to conflicting priorities in instruction which limits the possibilities for students to engage in disciplinary practices.

While technical and abstract terms are introduced and unpacked at an early point in the genre-based instructional process, they are not used in the phases of deconstruction and joint construction of texts. Instead of choosing texts which negotiate content knowledge about maps and populations, the teacher’s priority seems to be to model the genre structure of discussions and the use of internal logical connections to organise texts. A similar priority is apparent when the teacher models how other logical connections, including instances of grammatical metaphors, should be used for “developed reasoning”, as the resulting interactions and texts seems to trivialise or ignore the content area which is studied. In a stark contrast to the intentions of genre-based instruction, the teacher’s ambition to communicate knowledge about language seems to side-track the instruction from the relevant field knowledge rather than to scaffold disciplinary reasoning and argumentation. In other words, knowledge about language seems to be treated as the main goal of instruction rather than as resources for negotiating meanings in texts and engaging in disciplinary practices (cf. Moore et al., 2018).

Nevertheless, the teaching observed also shows qualities, such as using a variety of modes of instruction and unpackings – but not re-packings – of technical and abstract wordings in line with the findings of Martin (2013), Maton (2013) and Hipkiss (2014). Also, the criteria for how the students are supposed to organise their individual texts according to a rhetorical sandwich structure



are made very clear. This relates to the importance of *periodicity* in texts (see Martin, 1992, p. 456) and can be seen a feature of visible pedagogy (see Bernstein, 1990/2003; Bernstein, 2000). What is left largely ambiguous, however, is what counts as disciplinary knowledge about maps and population.

The tensions observed between priorities relating to disciplinary content and language use as the teacher sets out to integrate Swedish and Geography is in a way not surprising: the boundaries between the two subjects, or the *classification* of the curriculum area (cf. Bernstein, 2000), are ambiguous from the start. However, even from the more general perspective of writing pedagogy, it seems that much could be gained from employing the desired linguistic resources in discourse about living conditions and resource distribution, as a more meaningful context for deconstruction and joint construction of contrasting perspectives in argumentative texts. This would require the use of texts which adequately model the required registers. Such texts appear to be used in studies advocating scaffolding strategies (Gibbons, 2006a; Hammond & Gibbons, 2005; Martin & Rose, 2005; Martin, 2013; Nygård Larsson, 2018) including the unpacking and re-packing advocated by Martin (2013) and Maton (2013), but were largely lacking in the genre-based process I observed: the texts seemed to reflect the ambition to model selected features of language rather than the need to engage with field knowledge through language.

In previous research drawing upon genre theory in Sweden, the adoption of the word *genre* for describing Martin's staged, goal-oriented social processes (cf. Martin, 1992) has been contested. Nygård Larsson (2011), in a study of biology teaching in upper secondary school, prefers the term *text activity* (textaktivitet) (suggested by Holmberg, 2006) in order to stress them as processes integrated in, and necessitated by, the negotiation of disciplinary knowledge. This perspective is useful to accentuate that features of language, such as the "power triplet", only become powerful when they co-occur in meaningful and challenging disciplinary practices (as also argued by Martin, 2013). The present research has shown that placing a heavy emphasis on knowledge about language, such as genre structures and resources for creating logical relations, can side-track rather than scaffold the learning of academic content.

As for pedagogical implications, I would argue that the risk of misalignment between knowledge about language and content knowledge can be reduced by foregrounding the variable of *field* during all the phases of the teaching/learning cycle (TLC). If primacy is given to the technical/abstract language belonging to the relevant content area, and to texts which adequately model how it is used, the instruction is more likely to provide opportunities for engaging with academic content knowledge and learning about language in meaningful contexts.

## Conflicts of interest

None.

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