

Bridging the Gap from the Other Side: How Corpora Are Used by English Teachers in Norwegian Schools

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Abstract

Researchers have written of ‘bridging the gap’ between corpus linguistics and teaching practice. This study focuses on in-service English teacher informants from Norwegian schools, to try to address the ‘gap’ from the teaching practice ‘side’, rather than from the linguist ‘side’ engaged in spreading corpus linguistics. The study collects data on teachers’ familiarity with corpus linguistics, what corpora are used for and how, and teachers’ views on the obstacles to corpus use. The research question is *How are corpora used by in-service English teachers in Norwegian schools?* The research design consists of an online questionnaire and follow-up interviews. The questionnaire was answered by 210 teachers, 34 of whom answered they had done some work with corpora. The interviews were with three corpus-using teachers. The corpora they used were GloWbE, SkELL, Netspeak and COCA. Teacher-corpus interaction was for reference and for creating vocabulary and varieties of English exercises, and pupil-corpus interaction was encouraged by two of the teachers. The obstacles to the use of corpora were identified as differences between school levels, usability, and lack of teacher need. In concluding remarks, it is suggested that a starting point for corpus use among teachers may be to teach the tools and methods that seem to be already working for in-service teachers.

Keywords: corpus; corpus linguistics; English language teaching; in-service teachers; Norwegian schools

1. Introduction

There are ways in which corpora can be pedagogically valuable in language education. To list some: the authentic language found in corpora can show learners how a language is actively used; corpora are richer sources of data about a language than traditional reference books; and learners involved in a data-driven learning process can, through corpora, notice linguistic features, an activity which relates to the ‘noticing’ hypothesis of second language acquisition, and to learning motivation theory (Lin & Lee 2015: 264-5).

These declared potential benefits apply to language learning in general, but this article has a more specific scope, the role of corpora in language teaching in Norwegian schools (at all levels, i.e. both primary and secondary). There has been research into the potential of using

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corpora in schools (e.g. Braun 2007; Crosthwaite 2020), but it has been acknowledged that in Norway, corpora have not been used in language teaching to any great degree (Cardona, Didriksen & Gjesdal 2014: 1). It has been suggested, but not empirically established, that ‘lack of time, group sizes and technological obstacles can stand in the way’ (Ibid.). This apparent low level of direct applications¹ of corpora in schools mirrors the international picture, where researchers have found such a low level, and have discussed the difficulty of ‘bridging the gap’ (Mukherjee 2004; Breyer 2011: 146) between corpus linguistics and teaching practice. The difficulties identified have included not enough teachers ‘systematically familiarized with the basic foundations, implications and applications of corpus linguistics’ (Mukherjee 2004: 243) and the lack of ‘(classroom) userfriendly concordancing software’ (Breyer 2011: 207).

This study aims to discover whether and what corpus linguistics tools and methods are being used in Norway by in-service teachers in their teaching. In-service ‘designates a teacher that has certification or is already teaching in a classroom, in contrast to a preservice teacher, who is in the process of preparing to become a teacher’ (Koellner & Greenblatt 2018). A country-wide survey of how familiar in-service English teachers are with corpus linguistics has been undertaken for this study, and from the survey, corpus-using teachers have been identified. Informants are included irrespective of their corpus literacy,² firstly because the intention is to gather data from as many teachers as possible, and secondly there may be obstacles to corpus use that are not affected by the corpus literacy of the teacher.

Some previous research in Germany has surveyed in-service teachers about their corpus use (Mukherjee 2004; Callies 2019), the results of which are discussed in section 2. The present study has gathered data on how corpus-using teacher informants use corpora, what they use them for, and what they find the obstacles to corpus use to be. This is to try to address the abovementioned difficult ‘gap’ from the teaching practice ‘side’, rather than from the linguist ‘side’ engaged in spreading corpus linguistics, where there is already a body of research on corpus

¹ The distinction is made between ‘direct applications’ of corpora (the use by teachers and/or pupils) and ‘indirect applications’ (affecting what goes into reference books, textbooks, and syllabi), following Römer (2011: 207).

² For a detailed definition of corpus literacy see Callies 2019: 247.

instruction for pre-service language schoolteachers (Breyer 2009 & 2011; Farr 2008; Heather & Helt 2012; Leńko-Szymańska 2014; Zareva 2017). To collect data from teachers who are already in service, and using corpora in their teaching, is potentially illuminating.³ It may become a starting point for spreading the use of corpus linguistics among teachers, so investigating the school context may be insightful for the corpus education of teachers, a 'bridge' from teaching practice to corpus linguist. The research question is *How are corpora used by in-service English teachers in Norwegian schools?*

This specifies English teachers, and the English subject in Norway is a fitting one for conceivable corpus use, because there are potential obstacles that are not present. First, the English subject curriculum presents no obstacle, in principle, to the use of corpus methods. Although corpora are not mentioned in it, the curriculum has competence aims⁴ that could be fulfilled by corpora, namely aims related to patterns in the language, to language use in context, to English and one's own language(s), and to digital resources or tools (Utdanningsdirektoret 2013, 2019). Second, the Norwegian education system has commensurate IT infrastructure; it is the norm for teachers and pupils to have access to computer equipment and an internet connection. Third, Norway is not a country that has low proficiency in English; it is one of only 12 countries to have 'very high proficiency' status in Education First's *English Proficiency Index*, ranking third in the world (Education First 2019: 6).

Previous research is considered in the next section (2), specifically studies concerning in-service teachers' knowledge of corpora, and concerning what corpus-using teachers do with corpora. Then, the methods of this study are explained (section 3). The results are presented in section 4. In the final section, the results are discussed, with some concluding remarks.

2. Previous Research

The main focus of this study is on in-service teachers in schools, therefore this section is devoted to studies which have that focus.

³ Data from non-users to find out why they do not use corpora, although worth collecting, is not within the scope of this study.

⁴ 'Competence aims' is the term used in the curriculum.

(Teacher educators and higher education teachers work with adult language learners in non-compulsory education and, for example, corpus use considered useful in the third level classroom (Lin & Lee 2015) might not apply to school pupils.)

The studies of Mukherjee (2004) and Callies (2019) investigated how familiar corpus linguistics is to in-service teachers in schools. Mukherjee used a questionnaire to survey 248 German teachers of English in secondary schools. He found that 79.4% of his in-service teachers, before taking a corpus workshop, agreed with the statement ‘No, I don’t know anything about corpus linguistics’ (Mukherjee 2004: 241). He concluded that this ‘illustrates the low extent to which corpus linguistics has so far had an impact on teaching practice in Germany’ (Mukherjee 2004: 242). Fifteen years later, Callies also used a questionnaire to survey German teachers of English in secondary schools, and interpreted the findings from his small-scale survey of 26 teachers as reconfirming Mukherjee’s (Callies 2019: 252): only 34.6% of his in-service teachers had ‘heard of’ corpus linguistics in their university studies, and only 3.8% in their in-service practical teacher training (Callies 2019: 250). Callies does, however, note an increased awareness among teachers of corpus linguistics between his study and Mukherjee’s, and sees it as due to ‘a younger generation of language teachers who have been trained in the use of corpora for research purposes in their university studies’, but nevertheless he observes that ‘this seems not to have made a significant impact on their teaching practice’ (Callies 2019: 252). To these two studies can be added that of Zareva (2017), who surveyed 21 TESOL teachers taking a master’s degree in the USA. Although her informants were pre-service teachers, there were in-service teachers mixed in with them. She issued a questionnaire at the conclusion of a grammar course that included a corpus component (Zareva 2017: 71-3), and found that 43% of her informants said they ‘knew what a language corpus was’ before their course began. That percentage, however, is reduced to 29% when counting only those who had ‘done basic corpus searches before’ (Zareva 2017: 74). So in all three studies, a minority had awareness of corpora, which indicates no wide use of them in English teaching.

Two of these studies, Callies (2019) and Zareva (2017), and a study by Farr (2008), investigated what teachers knowledgeable of corpus linguistics do with corpora. Of these, only Callies’s informants were

exclusively in-service teachers, but the others are considered here because the informants were a mix of pre-service and in-service teachers. Farr used a questionnaire to survey 25 teachers taking an MA in ELT in Ireland, and found that a majority of her informants were willing to use corpora in preparation for teaching or teaching materials, to use corpora in class, and to 'initiate' pupils, as long as there were computers; her informants predicted they could use corpora in ways such as researching 'words before teaching them' and taking 'real, authentic examples of use', to give two examples (Farr 2008: 37-38). However, Farr could not obtain a full picture of what her informants went on to do in their teaching. Similarly, some of Zareva's informants 'pointed out specific areas of teaching where they can apply their corpus research knowledge, of instance in teaching grammar, academic vocabulary, and the use of words and collocates' (Zareva 2017: 75), but we do not know whether they subsequently used their corpus skills in teaching. This is a problem, acknowledged by both Farr and Zareva, when gathering data from pre-service informants. Farr wondered 'whether these good intentions are realised when the STs [pre-service teachers] hit the reality of their first teaching position' (Farr 2008: 39), and could not answer this conclusively; Zareva cited Farr on this point (Zareva 2017: 75). The corpus use of Callies's informants is actual not potential use. Most of his informants who used corpora did so as reference, 'for example when marking or checking language acceptability, while corpora are hardly, if at all, used in learner-centred activities or to compile local learner corpora' (Callies 2019: 252).

Our state of knowledge about in-service teachers using corpora in English teaching in schools is thus limited to survey results (and none from Norway) in which only a minority of teachers claim to know about corpora or corpus linguistics; and in which teachers who declare they use corpora for teaching mostly use them for reference. This low awareness and low level of use of corpora may be a picture of English teaching around the world, and there is a need for research to show, from more countries (e.g. Norway), whether there are corpus-using English teachers, what they do, and to what degree they involve pupils. The present study obtains data on this.

3. Methods

The research design consists of an online questionnaire and follow-up interviews. One aim of the questionnaire was to provide data about corpus use in English language teaching in schools in Norway, rather than rely solely on statements that there was not much use (e.g. Cardona, Didriksen & Gjesdal *op. cit.*). To this end, the questionnaire was released online so that it could reach all districts of Norway. The questionnaire also had the purpose of identifying a subgroup within the sample: corpus-using teachers, who could then become informants for follow-up interviews (how informants were selected is explained below in section 3.2).

3.1. The questionnaire

The questionnaire was designed on, and distributed through, the platform Qualtrics.com. As a tactic to ensure a high response rate, it was decided to make it answerable in a few minutes, therefore not many questions were asked (Cohen et al. 2018: 264). The questionnaire began with questions that collected nominal data: teaching level, geographical location, years of teaching experience and age. There followed questions about teaching activities which informants could possibly use corpora for: English grammar; English usage; and an overview of pupil mistakes (questions 5, 6 and 7, in Appendix 1), without these questions leading the informants by mentioning corpora. The focus shifted to corpus linguistics with question 9, shown in Figure 1 (it is similar to a question from Leńko-Szymańska 2014: 268). Answers divided the informants into four (potentially five) groups, for different follow-up questions based on what they claimed to know.

Q9 Have you ever heard the linguistic term corpus? Choose from one of the answers below.

- o I have never heard the linguistic term corpus before.
- o I have heard the linguistic term corpus before, but I have little or no idea what it is.
- o I am fairly familiar with corpus linguistics, but I have never done any practical work with corpora.
- o I have already done some work with corpora.
- o If you have an answer that you are sure is different to the ones above, please give it here:

Figure 1. The first corpus question in the questionnaire (question 9), English-language version.

There were four optional answers to the question, and an additional open option selected by no informants, indicating that the four options sufficed. The question uses familiarity with gradation, from a relationship with corpora that involves having worked with them, to never having heard of them. This feature was influenced by previous questionnaires (Breyer 2011: 162; Leńko-Szymańska 2014: 268).⁵

Three questions (questions 10, 12 and 13 in Appendix 1), asked of every informant, checked informant claims of familiarity. This was a feature of a previous questionnaire (Leńko-Szymańska 2014) in which informants were asked about their prior knowledge of the term *corpus*: 61.5% claimed they had 'a rough idea what it is', and their answers were cross-referenced with answers to open questions asking them to define *corpus*, *concordance* and *concordancer*. Some 'inaccurate, vague or even meaningless' answers were received, indicating it was an effective way of checking claims (Leńko-Szymańska 2014: 269).

Question 10 asked whether informants knew each of the terms *collocation*, *colligation*, *concordance*, *concordancer*, *frequency list*, *key word in context (KWIC)*, and *part of speech (POS)*. Question 12 showed screenshots of online corpus interfaces, including Sketch Engine for Language Learning (SkELL) (Baisa & Suchomel 2014) and english-corpora.org, where among others the Corpus of Contemporary American English (COCA) can be found (Davies 2008-). The text of the question accompanying the screenshots asked informants whether they knew

⁵ These questionnaires were for pre-service teachers.

'these web tools'; this general phrase was chosen so as not to lead informants by identifying corpora using the specific term. Question 13 asked if informants know other 'web tools' similar to the ones shown. It is evident that these checks on claims to familiarity themselves involve claims, but as mentioned above, the questionnaire was designed to be taken in minutes, which precludes onerous tests of knowledge.

There were two questions (questions 16 and 17 in Appendix 1) for those who selected the option in question 9, 'I have already done some work with corpora.'⁶ Question 16 asked in what context these informants had used corpora. Of the six options, three were relevant to direct applications, namely 'I have used corpora to check acceptability of use when in doubt (or when marking),' 'I have used corpora-based materials in my teaching' and 'I have introduced corpora to pupils.' These options were developed from a previous questionnaire (Callies 2019: 251, Table 5). Question 17 asked what these informants used corpora for, options being grammar, vocabulary, spelling, idiom, authentic dialogue, learner language, and 'other'. These options were not intended to be mutually exclusive uses of corpora. They can be seen as relevant to direct applications when cross-referenced with the answers to question 16. As the questionnaire was designed to have few questions, there were no further questions about these uses. Instead, the follow-up interviews were used to gather more detail.

The Norwegian Centre for Research Data (NSD) approved both the questionnaire and the terms of service with Qualtrics. On the first screen, before informants commenced, they were given information on their rights and how data would be used. By commencing the questionnaire, they gave consent.

The questionnaire was distributed in March and April 2018. It was answerable by computer or phone. Informants had the option of answering in either English or Norwegian. The questionnaire was publicized through social media groups of English teachers in Norway. The total membership of these groups was over 10,900. The total population of English teachers in schools in Norway is not known.

The questionnaire was answered by 210 informants. Although this a fraction of the membership of the social media groups, the number of

⁶ This article focuses on corpus-using teachers, but follow-up questions were also asked of non-corpus-using informants (see Appendix 1).

informants is substantial compared with relevant past surveys of teachers described in section 2 (Mukherjee 2004; Callies 2019). Proportionally, the sample size, 210, is far greater in this study than the 248 of Mukherjee (2004), as Germany's population is 16 times greater than Norway's.

3.2. The interviews

Informants were selected for interview in the following way. Those who answered in question 9 they 'have already done some work with corpora' and subsequently in question 16 answered either 'I have used corpora-based materials in my teaching,' 'I have introduced corpora to pupils,' or 'Other', were asked at the end of the questionnaire whether they were willing to be interviewed. Those who volunteered their emails were contacted later, and three consented to face-to-face interviews. The interviews were approved by NSD. Each informant was given an information letter about their rights of participation, and the use of the data, and signed a consent form.

The interviews were conducted in October and November 2018. The researcher visited the teachers at their schools, and made audio recordings. Each interview was approximately an hour long, and in English. The researcher transcribed the recordings using Express Scribe for playback and Word for text. Any repetitions, pauses or verbal tics are not included when quoting from the transcripts, for reasons of clarity; content, not delivery, is the focus of interest. (The researcher accepts that interpretations of what constitutes repetition and so on are his own.) For each interview, the researcher created a guide containing a set of questions (Appendix 2). These were related to the informant's questionnaire answers. For instance, if the informant had answered in question 16, 'I have used corpora to check acceptability of use when in doubt (or when marking),' then in the interview they were asked how.⁷ Each interview guide is therefore unique.

From guide questions it can be seen that for each aspect of language that informants in questionnaire question 17 selected that they used corpora for (e.g. vocabulary or grammar), the interview data can show which direct applications were teacher-corpus interaction and which were pupil-corpus interaction, for these informants.

⁷ See the second question in the 'Joy' interview guide (Appendix 2).

Apart from the guide questions, the interviews were conducted in a back-and-forth conversational manner typical of semi-structured interviews. For this article, the anonymized informants have names assigned from the random name generator at behindthename.com/random: Joy, Lars, and Thomas.

Joy teaches at all levels of upper secondary school (Vg1, Vg2, and Vg3),⁸ and had 25 years' experience teaching in the Norwegian school system at the time of the questionnaire. She discovered corpora by finding the Corpus of Global Web-based English (GloWbE) (Davies 2013) during a web search. Lars teaches in lower secondary (grade 9 at the time of the questionnaire; grade 10 at the time of the interview), and had four years' teaching experience at the time of the questionnaire; he studied corpus linguistics as part of his master's degree. Thomas teaches Vg1 and had three years' experience at the time of the questionnaire; he also studied corpus linguistics as part of his master's.

4. Results

In the response to the questionnaire, there was a spread of informants: they taught at all levels, with 64 teaching primary, 71 lower secondary, and 84 upper secondary (with some overlap); they were geographically spread, from 18 of the 19 Norwegian counties of the time;⁹ their teaching experience ranged from less than 1 year to 50 years; and they were in all age categories from 20-29 to 60+.

4.1. Familiarity with corpus linguistics

To the questions about teaching activities which informants could possibly use corpora for, such as question 6 dealing with English usage (Appendix 1), none of the informants specified the use of corpora. This indicates that corpora were not to the forefront of informants' minds in relation to teaching, even if they were familiar with them.

⁸ The Norwegian school system consists of primary school (*Barneskole*, grades 1-7, ages 6-13), lower secondary school (*Ungdomsskole*, grades 8-10, ages 13-16), and upper secondary school (*Videregående skole*, grades Vg1-Vg3, ages 16-19).

⁹ Subsequent to this, Norway reduced the number of its counties to 11.

In the answer to question 8 (Ibid.), 157 out of 188 informants claimed to collect pupil texts. This indicates a potential interest in local learner corpora, from which teachers can find 'common and persistent errors' (Callies 2019: 253), and can be used to create materials (Millar & Lehtinen 2008).

Question 9 (Figure 1) was answered by 193 informants. Each option of the question showed a different 'grade' of familiarity:

- 29 informants 'never heard' (15%)
- 75 'little or no idea' (39%)
- 55 'fairly familiar' (28%)
- 34 'done some work' (18%)

These answers were cross-referenced against the answers to questions 10, 12 and 13 to check claims of familiarity. There were 34 informants who claimed 'I have already done some work with corpora,' and when compared with other answers, it could be seen that fewer than that are familiar with important terms in corpus linguistics. For example, only 26 claim to know what *concordance* means. Unfamiliarity with terms indicates that the 34 who claim experience should not all be thought of as all equally knowledgeable about corpora.

33 of the 34 answered question 16 about the context of their corpus use. Only 12 of the 33 claimed to have used corpora in either or both of the contexts 'I have used corpora-based materials in my teaching' and 'I have introduced corpora to pupils.'¹⁰ Of these, 11 said they had used corpora-based materials in their teaching (including all 3 interviewees), and 6 said they introduced corpora to pupils (including Joy and Lars).

4.2. *What corpora are used for and how*

Of the abovementioned 12 informants, what they answered they used corpora for in question 17 were:

¹⁰ There are contexts that could be included or excluded when considering what constitutes using corpora in teaching. If the context 'I have used corpora to check acceptability of use when in doubt (or when marking)' is added, the number of informants is 17 out of 33, but that activity could include non-teaching-related checking.

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Vocabulary (11, including all three interviewees)
Idiom (10, including all three interviewees)
Authentic dialogue (8, including Lars and Thomas)
Grammar (6, including Joy and Lars)
Learner language (5, including Joy and Thomas)
Other: spelling (2, including Joy)
Other: language and gender (1)
Other: turn-taking (1)
Other: varieties of English (1, Joy only)

The three questionnaire informants who volunteered for interview came from this pool of 12. The corpora they used were all online corpus interfaces. They used no offline tools such as downloadable concordancers.

In the questionnaire, when asked about teaching activities (questions 6 and 8), none of the three mentioned corpora, even though they all have used corpora in their teaching. They were asked about this in the interviews, and each gave a different reason why not. Joy said she did not think of corpora as a separate category to dictionaries: ‘For me it just functions as a different type of dictionary, really.’ Lars said he did not mention corpora because he tends to think only of the classroom when questions are formulated with language like ‘when you teach’ or ‘your teaching’, and in the classroom, ‘I seldom actually show my students [corpora], like, all of them together’. For Thomas, he simply did not mention corpora because he had stopped using them by the time of the questionnaire.¹¹ So there is no single reason corpora might not be mentioned; they might go unmentioned by people who have actually used them (as with Julia and Lars).

The most relevant data from the interviews is here divided into four subsections. The first concerns the corpora that are used. For the next two, the purposes that these teachers use corpora for can be divided into ‘teacher-corpus interaction’, when they use a corpus themselves, and ‘pupil-corpus interaction’, when the pupils conduct searches of a corpus (Römer 2011: 207). The final subsection concerns what informants do not use corpora for.

¹¹ That Thomas stopped does not mean his other questionnaire answers are inaccurate. For example, options in question 16 begin ‘I have used...’ and ‘I have introduced...’ etc.

4.2.1. The corpora that are used¹²

GloWbE, described above, is used by Joy, and she recognized the english-corpora.org interface in the questionnaire. Joy also uses SkELL, and she recognized that interface too. Netspeak.org is a search engine of English native speaker text, created at Bauhaus-University Weimar, and uses Google Books as its corpus. It is used by Joy, and she mentioned it in her response to question 13. Lars uses COCA, and he recognized the english-corpora.org interface in the questionnaire. It was also possibly used by Thomas, who said he used 'COCA or something like it' in a teaching context: he recognized the english-corpora.org interface in the questionnaire, but was genuinely unsure which of the corpora he had used. All three interviewees also use online collocation dictionaries. There are at least three popular online collocation dictionaries, and Lars specified Ozdic. As these are dictionaries, when they are corpus-informed (this information is not always given), they can be considered indirect applications (see section 1, footnote 1), but not corpora.

4.2.2. Purposes corpora are used for: teacher-corpus interaction

Teacher-corpus interaction is shown in Table 1. The purposes shown are elaborated upon below.

Table 1. Teacher-corpus interaction.

Informant	Corpus	Purpose: vocabulary	Other purpose
Joy	SkELL and Netspeak	Collocation	
	GloWbE		Spelling and varieties of English

¹² A limitation of the questionnaire is that it did not collect data on what corpora were used by the 9 non-interviewed teachers who used corpora in teaching. This may have been caused by being optimistic about interviewing all 12. The questionnaire at least collected data on what corpus interfaces they recognized from ones shown to them (see Q12, Appendix 1).

Lars	english-corpora.org (COCA)	Collocation, idiom	Checking acceptability
Thomas	English-corpora.org	Frequency	

Joy uses SkELL and Netspeak for vocabulary. She uses them to check collocation herself, ‘to help students figure whether collocations are good, yes or no’, in feedback on pupils’ written work, or feedback in the classroom. When the latter occurs Joy uses SkELL, not the pupils, so it is not pupil-corpus interaction.

Lars mainly uses COCA to check acceptability of use. He uses COCA, because ‘99% of my students speak and write American English.’ He also uses it for vocabulary, in the following manner. First he checks COCA himself, then he tries ‘to have my students guess, like what other words go with this word, and then come with all their suggestions, and then I say, “These are the 20 most common words to use with this word.” And then sometimes you’ll get 10 out of 20 right, and then we can talk about the rest, “Why is this a word that comes up all the time?”’ He does not present COCA’s concordance lines to them; he re-types the examples into a Powerpoint slide (e.g. he shared with the researcher a slide where the word was *choice*.) He does not use the term *collocation* with pupils, but rather asks, ‘What other words go with this word?’ (*No choice, your choice*, etc.). Finally, Lars checks COCA when confronted with Norwegian idiomatic expressions that he suspects do not translate into English. ‘So, do you have a phrase [written by a pupil] and it feels idiomatic in Norwegian? Put it into COCA and see if you can get someone else using that... I try to actually check, if it’s a use I just haven’t seen before.’

Thomas’s main use for an english-corpora.org corpus was vocabulary. He ‘used a corpus in planning of classes’ and when he ‘needed to look up some examples and get numbers and statistics for them [i.e. pupils], to show this is a better way of saying it than this way, because this is what they [i.e. English speakers] use.’ A corpus-based vocabulary exercise that he has given to pupils involved the 100 most frequent words of English, asking them to write something with these

words: 'You'd be surprised at how many of them actually manage to string together authentic speech.'

Joy occasionally uses GloWbE for spelling and varieties of English. For her, these two aspects of language are intertwined. For spelling, normally Joy 'would use a dictionary' if she was in doubt. 'But of course you could use it [a corpus] for checking differences [...] then we're basically into varieties of English.' In Vg1, she teaches 'a quick session on British versus American [English]... getting them to be aware of the differences and [to] try and be consistent'. She said that 'once or twice' she showed the pupils the results of a GloWbE search, but did not have them search that corpus themselves because she thought 'that's too advanced for students', and that the average pupil is not interested in language.

4.2.3. Purposes corpora are used for: pupil-corpus interaction

Pupil-corpus interaction is shown in Table 2. The purposes shown are elaborated upon below.

Table 2. Pupil-corpus interaction.

Informant	Corpus	Purpose: vocabulary	Purpose: grammar
Joy	Netspeak	Collocation, idiom	Verb forms
	SkELL	Idiom	
Lars	english-corpora.org (COCA)	Checking acceptability	Suffixes

For vocabulary, Joy finds Netspeak useful for pupils finding collocations themselves: 'I think I managed to get some of them to start using this.' For idiomatic expressions in English, Joy has suggested to pupils that they use Netspeak or SkELL. 'If there's an expression they're not sure about, find it hard to find, you could use that [a corpus] instead of a dictionary,' she said, but she does not know whether her pupils actually do.

For grammar, while Joy would 'usually refer them [pupils] to the grammar section' of a textbook, she has introduced Netspeak to pupils

for verb forms. ‘They can fill in, for instance [...] *look forward to*. Typically Norwegians use an infinitive, so then I say, “Okay, you’ve got to write *look forward to* with your question mark.”’ In Netspeak, a question mark is used as a symbol for representing any letter or number (i.e. a ‘wild card’); the most frequent collocations of *look forward to* in a Netspeak search are *seeing* and *hearing*, and this would reveal that the *-ing* verb form is used, not the infinitive.

For vocabulary, Lars has shown some grade 10 pupils how to use COCA, in written feedback. He said his best pupils do not ‘tend to make [...] concord mistakes or grammar mistakes, it’s often usage mistakes’. For example, a pupil wrote ‘I slowly exposed my eyes’ and he had the pupil search COCA. The pupil then ‘agreed that it sounded off’.

For grammar, Lars also taught the highest-performing pupils how to use in COCA ‘a wild card to see if you can put suffixes on a word’. He gave the example of adjectives, and the *-ly* suffix for creating adverbs out of them.

4.2.4. *Non-use of corpora*

None of the three informants considered investigating concordances of learner texts. Joy has collected six or seven years of pupil texts. Her use of learner language occurs when on occasion she gives pupils ‘texts written by other students and have them grade it’. She has not used a concordancer to search for patterns in these texts: ‘I don’t think I have any need for that really [...] I know where they make their mistakes.’ When that method was suggested to Thomas, he reacted differently: ‘Once you actually put that idea in my head that actually sounds very interesting [...] you can start just basically looking up different N-grams and see what repeats.’ All three interviewees had collected pupil texts, but apparently had not thought of their collections as learner corpora, or even corpora.

4.3. *Obstacles to the use of corpora*

The obstacles to the use of corpora in teaching identified by these three informants can be divided into subsections: differences between school levels; usability; and lack of teacher need. These obstacles apply to both teacher-corpus interaction and pupil-corpus interaction.

4.3.1. Differences between school levels

In upper secondary school, when most pupils have a higher level of English, and would also be, perhaps because of age, better able to understand corpus methods and tools, there is actually less focus on the English language itself in the English subject. The teacher cannot change this by becoming more corpus literate. Less focus on language means there is less need for language corpora. At that level there is more focus on being able to communicate about culture, society and news items. Joy said, 'There are so many other things we have to teach we do not really get to go into language.' Thomas referred to 'the amount of work that we have to put into social studies, pretty much, like my students right now are working with the #MeToo movement, explaining the American election, especially at this level'. This is a combination of the pressure of time and the pressure of the syllabus on the teachers. A related point from Thomas is about assessment at this level. In an exam, pupils are not marked solely for their language use:

With language only really being a third of the grade you give, when I read, I'm so lost in paragraph structure and argument structure, and 'Do these facts comply? Are these citations correct?' that when you come to the language, the ones who do have language mistakes to the level where this will impede their grade, it's usually concord, verb conjugation, and I don't need to look up a corpus to see an is/are mistake.

At lower levels, where there is more focus on the linguistic aspects of the subject, advanced concepts like collocation (for example) are not taught to pupils. There was the example above of Lars only showing COCA to his best-performing pupils. The more advanced language patterns that can be discovered in corpora are less relevant to pupils at lower levels. Lars also sees a disadvantage in using corpora for examples of authentic dialogue. He prefers to use movie dialogue with pupils, because he notices 'how chaotic actual conversation is often. And you may not want to introduce that to tenth graders'.

4.3.2. Usability ('user friendliness')

The issue of usability came up in the discussions around COCA. While Lars could show COCA to a high-performing grade 10 student, he agreed he 'probably could' do this in grades 8 or 9, but said, 'It's a little confusing, the COCA interface is kind of messy... There's a lot of

buttons to push and it's kind of slow.' Thomas echoed this when he explained why he does not use a corpus with pupils. He used a corpus in class with pupils only once but the pupils did not understand what they saw. He explained, 'Most corpora look like web 2.0, they're not very user-friendly.' While educators can improve the digital competence of pupils (Ståhl 2017) and teachers (Røkenes & Krumsvik 2016), this may have limits and it does not rule out changing the software as the solution (Breyer 2011: 93).

4.3.3. Lack of teacher need

This is an issue for teachers regardless of their level of corpus literacy. Thomas said he used to check corpora for himself when giving written pupil feedback, but stopped: 'I started using it, I started out as a teacher using it, but as time went on, I found myself using it less and less.' The reason he gives for stopping is

This is going on my fourth year. At this point I must have marked close to a thousand texts [...] You're starting to see the patterns yourself [...] I still do the points where I comment on collocation and I comment on a lot of the things I did, but I no longer felt it necessary to look up 'Is this the best way to say it, is it possible to say it this way?' because I've seen it.

The repetitive nature of marking pupil assignments in Vg1 year after year has led to him being habituated, and he notes that

I believe that if I get samfunnsfag [social studies] English or even international English [...] At that point, especially if I were to teach and grade those papers, I would definitely try my best to remember what I learned in my corpus linguistics.

For the time being, Thomas's intuition for the language is attuned to the work that the pupils are doing in a Vg1 class (which can be compared to Joy's experience: 'I know where they make their mistakes'). He does not see the need for corpora unless he starts teaching another type of English class.

5. Discussion and conclusion

The results indicate that the use of corpora may not be occurring very often in Norwegian schools. But the research question asked *How are corpora used by in-service English teachers in Norwegian schools?* and

the results show how corpora are used by some teachers. This increases our knowledge about what works for teachers in the school context. A finding from Callies's survey was that corpus-using teachers were mostly using corpora for reference (Callies 2019: 252). In the present study the same can be seen, with 12 of 33 corpus users doing this. But a difference in this study is that almost as many (11 of the 33) answered, 'I have used corpus-based materials in my teaching.' The interviews showed what this means for three of the teachers: Lars created collocation exercises with data from COCA, Thomas gave pupils the frequency of words or phrases, he created a '100 most frequent words of English' exercise, and Joy used corpora data to teach British versus American varieties. These informants exclusively use online interfaces, not offline concordancers. Interfaces that do not have 'kind of messy' (Lars) concordance lines were preferred. COCA is typically introduced in teacher education (Ebrahimi & Faghih 2016: 123; Leńko-Szymańska 2014: 278; Zareva 2017: 72), but Joy tended to use SkELL and Netspeak, and when the researcher later showed Lars and Thomas these, they were impressed by them. COCA is and has been used, but there are usability restrictions: Lars would not use it for younger pupils, and Thomas would not even use it for Vg1 (condemning it as 'web 2.0'). In terms of concordance lines, SkELL and Netspeak were preferred. The usability of online corpora interfaces like that of COCA or GloWbE, and of offline concordancers, allows for research into language, but seems to impede direct applications in the school context.

Also avoided by the informants was the building of local learner corpora. Joy did not see the need for it, and Thomas had not even thought of it until I suggested it. This was not unexpected, as Callies also did not find much compilation of learner corpora—only one informant (Callies 2019: 251, Table 5)—but the present questionnaire results showed mass collection of pupil texts, so the potential is there if the need is.

To return to the metaphor of 'bridging the gap', the lack of use of corpora has implications for teacher education, about which some remarks can be made. Language teachers need 'knowledge about the different ways in which corpora can be exploited in the classroom and the necessary skills for the application of this knowledge' (Leńko-Szymańska 2017: 217), but other factors influence teachers, such as the obstacles identified above: the differences between school levels, usability, and the lack of teacher need. These are obstacles regardless of

the corpus literacy of the teacher, even if teacher educators succeeded in making corpus linguists out of pre-service teachers. The two interviewed informants in this study who studied corpus linguistics as part of their master's degrees use corpora not habitually but only when they deem it pedagogically useful to them.

To address the 'gap' from the teaching practice 'side', rather than from the corpus linguist 'side', a starting point for corpus use among teachers may be to teach the tools and methods that seem to be already working for in-service teachers. This means further exploration of what already works, and feeding that back into teacher education. In-service teachers may find use for only a handful of activities, though, and many of the language-learning advantages of corpus use, especially in the area of pupil-corpus interaction, are lost when we look at only these informants' approaches. Yet it is a starting point, from which other suggestions for bridging the gap—corpora for curricular requirements (McEnery & Xiao 2010: 374-5) or a concordancer for the classroom (Breyer 2011: 207)—remain valid.

If more teachers used corpora even at the level the interviewed informants have, a certain degree of corpus awareness and corpus use would be established. This may be an underwhelming starting point, but 'bridging the gap' for its own sake cannot really be the ultimate aim of a corpus linguist interested in language teaching and learning. In the school context, we can begin with teachers' needs.

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Appendix 1. Questionnaire for English Teachers (English-language version)

The number of respondents for each question and option is included. The content of what respondents wrote in text fields is not included, although in the cases of Q's 11, 14, 15 and 16, it is summarized.

Q0

Dear English teacher / Kjære engelsklærer

Which language would you like to answer the questionnaire in? / På hvilket språk vil du besvare spørreskjemaet?

- English
- Norsk

Respondents: 113 in English; 97 in Norwegian

Q1 In what grade(s) do you teach English? Click on all that apply.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- Vg1
- Vg2
- Vg3

Respondents: 209

Grades 1-7: 58

Grades 8-10: 62

Mix of the above categories (3-10): 5

Vg: 80

Mix of Vg and grades down to 7: 4

Q2 In which county (*fylke*) do you teach?

▼ Østfold [...] Finnmark

Respondents: 206

Akershus: 44

Oslo: 24

Hordaland: 19

Hedmark: 15

Buskerud: 12

Østfold: 11

Oppland: 10

Rogaland: 10 Nord-Trøndelag: 5

Sør-Trøndelag: 10 Aust-Agder: 4

Sogn & Fjordane: 8 Troms: 4

Vest-Agder: 8 Vestfold: 4

Møre & Romsdal: 7 Finnmark: 0

Telemark: 6

Nordland: 5

Q3 How many years have you taught in the Norwegian school system?

Respondents: 210

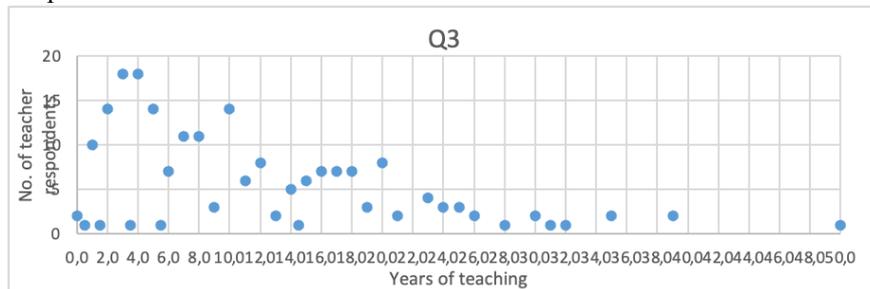


Figure 2. Scatter plot: the range is 0 (i.e. less than a year) to 50 years.

Q4 What is your approximate age? Click on one of the answers below.

20-29

30-39

40-49

50-59

60+

Respondents: 209

20-29: 45

30-39: 68

40-49: 57

50-59: 33

60+: 6

Q5 How do you teach English grammar? Choose any that apply to you:

- I teach grammar deductively (giving rules, followed by examples).
- I teach grammar inductively (giving examples, from which rules can be noticed or discovered).
- I teach grammar communicatively (I do not teach it explicitly)
- In another way (please specify):

Respondents: 203

Communicatively only: 36

Deductively & inductively: 32

Deductively, inductively & Communicatively: 31

Deductively only: 31

Inductively & communicatively: 30

Inductively only: 19

Deductively & communicatively: 12

Another way only: 5

Communicatively & another way: 4

Inductively & another way: 1

Deductively, communicatively & another way: 1

All four options: 1

Total selections of communicatively: 115

Total selections of inductively: 114

Total selections of deductively: 108

Total selections of another way: 12

Q6 When you teach the understanding and use of English in different situations, what kind of material do you base your teaching on? Choose all that apply to you:

- Textbooks
- Dictionaries
- English usage books
- Other English-language books (including literature)
- Newspapers/magazines
- Comics
- Online written material
- Online quizzes
- Film / TV / YouTube
- English-language song lyrics
- Radio / podcasts / audiobooks
- English speakers in the school or neighbourhood
- Field studies
- Other (please specify):

Respondents: 198

Textbooks: 180

Dictionaries: 77

English usage books: 38

Other English language books (including literature): 146

Newspapers/magazines: 105

Comics: 76

Online written material: 164

Online quizzes: 79

Film/TV/YouTube: 180

English-language song lyrics: 150

Radio/podcasts/audiobooks: 58

English speakers in the school or neighbourhood: 30

Field studies: 8

Other: 13

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Q7 Do you ever base your teaching on common mistakes that your pupils make?

- Yes
- Sometimes
- No

Respondents: 196

Yes: 100

Sometimes: 88

No: 8

Display This Question: If Q7 = Yes, or Q7 = Sometimes

Q8 When you teach based on common pupil mistakes, how do you get an overview of the mistakes? Click on anything that applies to you.

- Personal judgement / intuition / introspection
- A collection of pupil texts
- Other (please specify):

Respondents: 188 (i.e. all who were asked)

Collection of pupil texts only: 85

Personal [...] & collection of pupil texts: 60

Personal [...] only: 29

Collection of pupil texts & other: 7

All three options: 5

Personal [...] & other: 1

Other only: 1

Total for collection of pupil texts: 157

Total for personal [...]: 95

Total for other: 14

Q9 Have you ever heard the linguistic term *corpus*? Choose from one of the answers below.

- I have never heard the linguistic term *corpus* before.
- I have heard the linguistic term *corpus* before, but I have little or no idea what it is.
- I am fairly familiar with corpus linguistics, but I have never done any practical work with corpora.
- I have already done some work with corpora.
- If you have an answer that you are sure is different to the ones above, please give it here:

Respondents: 193

Never heard the term before: 29

Have heard, but have little or no idea what it is: 75 (these respondents were asked Q14 later)

Fairly familiar with corpus linguistics, but have never done any practical work with corpora: 55 (these respondents were asked Q15 later)

Have already done some work with corpora: 34 (these respondents were asked Q's 16 & 17 later)

Different answer text field: 0

Q10 Do you know what any of these terms mean?

	Yes	Not sure	No
No collocation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Colligation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Concordance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Concordancer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frequency list	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Key word in context (KWIC)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Part of speech (POS)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Respondents: 191

No collocation	Yes: 107	Not sure: 39	No: 45	
Colligation	Yes: 17	Not sure: 72	No: 102	
Concordance	Yes: 101	Not sure: 40	No: 50	
Concordancer	Yes: 34	Not sure: 63	No: 92	No answer: 2
Frequency list	Yes: 151	Not sure: 21	No: 19	
KWIC	Yes: 112	Not sure: 42	No: 37	
POS	Yes: 157	Not sure: 21	No: 13	

Display This Question: If any part of Q10 was answered
Q11 Where did you encounter the term(s)?

Respondents: 125 (of 186 asked)

These are the number of mentions for each main source.

Studies: 99

Books/texts: 12

Work/colleagues: 8

Internet: 6

Q12 Do you know any of these web tools? Select any you know. (The screenshots may take time to load.)

- SkELL
- Using English
- BYU corpora
- BNC Simple Search

Respondents: 64

SkELL identified by: 8

Using English identified by: 40

BYU corpora identified by: 24

BNC Simple Search identified by: 24

The 9 non-interviewed corpus users.

SkELL identified by: 1

Using English identified by: 6

BYU corpora identified by: 3

BNC Simple Search identified by: 5

Q13 Do you know other web tools similar to the ones above? If so, please name them.

Respondents: 15

Display This Question: If Q9 = I have heard the linguistic term corpus before, but I have little or no idea what it is.

Q14 Above, you answered that you have heard the linguistic term *corpus* before, but you have little or no idea what it is. Where have you encountered the term?

Respondents: 51 (of 75 asked)

These are the number of mentions for each main source.

Studies: 20

Internet: 11 Books: 5

Display This Question: If Q9 = I am fairly familiar with corpus linguistics, but I have never done any practical work with corpora.

Q15 You are fairly familiar with corpus linguistics, but you have never done any practical work with corpora. How did you learn about corpus linguistics?

Respondents: 48 (of 55 asked)

These are the number of mentions for each main source.

Studies: 38

Indirectly/conversation: 3

Reading/articles: 3

Display This Question: If Q9 = I have already done some work with corpora.

Q16 You have already done some work with corpora. In what context did you do this? Please click on any context below that applies to you.

- I worked with corpora as part of teacher training.
- I worked with corpora in a course (not a teacher training course).
- I have used corpora to check acceptability of use when in doubt (or when marking).
- I have used corpora-based materials in my teaching.
- I have introduced corpora to pupils.
- Other (please specify):

Respondents: 33 (of 34 asked)

As part of teacher training: 25

In a course (not teacher training): 9

To check acceptability of use when in doubt (or when marking): 12

Used corpora-based materials in teaching: 11

Introduced corpora to pupils: 6

Other: 2 (master's courses)

Display This Question: If Q9 = I have already done some work with corpora.

Q17 What have you used corpora for? Please click on any use below that applies to you.

- Grammar
- Vocabulary
- Spelling
- Idiom
- Authentic dialogue
- Learner language
- Other (please specify):

Respondents: 31 (of 34 asked)

Grammar: 15

Vocabulary: 22

Spelling: 2

Idiom: 19

Authentic dialogue: 15

Learner language: 8

Other: 3

Display This Question: If Q16 = I have used corpora-based materials in my teaching, or Q16 = I have introduced corpora to pupils, or Q16 = Other (please specify): Is Not Empty

Q18 Your experience is of interest to our researcher! Would you be willing to be interviewed about your work with corpora?

- Yes. Here is an email address:
- No.

Respondents: 14 (i.e. all who were asked)

Yes: 4

No: 10

Appendix 2. Interview guides.

Interview guide – informant 'Joy', 2018.

Focus: Corpus linguistics

Research question: How familiar are teachers of English in Norway with corpus linguistics?

Question:	Answer:
Why did you become an English teacher?	
How have you worked with corpora in the context of checking English usage?	
How have you worked with corpora in the context of using corpus-based materials in teaching?	
How have you introduced corpora to pupils?	
How have you used corpora for vocabulary?	
How have you used corpora for idiom?	
How have you used corpora for learner language?	
How have you used corpora for grammar?	
How have you used corpora for spelling?	
How have you used corpora for varieties of English?	
When you answered the question 'When you teach the understanding and use of English in different situations, what kind of material do you base you teaching on', you didn't mention corpora. Have you any idea why it didn't come to mind?	

Interview guide – informant ‘Lars’, 2018.

Focus: Corpus linguistics

Research question: How familiar are teachers of English in Norway with corpus linguistics?

Question:	Answer:
Why did you become an English teacher?	
What was your experience of encountering corpus linguistics in your master’s degree?	
How did you work with corpora in the context of teacher training?	
How have you worked with corpora in the context of checking English usage?	
How have you worked with corpora in the context of using corpus-based materials in teaching?	
How have you introduced corpora to pupils?	
How have you used corpora for vocabulary?	
How have you used corpora for idiom?	
How have you used corpora for authentic dialogue?	
How have you used corpora for grammar?	
When you answered the question ‘When you teach the understanding and use of English in different situations, what kind of material do you base you teaching on’, you didn’t mention corpora. Have you any idea why it didn’t come to mind?	

Interview guide – informant ‘Thomas’, 2018.

Focus: Corpus linguistics

Research question: How familiar are teachers of English in Norway with corpus linguistics?

Question:	Answer:
Why did you become an English teacher?	
What was your experience of encountering corpus linguistics in your master's degree?	
How did you work with corpora in the context of teacher training?	
How have you worked with corpora in the context of using corpus-based materials in teaching?	
How have you used corpora for vocabulary?	
How have you used corpora for idiom?	
How have you used corpora for authentic dialogue?	
When you answered the question ‘When you teach the understanding and use of English in different situations, what kind of material do you base you teaching on’, you didn't mention corpora. Have you any idea why it didn't come to mind?	
How do you collect pupil texts?	