The Complexity of Assignment Design: Functional Dimensions and Semiotic Domains in Assignments Designed by Teachers in the NORM-project

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Abstract: Designing writing assignments for pupils is a complex task. The teacher must make a lot of choices regarding what type of text the pupils will write, what the purpose of the writing should be, which audience the texts should have etc. Although formulating assignments is important for writing instruction, there has been limited insight into teachers' choices regarding these aspects or the significance of the different school subjects when making such choices. We explore findings from a Norwegian intervention study on writing in primary school. The data includes 687 writing assignments designed by teachers for pupils in grades 3–7. Gee's concept of semiotic domains forms the theoretical scope. Our research question is: What opportunities and challenges arise in teachers' assignment design regarding different functional dimensions and semiotic domains? We show examples of how semiotic domains can collide, revealing how the combination of acts of writing, purpose and audience can lead to assignments that are almost impossible to answer in a good way. We visualize the complexity of assignment design in a model which is also transferable to other contexts of assignment design.

Keywords: semiotic domains, writing research, assignment design, literacy, school writing.

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1. Introduction

The writing researchers Ruth and Murphy (1988) have called writing assignments a springboard – an important starting point for the writer. Designing writing assignments for pupils is a complex task with many choices: what type of text to write, what the purpose should be, which topic, in which roles, to whom, how the framing of the writing situation should be described, how to introduce the assignment in the classroom, etc. Even minor changes to wording may have impact on how pupils write. Teachers' intentions for giving writing assignments can be of different kinds, for example to document what the pupils have learned, to stimulate the pupils to write about a topic or to get the pupils to develop as writers. Although formulating appropriate assignments is important for writing instruction, there has been limited insight into teachers' choices regarding these aspects or the significance of the different school subjects' traits and traditions when making such choices. This study aims to contribute to an understanding of the complexity of assignment design.

The Norwegian curriculum emphasizes writing as a key competency, writing for real purposes, audiences and the social situatedness of writing (cf. Barton, 2007; Prior, 2006; Gee, 2015; Smidt, 2002). The curriculum reflects two turns; 1) a turn from cognitive to functional approaches to writing, a turn that Berge et al. (2016) build upon when promoting a functional oriented model of writing – writing understood as culturally and individually purposeful acts of semiotic mediation, and 2) a turn from a genre-specific Norwegian curriculum (naming which genres pupils were supposed to write in school) to more overarching text labels and acts of writing (argumentative, explorative, descriptive, reflective, etc. texts). These changes were implemented in the Norwegian curriculum in 2006 and 2013 respectively, together with an understanding of writing as a *key competency*: "Every teacher, regardless of subject, is now responsible for the teaching of writing" (Berge et al., 2016, p. 9). This background has served as an important basis for our project.

This qualitative and empirical study explores findings from several published studies on writing assignments from the long-term Norwegian intervention study *Developing national standards for the assessment of writing: A tool for teaching and learning*, also known as the NORM-project (Berge et al., 2017; Matre et al., 2021).[1] The data in the project are extensive and include 687 writing assignments designed by teachers for pupils in grades 3–7 (age 8–11), in addition to 50 000 pupils' texts. Assignment design was proven to be a crucial dimension in the NORM-project. This article is a synthesis of findings from previous studies of the assignment data in the NORM-project, all published in Norwegian (Dagsland, 2018; Kvistad & Otnes, 2019; Matre et al., 2021, Otnes, 2015b). However, we also contribute with new findings and examples, especially regarding the paper's theoretical point of departure – Gees' (2002) concept of *semiotic domains*. Although our data is taken from a specific

project, our purpose is to thematize the complexity of assignment design more generally.

Our study uses a qualitative approach, not focusing on the quantitative aspects of the NORM-project (for this, see Berge et al, 2017; Berge & Skar, 2015). We aim to study different dimensions of assignment design that come into play in the project data. Our main research question is as follows: *What opportunities and challenges arise in teachers' assignment design regarding different functional dimensions and semiotic domains?* We have operationalised this question into two sub-questions concerning different aspects of assignments (See section 4). As the primary research question reveals, we will focus on assignment design regarding both functional dimensions and semiotic domains (Gee, 2008). Findings regarding semiotic domains, writer roles and audience in the assignment data are visualized in a model which could also be transferable to other contexts of assignment design – a model showing the complexity of assignment design.

2. Theoretical Framework

It has been argued that assignments may be considered as a separate genre (Swales, 1990; Ongstad, 1997), in the sense that genres are based on conventions and expectations. Although form and content may vary, depending on for instance school level and subject, a writing assignment is a phenomenon that in one way or another initiates the writing of a text. However, the writing assignments themselves also constitute texts, and writing researchers should study them as separate texts with their own content, format and purpose. The assignment designer is thus himself an author of a small but important text – where the pupils are the audience (Gardner, 2008; Otnes, 2015a). Designing assignments is "a particularly demanding form of writing" (Gardner, 2008, ix).

When approaching assignment design as a written text, Gee's concept of semiotic domains forms the theoretical scope of this study. One of Gee's (2008) definitions of a semiotic domain is "an area or set of activities where people think, act, and value in certain ways" (p. 19). In our study, we explore semiotic domains that come into play through teachers' assignment design. The domains and areas have their own "design grammar", certain ways of speaking, writing and acting (Gee, 2002; 2008). Barton (2007, p. 39) provided this elaboration on the concept of domains: "they give rise to different practices – meaning both the general social ways of acting and how people individually act on particular occasions." School subjects involve different semiotic domains, and learning a new domain is "almost always also an instance of acquiring a new language" (Gee, 2008, p. 141). However, Gee also specifies a bigger "school science" domain that involves institutional genres and practices. Gee says that school science's "design grammar is unlike any design grammar associated with any science outside of school" (p. 139). All assignments are part of a "school science" domain; they are being given in a

situational and cultural school context – understood as the "rules" of school writing. This includes what counts as good writing in terms of what you are allowed to write, how and for what purpose (Smidt, 2009). Teachers' assignment designs also reveal dimensions of different semiotic domains involved in school writing—institutional domains, disciplinary domains and semiotic domains connected to discourse communities outside of school. One dimension of this is that a school context almost always involves what we will refer to as a *double writing situation.* It is "double" because the teacher is almost always a reader, while the pupils may be led to write to an audience outside the social context of the physical classroom.

We see the semiotic domains involved in assignment design and school writing in relation to Barton's (2007) ecological metaphor:

> Different literacies are associated with different domains of life, such as home, school, church and work. There are different places in life where people act differently and use language differently. In the ecological metaphor there are ecological niches which sustain and nurture particular forms of literacy. (p. 39)

Writing assignments, like all texts and utterances, are always part of cultures of writing and larger ecologies (Smidt, 2009). Semiotic domains emerge within an ecology based on practices concerning "how to write" in this subject, in this context, in this classroom, etc. An ecological perspective could be somewhat wide and vague because of the complexity involved. An important reminder is highlighted by Smidt (2002): "Of course, however inclusive the perspective, no single study can focus simultaneously on all the actors, dialogues, and related activities in the ecology of the classroom" (p. 421). In our study, we focus on the actors and activities related to assignment design in the NORM-project, especially on the dimensions of assignment design captured by the scope of social semiotics, but not, for instance, how the assignments were realized or facilitated in the classroom context (see 4 for elaboration). Barton (2007) emphasizes the complexity and fluidity of concepts like domains, literacy, discourse, etc. when he points out that the ways researchers use these concepts are fluid: "The practices leak from one domain to the other and there is much overlap" (p. 40). A semiotic domain is networked with others in "a myriad of complex ways" (Gee, 2008, p. 47). Some domains can be precursors for others (in or out of school) or even collide with each other, especially in a school context. Because of the concept's flexibility, semiotic domain theory encapsulates complexity (Barton, 2007, p. 40).

When assignments are studied in contexts of intervention studies, the assignments are also parts of certain kinds of "project domains". In the NORM-project the teachers were to design assignments within the ecology of the intervention study. The NORM-project is based on a functional understanding of language and text, and the teachers were trained in this functional perspective. This

functional approach is based on the Wheel of Writing (Berge et al., 2016), a model (Fig. 1) that the teachers were instructed to use as their point of departure in their assignment design. The Wheel of Writing is a construct where writing is seen as an intentional activity centered on three core dimensions: acts of writing, purposes of writing and semiotic mediation. We will use and understand the model in two ways: 1) as a theoretical model that specifies how one can think about writing in a functional way and is essential to our understanding of writing as a concept; and 2) as an empirical document that was important in the ecology of the intervention study and the assignment design.

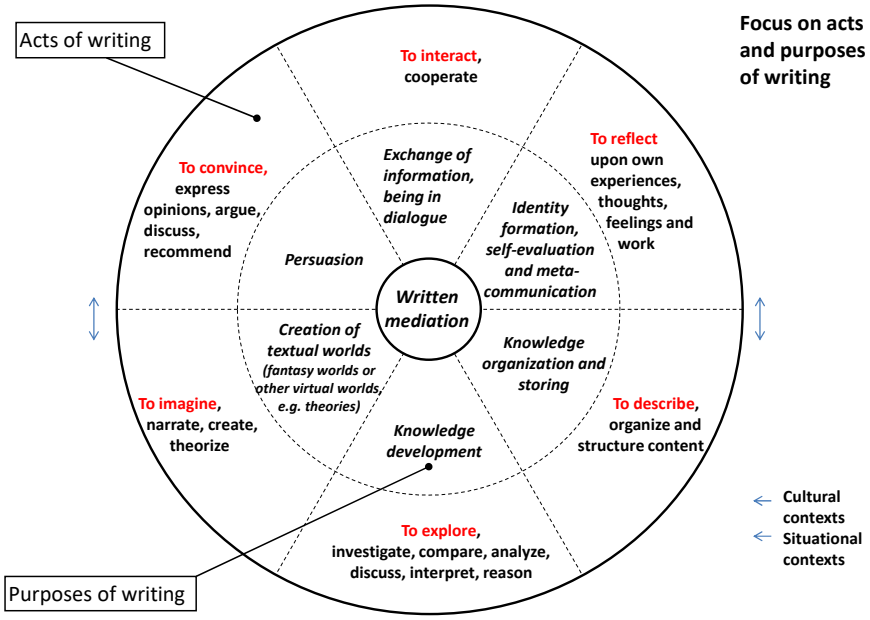

Figure 1. The Wheel of Writing (Berge et al., 2016).

The Wheel of Writing is "a tool for conceptualizing the complexity of writing in different cultural and situational contexts that constitute the arenas for writing in a society, including writing in different school subjects" (Berge et al., 2016, p. 1). Evensen (2010), in elaborating the background for the Wheel of Writing, points out that even though pupils and teachers only have access to a limited number of genres in a classroom context, they have access to the same purposes and acts of writing in which the larger culture of writing (writing in the "real" world) attend to. The six acts of writing are to reflect, to explore, to describe, to interact, to convince,

and to imagine. In the model, these are connected to six purposes of writing: identity formation, knowledge development, knowledge organization and storage, exchange of information, persuasion and creation of textual worlds. The assignments in the NORM-project ask for acts of writing, not understood as genres or mental processes, but understood as what you *do* in writing (Berge et al., 2016). The model is dynamic, and "turnable", meaning that different acts of writing can be combined with different purposes, and more than one act of writing can exist in the same text. For example, one could say that the act of reflecting in one domain does not necessarily overlap with what it might mean to reflect in another domain. The genres, domains, etc., are therefore situated "outside" the model as part of cultural and situational contexts.

3. Previous Studies on Writing and Assignment Design

Several projects and publications exist involving different dimensions of school writing in general and assignment design in particular, but there are few studies with a large amount of data. An important international study from the 1980s is the IEA project (*International Association for the Evaluation of Educational Achievement*), which examined writing instruction in 14 countries (Gorman et al., 1988). The assignments dealt with different domains and with different purposes and audiences (Vähäpassi, 1988). Also, a central part of the project was that the assignments asked for writing within a specific act of writing (e.g., narrative, descriptive, argumentative). Unlike the NORM-project, the assignments in the IEA project were designed by the researchers rather than by the teachers themselves. Our study, analysing assignments designed by teachers in twenty primary schools, aims to supplement the research on assignment design.

Regarding research on writing within different domains, Gee's empirical studies on video and computer games are relevant. Gee (2003) claims that games offer players an opportunity to learn a new domain and require them "to view the virtual world through the eyes and values of a distinctive identity" (p. 81). Håland (2013) is inspired by Gee's domain theory in her studies of writing in primary school. She explores how model texts can help pupils enter a subject domain with text conventions and professional language, and thus visualise the pupil as an "apprentice" (Gee, 2002, p. 2) and the teacher as a facilitator in activities that contain elements of the professional semiotic domain.

Furthermore, writing researchers have been concerned with various communicative dimensions in writing assignments, such as writer roles (Otnes, 2015b; Smidt, 2009) and audience (Kvistad & Otnes, 2019; Vähäpassi, 1988). These aspects are complex in the school context because school writing is often an ambiguous communication situation. Studies have revealed that different sets of text norms—those inside and those outside school—can collide (Berge, 1996; Karlsson, 1997). For example, the research literature refers to the teacher's dual role

as supervisor and grader (Berge, 1996). When young pupils and no grading or exams are involved, the question of "splitting" the audience is relevant in another way: The writing assignment asks the pupil to write for a given audience (who is not the teacher), while the pupil knows that it is the teacher who will read and comment on the text (Karlsson, 1997; Krogh & Hobel, 2012).

Several researchers have problematised the use of assignments in school that keep pupils within their leisure domain and their youthful way of communicating (Freedman & Pringle, 1989; Håland, 2016). Keech (1982) addresses the challenges of using friends as audience for pupils' writing and indicates that this often results in an informal and less well-articulated language. Pupils who are able to vary language for different audiences may actually be penalized for this in the assessment (p. 184).

Another recurring aspect in studies involving diverse writing situations in schools has been the concept of authenticity – and we see this as a central part of a functional understanding of writing. Guariento & Morley (2001) specify that one way to understand authenticity may be to think of assignments as authentic if they are linked to assignments in real life (Duke et al., 2006). Some researchers have claimed that there is no dichotomy between writing inside and outside school, but that there are degrees of authenticity from "classroom" to "real world" (Pinner, 2014). An intermediate variant discussed in several studies is a form of writing situation called *simulated* (Kohnen, 2013; Håland, 2013) or *almost authentic* (Kvistad & Otnes, 2019). In such writing assignments, potential readers are suggested, but the texts are not intended to be read by them. Finally, several studies have emphasized that authentic writing situations can of course be created through interaction in the classroom, and not just in situations outside of school (Ivani , 2004; Smidt, 2009). Smidt believes that the authentic social context of the classroom is often underestimated. He specifies that the idea that pupils should be given authentic writing assignments can lead them to think outside the social context in which they actually find themselves (p. 315). We adopt this latter understanding, which means that in our study, we treat assignments as authentic if the texts are actually meant to be read by the audience implied in the assignment formulation (Section 5.2), regardless of whether the audience is situated inside or outside the school context.

4. Method and Data Selection

The NORM-project is a long-term intervention study on writing education and assessment. The data material was obtained from 20 primary schools from different parts of the country (Berge et al, 2017). Developing a common understanding of writing and writing competence among teachers was a key point in the project as well as providing a systematic collection of pupils' texts and teacher assessments. The data consists of more than 50 000 texts and a big amount of quantitative data on the teachers' assessments at several points during the intervention period (Matre et al., 2021; Berge et al., 2017). The teachers' writing assignments were supposed to

be an important part of the process and gradually also proved to be crucial data. Pupils from grades 3, 4, 6, and 7 (age 8 to 11) wrote texts based on writing assignments designed by their teachers – about topics from their regular curriculum. The teachers were asked to design writing assignments using the Wheel of Writing as their point of departure. They were schooled in a functional approach, and they were given the resources they should use in their assignment design, but how they used these resources, and to what extent, was up to them. They were asked to make one assignment from each of the six acts of writing within each year of the intervention (a total of 12 writing assignments over two years), and to integrate them in their local instruction plan. The teachers could decide themselves in what order the different acts of writing should be integrated into the six assignments and which subjects they wanted their assignments to be designed for. For many teachers in the NORM-project, the functional approach, as visualized in Wheel of writing, was unfamiliar. Thus, the teachers were offered some supervision on their assignment drafts (Matre et al., 2021).

Along with the pupils' texts, 687 assignments[2] were collected via forms submitted by the teachers. Adding to the assignment as such, the teachers were asked to enter other information about the writing situation and the assignment in this form (e.g. school subject, writing purpose, audience). In this paper, it is primarily the written assignment formulations that constitute the empirical data. However, we have included information from the forms, such as the subject, audience and other contextual information.

As already mentioned, our main research question is: What opportunities and challenges arise in teachers' assignment design regarding different functional dimensions and semiotic domains? In order to answer this question, we have created two sub-questions (SQ):

> SQ1. Which patterns and tendencies emerge when teachers design assignments in different subjects and acts of writing?
>
> SQ2. How do teachers design contextual frames in writing assignments?

Our study has a qualitative approach in the sense that we are examining different aspects of the written assignments given in various contexts of school writing. A limitation in this regard is that we study the assignments (and forms with information about the context) in themselves, and not how they were realized in the classroom or how the pupils wrote in answering them. First, the choices teachers make regarding different acts of writing and subjects are investigated in relation to emerging and colliding semiotic domains (SQ1). SQ1 is intended to reveal the teachers' understanding of the subjects' semiotic domains, acts of writing and assignment design practices in the ecology of the NORM-project. Next, contextual framings given in the assignments, such as writer roles and recipients, are explored (SQ2). The categories used in SQ1–2 are both deductive and inductive.

The acts of writing are theory driven categories – but nuanced and problematised through the analysis. For example, an assignment is marked as a reflective assignment if the assignment design asks for reflection. Which subject an assignment is related to is a more challenging question – there was not necessarily correspondence between the assignments' topics and the teachers' annotated school subject (see 5.1 for elaboration and examples). The writer roles and categories of audience have arisen after many close readings of the material. The analytical approaches are further explained in Section 5, where we will elaborate on some of the categories and analytical approaches, especially in cases where an assignment could be placed in several categories (revealing continuums between categories).

5. Analysis and Results

In 5.1 we explore the distribution of subjects and acts of writing in the assignments (SQ1) and in 5.2 the design of various contextual frames (SQ2). These aspects will be addressed in relation to semiotic domains, whereby these aspects combined will reveal the complexity of assignment design in general and in an intervention study in particular.

5.1 School Subjects, Acts of Writing, and Semiotic Domains

In this section, we show how the assignments were distributed between school subjects and acts of writing. SQ1 is intended to reveal the teachers' understanding of the six acts of writing, their understanding of the subjects' semiotic domains and assignment design practices in the ecology of the NORM-project.

Subjects and semiotic domains

Initially we mapped the subjects in which the teachers *chose* to design and give their assignments and which acts of writing they chose for which assignments (Table 1)[3].

Table 1 shows that L1 is the school subject with the most writing assignments (26%), Science is second (17%), followed by Social Studies (16%) and Religion, Philosophies of Life and Ethics (RLE, 9%), while writing assignments in Mathematics total 5%. As in Mathematics, writing assignments in the aesthetic subjects are a rarity in the NORM material. For example, writing assignments in Physical Education, Mathematics, Arts and Crafts, Music, English[4] and Food and Health constitute 10.3% of the material (Dagsland, 2018). Dagsland (2018) specifies that these subjects may have weaker traditions in explicit writing education than the subjects with the most assignments. Maybe these are subjects where the design grammar of "how to write" within the semiotic domains is more or less tacit for the teachers (and pupils) involved—they may not think about Physical Education, Mathematics Arts and

Crafts, Music, English and Food and Health as writing subjects to the same extent as in L1, RLE, Science and Social Studies.

Table 1. The distribution of writing assignments in different school subjects (Dagsland, 2018)

School subjects	Writing assignments	Writing assignments (%)
Norwegian (L1)	181	26%
Science	119	17%
Social Science	107	16%
Religion, Philosophies of Life and Ethics (RLE)	62	9%
Mathematics	34	5%
Arts and Crafts	18	3%
Physical Education	14	2%
Food and Health	7	1%
Knowledge Promotion Reform (Core Curriculum)[4]	5	0,7%
English	3	0,4%
"Subject /topic"	1	0,2%
No school subject specified	93	14%
Multiple subjects specified	43	6%
Total	687	

The first pattern found in the data, is how the assignments are related to specific disciplinary topics within school subjects, and thereby to disciplinary domains; for instance, this assignment is related to the semiotic domain of Science:

> You are going to explain how to make charcoal to a pupil in grade 6.

The pupils produced their own charcoal and were given the assignment of explaining how to do it to pupils in the grade below them. Explanations, instructions, or descriptions of what happened in experiments (science reports), etc. are common assignments in Science (Lykknes, 2015) and an important part of the semiotic domains and design grammar in science subjects. There are many similar assignments, where the assignment is connected to different disciplinary domains – reflecting aspects of the design grammar related to the subject at hand. Although the charcoal making had been taking place in Science, the writing assignment was however presented to the pupils in L1, and the texts produced were to be put "into the L1 binder". In Table 1, the assignments are categorized based on the subjects in which they are given, which means that the charcoal-example is categorized under L1. Even though this is a good example of an assignment encapsulating a semiotic domain of Science, it also reflects a general tendency

(across school subjects) in the data: the activity of writing is often understood (by teachers and pupils) as something connected to L1. An alternative interpretation is that the teachers thought of the NORM-project (as a whole) as especially connected to L1. An example that supports this, is how pupils, in interviews about writing in Mathematics, described the assignments in Mathematics as "weird" or "strange" and said that "it [felt] more like an L1 assignment" because of the activity of writing (Dagsland, 2018). In Mathematics, Iversen (2014) characterises *traditional* writing assignments as assignments where the pupils are asked to do different kinds of computations (through numbers, symbols, etc.), while assignments where pupils are meant to answer through verbal language are characterised as more *untraditional*. There are no such traditional assignments in Mathematics in the NORM data, and the teachers designed assignments where the pupils needed to give an answer through verbal language. A possible explanation for these patterns is that even though explanations, descriptions, instructions, etc. are connected to a subject's semiotic domain (for instance Math), this connection is not always clear to the teachers designing them or to the pupils answering them.

The second pattern that emerged, in extension to the above, was that in 20% (136) of the assignments in the NORM material, "L1" was registered by the teachers as one of two subjects. See three examples in Table 2. Table 2 shows some examples of assignments that were given in the assignments' subject matter (Science, Social Science etc., cf. Table 1), but where the teachers also added "L1" as an additional subject in the assignment form.

Table 2. Examples of assignments with L1 as one of the two subjects

1	Grade 7 Subjects: 'Social Studies, L1'	Write a text in which you give an overview of the seven continents of the world and the oceans around them. Imagine that you are writing for 6th graders.
2	Grade 7 Subjects: 'Mathematics, L1'	A sheet of paper measuring 36 cm wide and 42 cm long has a square measuring 6 cm by 6 cm in each corner. The sheet is then folded to form a box and taped together in the corners. What is the surface area of the box, and how do you calculate it? What is the difference between surface and volume? Write a text in which you explain your calculation of the surface area and the volume, and the difference between these, to a 6th or 7th grader who does not understand it. Use the drawing to aid your explanation. You can make the box if you wish.
3	Grade 4 Subjects: 'Science, L1'	Today was Science Day. You made four different paper planes. You did some research and discovered which plane flies farthest. You wrote this down in a table. Now you must write a report about this experiment. You must describe what you did and what you discovered. You must also write why you think the best plane flew farthest. Take the writing frame as your starting point for writing the report.

Note: In Table 1, we have sorted writing assignments that are specified as 'Social Studies, Norwegian (L1)' (the two subjects specified by the teachers) in the Social Studies category, writing assignments that are specified as 'Mathematics, Norwegian (L1)' in the Mathematics category, etc., because it was in these subjects the assignments were presented to the pupils.

These assignments, and the 136 assignments they represent, were not given in L1 (as the charcoal-example was). They were presented in the school subject of the assignment's subject matter content (Social Studies, Mathematics and Science). Therefore, these assignments are categorized as Social Science, Mathematics and Science categories in Table 1. The assignments are connected to semiotic domains of Social Studies (Example 1), Mathematics (Example 2), Science (Example 3), etc. Still, the teachers add L1 as one of the subjects relevant for the assignments. As highlighted above, the teachers may see *the activity of writing* as connected to a L1-domain, whereas the subject matter is connected to other subjects. Writing assignments linked to L1 constitute 46%, either with L1 as a sole specification of school subject (26% - Table 1) or with L1 as a "school subject number two" (20%). L1 is therefore *the* writing subject, although the intervention study's training in a functional approach emphasizes that every teacher is a writing teacher.

A third pattern in the data is related to assignments given in L1: It seems that it is of minor interest *what* the pupils write about as long as they write about *something.* There is no lack of disciplinary assignments in the NORM material, but these were mostly given in school subjects other than L1 (although, as pointed out above, many of these had marked L1 as 'subject number two' in the form). This pattern reveals the following challenge regarding assignment design: what is disciplinary writing in L1? If the writing assignments in the NORM-project were given the authority to specify relevant topics to write about in L1, these topics would be class trips, class environment, arguments for and against pets/homework, rules for interacting with other pupils, ethical problems, writing letters, etc. (Dagsland, 2018).

The findings above are supported by a fourth finding: the lack of multimodal texts in the material. There is a predominance of assignments where writing is understood as verbal language and not as a means of communicating through other semiotic resources (example 2 in Table 2 is an exception) — reflecting semiotic domains with a somewhat traditional view of writing.

Acts of Writing and Semiotic Domains

As mentioned, each year of the intervention, the teachers were asked to design six assignments, one for each act of writing. Table 3 shows the distribution of acts of writing across the subjects.

Table 3. Distribution of writing assignments by subject and act of writing (Dagsland, 2018)

	To convince	To reflect	To explore	To interact	To imagine	To describe	No act of writing specified	Total
Norwegian (L1)	42	18	14	41	49	14	3	181
Science	9	9	41	4	15	37	4	119
Social Studies	21	14	15	12	28	14	3	107
Religion, Philosophies of Life and Ethics (RLE)	1	31	5	10	7	6	2	62
Mathematics	0	1	11	2	0	15	5	34
Arts and Crafts	2	2	0	0	0	11	3	18
Physical Education	1	4	0	1	0	6	2	14
Food and Health	2	1	1	0	0	2	1	7
Knowledge Promotion Reform (Core Curriculum)[3]	0	2	0	1	0	1	1	5
English	0	0	0	3	0	0	0	3
No school subject specified	26	20	7	13	10	8	10	93
Multiple subjects specified	-	-	-	-	-	-		43
Total	104	102	94	87	109	114	34	687

In L1, the most frequent acts of writing are to convince (42), to interact (41) and imagine (49), while to reflect (18), to explore (14) and to describe (14) are used least. However, in Mathematics and Science, there is a predominant percentage of descriptive and explorative writing, while approximately 50% of the assignments given in RLE (31 assignments) are reflective ones. This can explain what the teachers interpret as important acts of writing in the subjects' semiotic domains. None of the assignments given in Mathematics were given "to convince", which is interesting if we understand Mathematics as a semiotic domain associated with submission of evidence. Nevertheless, it is uncertain that the school subject (school Mathematics as a semiotic domain) has equally strong traditions in the submission of evidence as does, for instance, Mathematics as a scientific domain (Dagsland, 2018; Morgan, 1998; Iversen, 2014). A semiotic domain emerging in RLE is connected to reflecting upon ethical dilemmas, etc. Thus, RLE is the subject that has the most reflective assignments in the material, although a study (Jørgensen, 2015) shows a lack of assignments asking about reflections on disciplinary topics beyond ethical dilemmas (the topic "philosophy and ethics" is the smallest part of the curriculum

in RLE). In Social Studies, the distribution is more scattered, although there is a predominant percentage of assignments asking pupils to convince someone or to imagine something. Another interesting finding is that there are connections between some acts of writing and genres. Thus, the teachers may conflate purposes or acts of writing with genres in some cases. For example, there are several assignments asking for letters, journal entries or travelogues that are designed with "to describe" as a starting point. Assignments that ask for letters constitute 15.5% of the material (106 assignments), and a predominance of the assignments designed from "to interact" are letters.

Dagsland (2018) found that the participating teachers did not make extensive use of the *turnability* of the wheel. The assignments were designed from the Wheel of Writing's default position when it came to the assignments' combinations of act and purpose of writing (Fig. 1). This evokes a discussion of genres. The wheel is neither genre-specific nor has genres as a theoretical point of departure (Berge et al., 2016). Nevertheless, in the ecology of the intervention, "to write reflectively", "to write exploratively", etc. in this sense became types of social genres of writing within the classrooms (Dagsland, 2018). They became genre-like formats in the ecology of the intervention, maybe because the teachers conflate acts of writing with a genre-like format. An example: The reflective writing in the material is characterised by personal texts, while reflections on disciplinary topics are underrepresented. Based on the Wheel of Writing's default position, the teachers design the reflective assignments' purpose of writing as to reflect upon *oneself* (the purpose 'identity formation'), and not "knowledge development" (which in the default position is connected to "to explore"). In Mathematics and Science, it is relevant to reflect on disciplinary topics, but it may not be relevant to reflect on something in a context where the "how-to-write-reflectively-genre" (the design grammar regarding reflective assignments) is primarily associated with personal writing.

Some assignments involve several colliding domains and directives, for instance, two examples from Social Studies (1) and Science (2) (Table 4).

Table 4. Examples of assignments with colliding directives

1	Grade 4, Social Studies The teacher's comment in the form: 'To reflect. Self-reflection. By "imagining themselves" living other people's lives, the pupils will be made to think about their own lives.'	Imagine that you are the boy in the picture in Gaia (page 162 in the Social Studies textbook). You live in the Bronze Age. Tell a 10-year-old living in 2014 about your life and what you do each day. Also tell them about your family and where you live.
2	Grade 4, Science, L1 The teacher's comment in the form: 'To reflect. To be able to use technical terms and new knowledge about a subject.'	Reflect on/imagine that you are going to travel by spaceship into space. What do you see? What do you experience? Does anything happen? What do the other planets look like? What is the temperature? Do you land somewhere (planet names, temperature, other stars, the sun)?

Both are examples of assignments with colliding writing directives domains, and acts of writing. Both assignments are named as reflective on the teacher's forms, but the writing instructions do not necessarily ask for reflection. The series of questions asked in Example 2 point in different directions and could confuse pupils who are trying to understand what kind of text the teacher is asking for and what elements should be emphasized. "Does anything happen?" and "What do the other planets look like?" could result in different texts, either fictional or more disciplinary ones, and neither are likely to be reflective. Therefore, the assignments do not specify what kind of text must be written: is it a fictional story (from the Bronze Age or from a journey in space) or a text where you are going to document what you learned about a disciplinary content (the Bronze Age or the universe)? These possibilities are open to interpretation, even though they can overlap (for instance thematising disciplinary content through storytelling). In an L1 context, to write a story is a long-established and typical school genre (a practice within the L1 school writing domain), and many of the assignments in the material (across subjects) have aspects of story-writing instructions. The verb "to tell" is used in several of these assignments. This well-known genre (storytelling) could pose challenges for the pupils, especially considering the teachers' disciplinary intentions for the same assignments. A narrative structure could help pupils organise their knowledge, but the balance between these possibilities could be challenging for both teachers and pupils.

Across all school subjects in our data, 90% of the assignments designed from "to imagine" involve some kind of story writing. The disciplinary intentions in these assignments are often to use concepts from the discipline (planet names, ability to use technical terms, etc.), but the genre of storytelling is not necessarily disciplinarily relevant (or what the teacher wants) if the answer to "does anything happen?" (Example 2) is an invasion from outer space. More specific writing instructions and clarifying and working on the balance between the opportunities given in the assignments could be relevant in these cases.

The final finding we will emphasize in 5.1., is related to the *explorative* assignments. There are certain challenges associated with the design grammar of explorative writing. The Wheel of Writing specifies that an explorative text is about something new and previously unexplored (Berge et al., 2016). The following assignment is characterised by the teachers as an explorative assignment:

> We have now carried out the experiment "the tea bag". Explain what happened and why it happened to a pupil in grade 4. Draw an illustration that matches the experiment.

This is a typical formulation in several assignments in the data registered by the teachers as explorative. It is intended as an explorative assignment, but we may ask:

Is it rather a descriptive one? To explore something through writing proves to be challenging when it comes to assignment design. The explorative assignments (as in the example above) show a grey area between descriptive and explorative assignments and texts, where the intended explorative assignments often ask for descriptions, while the explorative dimensions of the assignment are often placed in the process *before* the writing and not as something you do *in* writing (an act of writing) (Dagsland, 2018; 2019). In the teachers' assignments, tension arises between the explorative text as a textual product (to explore as an act of writing) and the explorative process: explorative writing is (mis)conceptualised as the writing one does *after* explorative activities. By comparison, the following assignment is characterised as descriptive:

> Your class conducted a science experiment about the characteristics of iron. Several pupils were absent. You are going to describe what we did and explain what happened.

In the semiotic domain of school writing in general, it is common for pupils to write descriptively about a subject to show the teacher what they know. But (maybe) these are assignments that ask for a description of a process (such as a science report) rather than an enquiry into something unknown.

5.2 Designing Contextual Frames for Various Writing Situations and Semiotic Domains

In this section, we approach our second subquestion concerning how the teachers frame writing situations in their assignments and how these contextual frames are connected to different semiotic domains inside and outside school.

The teachers in the NORM-project were not given instructions on how long or detailed the assignment formulations should be or how extensive the framing of the writing directives should be. Thus, the assignments show an interesting variation regarding the degree of details in the framing (Table 5).

The table shows that there are examples of assignments with low, medium and high "information load" (cf. Brossel, 1983). Some of the assignments have only a writing directive (without any framing) (1). Some have a small amount of information, either a contextual framing (2, 3) or some supportive questions or elaborations (4). Some have a more comprehensive framing (5); some are even based on a text the pupil must read first (6). It is probably unnecessary to establish a full rhetorical context for all writing assignments. Sometimes a brief writing directive is enough. There are even writing assignments that do not include writing directives but only state a topic or ask a question. In such assignments, the pupils are invited to define genres, acts of writing and contextual framings themselves. Our material contains a few examples of such assignments, although the teachers in the project were asked to include an act of writing in the assignments.[5]

Table 5. Various degrees of framing of the writing directives. (Green font = the actual writing directive)

No framing	1.	Write a text in which you explore what is meant by the expression 'typically Norwegian.'
Basic framing	2.	We will soon celebrate Constitution Day and the 200th anniversary of our Constitution. Reflect on how the Constitution affects you in your life.
	3.	The natural philosopher Giordiano Bruno was imprisoned for saying something he was not allowed to say, but which he knew was correct. Imagine you are Giordiano Bruno and write a page in your diary where you reflect on the reasons why you were thrown into jail.
	4.	Reflect on your relationship to diet and physical activity. Why are they important/not important to you?
More comprehensive framing	5.	Imagine that you are with Hiam on her journey to Syria. You see with your own eyes what war can do to a country and the people who live there. You also talk to children of your own age and hear their stories. You have now received a letter from your family in Norway. They ask about the situation in Syria, how the people are living and about your experience of being in a country at war. Write a letter back to your family trying to answer their questions.
	6.	Take the multimodal text your group has created as your starting point. Select one or more of the pictures or sounds you chose, which you think fit particularly well with the poem, and write a text in which you reflect on the choices you made here, and why you are happy.

In the following analysis of the framing of the writing instructions, we will focus on two functional dimensions: *the writer roles* the pupils were positioned in and *the audience* mentioned in the assignments.

Writer Roles

Analysing the *writer roles* that pupils are positioned in through writing assignments involves examining the positions and perspectives that pupils are asked to take in the writing process (Otnes, 2015b). We have used the concept of *role* because it is mostly a question of static characters or culturally determined roles that the pupils are meant to act through (cf. Smidt, 2009). In some writing situations, it will be the pupils themselves who choose to explore different roles. However, we want to emphasize that in our context – assignment design – the concept of *role* is used to refer to something in which the teacher positions the pupils.

In an initial round of coding, a vague dichotomy emerged between the roles the pupils were assigned to: whether the pupils were to be themselves or whether they were asked to take on the role of another and simulate "membership" in a semiotic domain. However, the various writer roles may appear more as a continuum than a dichotomy, and there may be an overlap between the roles (Fig. 2). We will comment on the different categories below.

The writer roles are more or less explicitly expressed in the assignments. For example, in the assignments where the pupil is simply meant to be a pupil showing what he has learned, the writer role is rarely mentioned explicitly in the assignment. The pupil's role is taken for granted within this school domain (column 1). This is also the case when pupils are invited to write texts based on their own experiences of less academic topics.

BEING ONESELF ←		**TAKING A ROLE** →		
As a pupil ...who writes to the teacher to learn and to document what he or she has learned	As an individual ...who conveys information and opinions about their own life, personal interests or current topics in the society	As a citizen ...who is a socially engaged writer outside the school context	As a professional ...who explains something to someone who does not have as much professional knowledge	As another person in a different context ...who empathises with that person's life situation and feelings and who writes texts based on this
Write a text in which you describe and explore the differences between the ways of life in two countries (Describe, grade 6)	*Your municipality is considering introducing a one-hour longer school day two days a week. This means that you may do all your homework while at school. Write your opinion to the municipality where you argue for and against this solution. (Convince, grade 6)*	*You are going to give a speech to world leaders at the UN. You are going to try to convince leaders to invest more in renewable energy sources. (Convince, grade 7)*	*You work as a miner in the silver mines at Kongsberg. Write a letter to your family in which you tell them about your job and how you feel. (Interact, grade 7)*	*Imagine that you are a slave who has lived for a long time in the West Indies. You suddenly meet your grandchild for the first time. Tell your grandchild what your life has been like. (Imagine, grade 7)*

Figure 2. Categories of writer roles, with examples from each category

They are supposed to write as individuals—and not primarily as pupils – about their own lives, families, interests, community involvement, etc. (column 2).

These assignments may cover different domains inside or outside school, but not the typical disciplinary semiotic domains. For instance, the data contains assignments where pupils are asked to write about their "experiences with…", "expectations of…", "opinions about…", "interests in…", etc. Such assignments position the pupil as "an expert" on certain topics of which the teacher simply does not have knowledge or know the right answer (Gardner, 2008). In assignments that focus on pupils' opinions and their argumentation for or against, there is a smooth transition, along the continuum, from being a citizen based on one's own experiences as a child (column 2) to taking on the role of an adult or a more competent citizen (column 3).

When it comes to the first two categories under "Taking on a role", the pupils are supposed to master a semiotic domain "even if only as a beginner or apprentice" (Gee, 2002, p. 2) and take the perspective of "a more advanced person" (Gee, 2002, p. 5). In several of the assignments in which the pupil is positioned as a citizen, it is often implied as an adult, established citizen (as a speaker, a politician, a newspaper commentator). Such active roles in different societal domains – and the competence they require – have been given various names in the literature,

such as "democratic citizenship" (Berge & Stray, 2012) and "community literacy" (Flower, 2008), and have also been incorporated into school curricula in Norway.

In the next category (column 4) pupils are meant to take on the role of a *professional*, for instance, a journalist, biologist or historian (cf. Håland, 2013). In such assignments, the pupil is given the role of an expert, a more advanced person within a semiotic domain. We have only found a miner, an astronaut and a fairytale writer represented in our data; professions that are not very relevant as models for pupils' professional writing. In this category, we might also include assignments asking the pupils to explain something academic to someone with less knowledge (often a younger pupil). However, in doing so, they do not take on a role; they are expert pupils (professionals) writing to less knowledgeable – "less advanced" (Gee, 2002) – fellow pupils. In this way, the teachers position their pupils in situations with a relevant authentic audience while at the same time they have the pupils' subject knowledge documented. As we see once again, there are no strict boundaries between the categories.

The last column (5) includes a type of assignment that makes up a large proportion of the material, where the pupils are asked to take on a role *as another person in a different context* and try to understand the person's life situation and show empathy for the person's feelings. For example, they are asked to imagine being a refugee child, a street child, a Viking child or a Sami child. Furthermore, some assignments positioned the children as a survivor of the Black Death, a slave on a slave ship, someone who is being persecuted in the Roman Empire or one of the shepherds in the field in Bethlehem. Last, some pupils were asked to take on the role of a famous person, such as Anne Frank, Louis XIV or Wolfgang Mozart. Here, they must imagine unfamiliar domains, domains in which they will never act or need to master the design grammar. However, they should acquire enough knowledge about the historical period to demonstrate understanding and empathy. The "imagine that you are …" assignments are most frequent in Social Studies. Empathy is a concept that is central to the discipline of history and is seen by some as a prerequisite for historical awareness (Hatlen 2020; Endacott & Brooks, 2013). The pupil learns to understand another person's position and situation based on the person's choices, values and ways of thinking. It probably varies, however, whether the assignments in our data are genuine attempts to train pupils' empathic ability or whether they represent a way of creating imaginative assignments, i.e. a result of the guidelines for assignment design in the NORM-project intervention.

The assignment designers have in this way tried to position the pupils in different situations, more or less authentic or simulated, to train them within different domains. In all writing events, the pupils are, of course, still pupils. We will return to this double writing situation in school writing in the following.

Audience

The project's research design called for the pupils' texts to serve a purpose. During the training of teachers, this was often solved by including an explicit *audience* (*readers*) in the assignments, as the teachers probably found it easier to specify an audience than to formulate a clear purpose. The assignments that have a clearly expressed audience have been examined with different approaches. In a previous study, we have investigated whether assignments invite pupils to write to known or unknown readers (Kvistad & Otnes, 2019). The findings showed that the youngest pupils (grades 3 and 4) were rarely asked to write to an unknown audience. They mainly wrote to people in their immediate sphere, such as family, friends and others at school. The older pupils (grades 6 and 7) were given a few more assignments that were aimed at completely or fairly unknown readers in the public sphere (e.g. readers of magazines or letters to public figures and organizations).

The *types* of readers mentioned in the assignments were analysed to determine whether the pupils were invited to write to a real or fictitious audience (Kvistad & Otnes, 2019) in more or less authentic contexts and domains.

REAL AUDIENCE ←		**FICTITIOUS AUDIENCE** →	
Authentic audience	Almost authentic audience	Audience in simulated situations	Imaginary characters
Write a text with the heading 'From a maggot to a fly.' You must use what you have learned to explain what has happened. You should present your text to your parents. The contact teachers who were not involved in the preparation should also read the text. (Explore, grade 3)	*You were disappointed that Malala Youzafzai did not win the peace prize this year. Write a letter to the Nobel Committee in which you try to convince them that she must be awarded the peace prize next year. (Convince, grade 7)*	*Imagine that you and your family have fled from a country to Norway. Write a letter to your grandparents or a friend in the country you come from and tell them what it is like in Norway. (Imagine, grade 7)*	*Tuku and Taka in the country of Fictive do not know what division and multiplication are. Explain what multiplication is and what division is so that Tuku and Taka understand why you use multiplication and division in your life. (Describe, grade 6)*

Figure 3. Categories of audience with examples from each category.

The findings showed that there is a continuum from *authentic audience* (someone who will actually read the text, e.g., "your parents") to *imaginary characters* (e.g. an alien) in the material. Figure 3 shows examples of the different types of audience.

Two intermediate variants have been identified: *almost authentic audience* and audience *in simulated situations.* Almost authentic audience is defined as readers

who actually exist in the community around the pupils (inside or outside the school) and who could potentially be readers of the texts but are unlikely to actually read them. Audience in simulated situations are readers who cannot be said to be imaginary characters, but they are part of a fictional situation (where the writer himself must take on a role).

Other studies have found that the teacher is the most common audience of pupils' texts (Applebee & Langer, 2011), and this is also the case for the material in the NORM-project. However, the teacher can be a reader in various ways (Fig. 4).

The teacher as a supervisor or an assessor (traditional 'school assignments')	**The teacher as a real communication partner** (often in a non-academic context)	**The teacher as the actual reader in a double writing situation** (with a fictitious or almost authentic audience given in the assignment)
E.g. when pupils are asked to write facts about a planet or an animal.	E.g. when pupils are asked to write to the teacher to make suggestions for activities the class should do.	E.g. when pupils are given an assignment where they have to imagine getting a new classmate, and having to explain something to him/her.

Figure 4. The teacher´s different roles as a reader.

The teacher *as a supervisor or an assessor* is common in typical "school assignments" asking for facts about a planet or an animal – and which only the teacher is meant to read. This is most often not explicitly expressed in the assignment. However, "Teacher" is sometimes listed as the audience on the forms the teachers submitted to the researchers. When the teacher is *a real communication partner,* it is clearly expressed that the teacher will read the text – and the assignment often has a clear purpose – e.g. to make suggestions for activities the class should do. When the teacher is *the actual reader in a double writing situation,* it means that in addition to a fictitious or almost authentic audience, these assignments have an implicit reader who will always be present: the teacher. This double writing situation is a part of the conventions for school writing, and perhaps one of the most obvious characteristics of writing within the school domain. The simulated situations in these assignments can lead writers into other domains. Thus, the school domain often conflicts with other domains, as in the following examples:

> Ex. 1: You have received a friend request on Facebook from a former classmate. You want to know more about him, and get in touch to chat. Write a chat post where you try to get to know this person again. Tell him about yourself and ask questions so that you get answers to what you are

> wondering about him (for example: what does he do in his spare time? What does he think about starting secondary school?). The text must fill an A4 page (*Grade 7, to interact*).
>
> Ex. 2: You are sitting in a park with your laptop when a Stone Age man approaches you and wonders what you are doing. Describe what a computer is and what it can be used for. Tell him what you can do on the internet. (*Grade 4, to describe)*

In Example 1, the pupils are asked to write to a person in a simulated situation (a former classmate). The genre of Facebook chat is not a school genre but connected to a semiotic domain outside of school – the topic to be written about is personal and non-professional. At the same time as the pupils must write an (informal) text to a peer, they must consider that what they write must be accepted by an adult authority figure (i.e. the teacher), with the limitations this entails regarding style and content. In other words, the double writing situation makes the assignment complex. Hence, the pupils have to choose between writing a text that fits the school domain and a text that appears authentic within their leisure domain.

It can be even more complicated when the simulated situation sets the school domain up against domains that are unknown to the pupils, as in Example 2. In this assignment, pupils are asked to describe something to a fictional audience (a person from the Stone Age). Describing a computer and its technical possibilities fits into a school writing domain, with textbook texts as an example of relevant model texts. Hence, the audience makes this type of writing unfit, because pupils must write within an unknown domain (communication with people from the distant past). Occasionally, an assignment that specifies an audience can backfire, according to Keech (1982). In other words, instead of creating a clear purpose for writing, the audience can make the writing assignment unnecessarily complicated. Smith & Swain (2011, p. 13) advises teachers to be as straightforward as possible in specifying the audience for a particular assignment and to rein in attempts to be overly clever.

When studying the roles of writers and readers as a whole, the material contains certain combinations of actors. When pupils write as themselves, they usually write to their teachers or others in their immediate sphere and within authentic situations. When pupils take on a role, they often write to a fictitious audience or an almost authentic audience. These findings are not surprising, since the writing in the latter is already set to a simulated situation. Regardless of constructed situations, roles and audience, the actors will always be present in their primary roles as *pupils* and *teachers*.

6. Discussion: The Complexity of Assignment Design

This study has aimed to gather perspectives on assignment design and examine the NORM-project's writing assignments through different lenses. The concept of semiotic domains has been a unifying concept. *Functional dimensions* such as acts of writing, writer roles and audience have formed key categories. Through our analyses, we have demonstrated different dimensions – not least the complexity – in assignment design. We visualise this complexity in a model based on our findings (Figure 5), a model which could also be transferable to other contexts of assignment design. In the discussion, we will emphasize dimensions of such complexity in general and the opportunities and challenges connected to the assignment design in the NORM-project in particular. In the following, we will explain the model based on our findings and focus our discussion on the three main parts of it: *semiotic domains* (blue circles), *writer roles* (green) and *audience* (yellow).

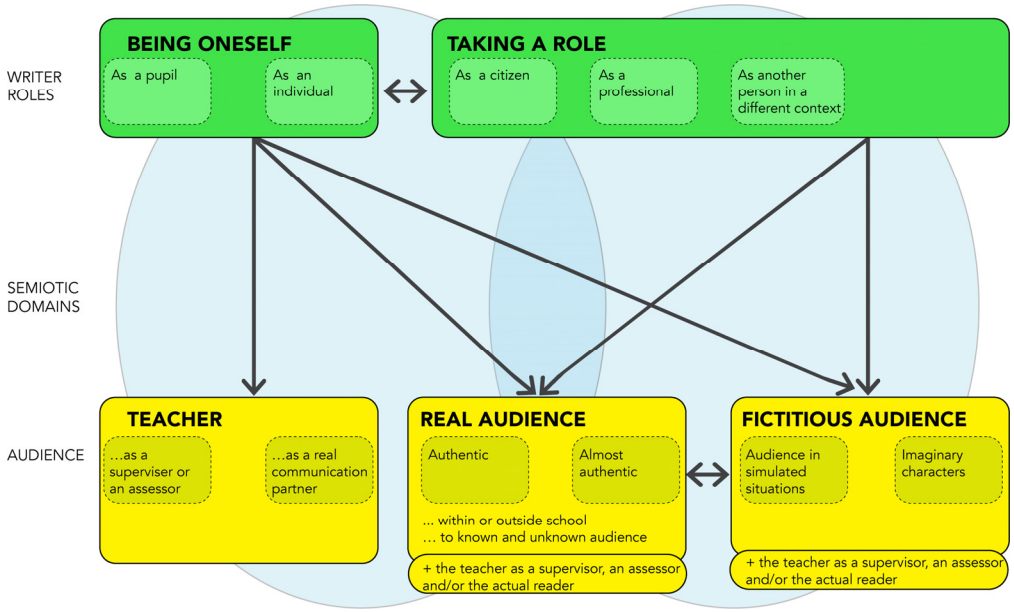

Figure 5. The complexity of assignment design.

In the background of Figure 5, the circles represent a diversity of *semiotic domains*: school domains, disciplinary domains, leisure domains, personal domains, and professional domains outside the school context in addition to imaginary domains. Semiotic domains can develop and emerge as practices within different ecologies and could also collide. Our analysis explains how the assignments are connected to semiotic domains associated with 1) different school subjects (disciplinary literacy

and disciplinary domains), 2) what Gee calls "school science" 3) leisure culture and practices outside of school and 4) the NORM-project's intervention study as an ecology – where teachers and pupils are on learning trajectories regarding how to write using the Wheel of Writing as a point of departure. Semiotic domains are not, from our perspective, constant concepts, but dynamic ones, and they are also often interconnected.

A result with theoretical overtones is encapsulated in the model – we see the potential to define and approach semiotic domains in a broad sense. Some can be "big", like Gee's "school science", and every assignment is somehow connected to the school domain in a more or less explicit way. Some of the domains emerging in our data were smaller and more specific than others, such as domains connected to certain subjects or disciplines. However, we also see that these vary in how specific or vague they are. As an example, the semiotic domain of the L1 represents certain challenges. The question "what is disciplinary writing in L1?" is hard to answer based on our material because the domains emerging in the L1 assignments are often connected to the activity of writing in general and not to disciplinary topics. It is also hard to answer because our data are part of a specific intervention study. As a contrasting example, the domains of assignment design and writing in Mathematics and Science emerge as more specific and disciplinary. The design grammar is often connected to enquiry and axioms (to explore/describe something), although one could discuss whether the explorative assignments are explorative or descriptive in nature. These domains are also often part of the larger "school science", for instance, when the pupils are asked to write to school-specific audiences (younger pupils, etc.). Our data and model reflect this complexity and the coexistence of different domains in many of the literacy events involved in designing and writing assignments ('semiotic domains', Fig. 5).

Our findings show that the assignments reflect semiotic domains that entail a somewhat traditional view of writing. It is important to emphasize that the teachers designing assignments in our project were undergoing their own learning processes, learning and exploring how a functional approach to writing instruction could be implemented in their assignment design practices (and they cannot be seen as 'experts' in this regard). Therefore, the somewhat traditional assignment design may not be surprising. Nevertheless, this finding reveals both challenges and possibilities in assignment design: a functional approach to writing and assignment design, across subjects with every-teacher-as-a-teacher-of-writing, may require systematic (and longitudinal) work if these understandings and practices of writing/assignment design are to be an inevitable and implemented part of different semiotic domains of assignment design and writing.

The blue circles in the background of Figure 5 are meant to encapsule all the semiotic domains in play. In addition to the domains already mentioned, *a NORM-project domain* emerged in the data. This domain points to a bigger methodical

dimension of conducting intervention studies. The teachers were told to do something using the Wheel of Writing as the point of departure in their assignment design. We would like to emphasize one of Gee's insights here regarding the complexities of semiotic domains and school writing: "Of course, it is not always readily apparent just what semiotic domain someone is attempting to master" (p. 2). Are the pupils on their way to mastering "how to write" within the semiotic domain of Mathematics, within a larger school domain or perhaps a NORM-project domain of "how to write reflectively" in the context of the intervention study, or perhaps all at once? Practices, rules and social languages from different domains coexist and collide with one another, representing complexity in assignment design. They collide with diverse pointers to "how to write" (regarding domains, audience, roles, acts of writing, etc.) in the given context. An additional layer of complexity is that the teachers sometimes conflate purpose with genre, acts of writing with purpose etc., making the picture even more complex in regard to which domains (and genres, acts of writing, etc.) the assignment design are connected to. In our view, it is important to be acutely aware of this complexity when researching and designing assignments in schools.

A key dimension in the complexity of assignment design concerns the degree of *authenticity* in the writing situations – both when it comes to writer roles (green) and audience (yellow) (see Figure 5). The arrows in the model show us the connections between writer roles and audience in the assignments, but not how these roles and audiences are realized in pupils' texts. The concept of authenticity was not part of the NORM-project's guidelines for assignment design. However, the guidelines emphasized that writing should have a purpose and a relevance. This was often interpreted by the teachers as striving for authentic or almost authentic writing situations – with writer roles other than the traditional pupil and an audience other than the teacher. This may for instance mean writing with the same purpose as texts written outside of school (cf. Guariento & Morley, 2001). Among others, Duke et al. (2006) refers to the challenge that lies in finding "real" readers for pupils' texts: "By real here, we mean a reader who will read the written text for its communicative purpose and not solely for evaluation, as so often happens to writing done in instructional contexts" (p. 352). Our analyses have shown that "real readers" may be found inside and outside school. However, we also found few truly authentic contexts in our data if we exclude contexts where pupils wrote to show the teacher what knowledge and skills they acquired they acquired regarding knowledge and skills (which of course are just as authentic, in their own way). Within the school context, fellow—often younger—pupils frequently reappeared as audience in our material. We can assume that in some of the situations, they actually read the texts and thus became authentic readers.

In our data, school writing assignments often involve *imagination*. Teachers sometimes have to construct simulated contexts and readers for pupils to become

familiar with a subject-related domain, contexts where the readers are imaginary and where the pupils have to play a role. One of our main findings is that many of the assignments in our data contain the phrase "Imagine that". Perhaps this is an obvious consequence of the need to create such simulated learning trajectories for the pupils. As we know, to *imagine* is one of the acts in the Wheel of Writing (and one of the acts that is less clear when it comes to *how* to write). However, many assignments in our data included performing in a simulated rhetorical situation, while the assigned writing act may be, for example, to *describe* or to *reflect*. Since writing assignments in school often require pupils to imagine something, we could claim that imagination is partly an overriding "act" in different school writing. Tensions between imagination and exploration as a *process* (cognitive process or activity) versus an *act of writing* occur in our data, and these tensions are challenging in the teachers' assignment design.

However, constructing simulated contexts in assignments is not always necessary. Sometimes "the audience is clearly implied by the nature of the task" (NAEP, 2017). This is a point that may have been under-communicated to the project teachers. For example, it will always be the teacher who will read the pupils' texts, either as the sole reader or as an additional reader. We have visualized this by adding "+ the teacher as a supervisor, an assessor and/or the actual reader" to the categories of audience in Figure 5. We found that in some cases, the teacher as reader is expressed explicitly in the assignment formulation, but in other cases, it is omitted. This especially applies to purely academic assignments, where the purpose is for pupils to document knowledge and learning. Even in a research project in which teachers were encouraged to specify an audience for the assignments they created; many did not do so. The reason is probably that it was obvious who the readers were. Sometimes it was the teacher alone who was the natural audience of the pupils' writings. Some writing assignments appear to be unnecessarily complex because the teachers have done their best to invent creative situations and specify different functional dimensions. This is probably due to a combination of the NORM-project's guidelines for what writing assignments should contain and because the teachers' assignment design was not always sufficiently well thought out. One can simply get *too* creative, as Smith and Swain (2011) caution against. The purpose of emphasising different roles in writing assignments must be to create appropriate rhetorical situations in which pupils are trained to adapt their texts to different semiotic domains. If one is overly creative, however, one can end up designing writing assignments that are almost impossible to answer, as in the example of writing to a man from the Stone Age.

The challenges of *the double writing situation* in school writing are a recurring theme in writing research, and we have tried to illustrate this in Figure 5. This duality is unavoidable in a school context, but for an assignment designer, it is important to be aware of how such collisions between domains can complicate both writing

for pupils and assessment for teachers, as in the example where pupils were asked to write a chat to a former friend. When providing these kinds of assignments, one should avoid penalizing pupils for using a language that is appropriate in the domain the pupils are asked to write within, even if the language differs from the language appropriate in the school domain.

In this study, we have discussed writing assignments as they were submitted to researchers in writing, but we are of course aware that it is not only the assignment formulation that sets the premises for how pupils write texts. There is a difference between what an assignment *is* – as a text – and what it *becomes* when it is presented by the teacher in the classroom (Bakke, 2019). This issue has not been addressed in our study, however, it should be mentioned as another complicating dimension in assignment design.

7. Conclusion

In this study, we highlight what the NORM-project has contributed in terms of knowledge about assignment design. Through our analyses, we have shown opportunities and challenges regarding assignment design, and we have presented a model (Fig. 5) that illustrates the complexities of creating writing assignments in school. Our analyses show that the guidelines given in the intervention study made some of the writing assignments unnecessarily complex. We have shown examples of how semiotic domains can collide, and that the combination of acts of writing, purpose and audience can lead to assignments that are almost impossible to answer in a good way. Based on our findings, we wish to highlight complexity as the "default" in assignment design; assignment design and school writing are complex by nature. This insight can help emphasize an important point: good writing assignments cannot be designed simply by following a checklist. We want to emphasize that critical reflection is crucial in assignment design, and we believe that our perspective and analytical approaches to the NORM data can contribute to such reflections.

In our study, we have examined assignments created by teachers in an intervention project with certain guidelines. Further research should also examine writing assignments that teachers design in their daily practice in school, as well as analysis of pupils' texts in relation to the assignments that are given. As mentioned, a limitation of our data is that we don't have loads of contextual information from the staging of the assignments in the classrooms. Additional research could examine how domains connect and collide in the interplay between the assignments' wording and the staging of them in classroom contexts, and also how these domains come into play in the pupils' written texts, teachers' formative responses, pupils' revisions, etc. – adding additional layers of complexity to assignment design.

Notes

1. Researchers from several institutions collaborated on the project, and the project was led by Synnøve Matre and Randi Solheim. The main focus has been on writing instruction and assessment (Matre et al., 2021).
2. The reason why there are 687 assignments – and not a rounder number – is that, for various reasons, not all teachers submitted all the six writing assignments per year in the intervention.
3. The subjects listed represent the subjects in the Norwegian primary school curriculum.
4. The norms of expectation in the NORM-project were not adapted to the English subject. This explains the small number of assignments given in English. Some teachers still chose to design writing assignments in this subject, and three writing assignments were therefore given in English.
5. See the last column in Table 3, chapter 5.1 'No act of writing specified'.

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