

# English as the lingua franca of engineering education<sup>1</sup>

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## **Abstract**

This paper investigates the use of spoken lingua franca English (ELF) by lecturers and students at a Swedish technical university where English is increasingly used as a medium of instruction. English in this setting is a vehicular language for speakers from a wide range of first languages. The present project has investigated the language skills of the teachers and students in this setting, namely non-native-like usage of spoken lingua franca English. The main aim has been to find out what aspects of language cause communication failure. The material comprises 76 hours of digital recordings, of naturally occurring, authentic high-stakes speech from content courses.

The results show a clear tendency by engineers to reduce redundancy and to focus on function, thus disregarding standard forms. There is little communication failure considering the relatively high frequency of non-standard forms. This round-table discussion will use the results of this investigation as a starting point.

## **Suggested questions for the round-table discussion:**

- What do you think are the main problems of lecturing in a foreign language?
- What kind of problems do students encounter when communicating with each other through a lingua franca?
- Are the problems lingua franca speakers face generally problems of grammar (syntax), vocabulary or pronunciation?
- Do you think speakers in lingua franca settings get irritated by issues that do not interfere with communication?
- Do you think people in lingua franca settings have prejudices against any aspects of each other's English?
- Do students' language backgrounds matter when they are assigned group-work projects? Is this relevant and should it be taken into consideration?
- How can we ensure that teachers' and students' language skills are adequate for English-medium education?
- What type of remedial work can be carried out for lecturers and students who operate in lingua franca settings?

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<sup>1</sup> Parts of this paper come from the author's doctoral thesis 'Spoken Lingua Franca English at a Swedish Technical University: An investigation of Form and Communicative-Pedagogical Effectiveness' and the two papers below by the author:

Björkman, B. (In press). 'English as the Lingua Franca of Engineering: the morphosyntax of academic speech events'. *Nordic Journal of English Studies*, 7(3): X-X.

Björkman, B. (2008). 'So where we are': Spoken lingua franca English at a Swedish technical university. *English Today*, 24 (2), 11-17.

## 1. Introduction

English is now the overwhelmingly dominant language in academia since academic communities use English as the default language, and there is a consequent development towards an increase in English-medium teaching in Europe in general. The number of programs offered in English has tripled in the last five years in continental Europe (Wächter and Maiworm, 2008: 31). Most countries have chosen to participate in the Bologna process, which has led to increased academic mobility and a number of student exchange programs. With visiting scholars and exchange students, European universities are becoming increasingly diverse linguistically. There are parts of academic communities in Europe now which operate predominantly in English, so English serves as a lingua franca (ELF), i.e. “a vehicular language spoken by people who do not share a native language” (Mauranen, 2003: 513). Across Europe, the subject area in which English-taught programs are most frequently offered is engineering with 27 % (Wächter and Maiworm, 2008: 12).

The Swedish academy is now international by nature and thus linguistically diverse as a consequence of increased academic mobility and student exchange programs, both aims of the Bologna Declaration. The transformation of the Swedish university from mostly monolingual to highly multilingual has required a common language for all involved. English has become that common language, being the most widely studied and the best known second language. So it is now the lingua franca of engineering education, i.e. the common language through which people from a large spectrum of first languages can communicate.

## 2. Background: English as the language of publication and instruction

English was used in the Swedish academy as the medium of scientific activity in Sweden throughout the 20<sup>th</sup> century as it finally shifted from German to English. English has established a firm position for itself through the years, and it is now, alongside Swedish, the main language of academic activity in Sweden.

It is important to make a distinction between the *language of publication* and the *language of instruction*. There have always been languages of publication, but only when a language is used in instruction, are voices raised. English has been the lingua franca of science in publication since the 1930s. Concerns were raised when its use was extended beyond publication to *instruction*. There are surely advantages of using English in instruction in higher education: mobility, employability and competitiveness/attractiveness, which are among the objectives of the Bologna Declaration. However, English, being both the language of publication and the language of instruction, has gained a much more powerful position. There are two main concerns here: if English is used in instruction instead of the local language, the local language might be threatened and if students cannot study in their native language but in English, they might not be able to learn as effectively as they would in their native language.

The first concern has been expressed in numerous studies; a number of scholars have focused exclusively on whether this unprecedented growth of English is threatening the languages of Europe or not. There are varying views on this very topical issue. Tardy, after investigating the way students view English, as a *Tyrannosaurus rex*, a term Swales uses (1997), or as a neutral lingua franca, says that although there are a lot of grey areas, students do not see English as a purely neutral ground the way the term lingua franca suggests (Tardy, 2004: 263). The question of domain loss for languages that are not widely spoken

has also been a topic of discussion as one of the biggest concerns for some time (Hellekjær and Westergaard, 2003: 65). Brock-Utne maintains that the “Norwegian language is threatened as an academic language” (Brock-Utne, 2001: 221). Griffin looks at the situation in Bulgaria, and his conclusions are that English is so “pervasive” in Bulgaria that a citizen without at least a working-knowledge of English would be at a “severe disadvantage” (Griffin, 2002: 60). However, these concerns are not widely shared. Melander finds the claims to be exaggerated and says that a “wide-ranging language shift” is not underway in Sweden (Melander, 2000: 13). House reports from a German perspective that English as a lingua franca is not a threat to multilingualism (House, 2003: 575). Mauranen predicts that scholarly writing in Finnish will not survive although Finnish rhetoric may survive through the medium of English (Mauranen, 1993).

Whether or not ELF is threatening the local languages will not necessarily be within this discussion. The second concern, however, is of interest. There is already some work that investigates whether students learn less effectively when they learn in English instead of their L1 at higher education (HE) level. Some scholars from the Netherlands have found out that instruction and testing in English leads to poorer achievement results in comparison with instruction and testing in L1 (Jochems, 1991; Jochems et al., 1996; Vinke et al, 1998). More work from the Netherlands refers to the frustration among content teachers and maintains that English-medium instruction causes problems of expressiveness both for lecturers and students (Vinke, 1995) and the slight disadvantage for students studying through the medium of English in the Netherlands (Klaasen, 2003: 119-145). Airey and Linder refer to the teaching of physics in Sweden through English, and in their tentative observations they argue that linguistic resources “would seem to be less well developed” in such situations compared to other disciplinary resources and oral skills in both Swedish and English would be the least developed (Airey and Linder, 2008). Another study that compares biology students’ reading skills shows that Swedish students reading biology texts in English do not read as well as the British students in Britain reading in English (McMillion and Shaw, 2008).

In Sweden, English is now appearing ever more forcefully as the medium of instruction. Naturally, in the absence of foreign students, Swedish is still the language of choice. So, in this sense, Swedish is the default language. Even so, “The rule seems to be that English takes over as soon as any individual is unable to understand Swedish.” (Gunnarsson, 2001: 294). In 2007, there were 123 reported English-taught programs in Sweden (Wächter and Maiworn, 2008: 24), which put the country in number four on the list of the leading countries as providers of English-medium tuition in continental Europe (Wächter and Maiworn, 2008: 29).

### **3. Methods**

The data in this investigation come from real high-stakes technical speech from content courses, i.e. non-language-teaching contexts, which is a strength of the present study. Another strength is the fact that group-work as a genre has been included in the investigation along with the lectures. Such highly interactive speech events are quite rich in terms of examples of usage and therefore reveal considerable data that are not necessarily observable in other speech events. Apart from the ELFA corpus<sup>2</sup>, such group-

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<sup>2</sup> ELFA stands for ‘English as a Lingua Franca in Academic Settings’ and is a large corpus of academic speech from Finland.

work has been almost ignored in the research of spoken university registers (Biber et al., 2002: 9).

The group-work sessions and lectures<sup>3</sup> have been digitally recorded and have all been analyzed for the present project. The data have been recorded straight into the computer through *Audacity* (version 1.2.4), a free cross-platform audio editor that runs on Mac OS X, Windows and GNU/Linux.

The subjects come from twenty different first language backgrounds: 50% of the students were exchange students from different countries, 25% were Swedish and another 25% were ethnically non-Swedish, i.e. residents in Sweden who have another home language than Swedish. When it comes to lecturers, 54% were Swedish and 46%, speakers of other languages. It is worth noting that none of the foreign languages in the material dominated over another one. Altogether, 63 speakers were recorded.

For the investigation of the material, all the occurrences of non-native-like usage in the lectures and group-work sessions were identified and transcribed. Cases of non-native-like usage were grouped as ‘disturbing’, i.e. causing overt comprehension problems and ‘non-disturbing’, i.e. causing no comprehension problems. An important stage of the study has been to investigate listener attitudes towards the non-standard forms through interviews and questionnaires, using slightly accented non-native speaker speech.

## 4. Results

In this section, brief examples will be given from each category of non-standard usage. If a non-standard feature was used by different speakers in different types of speech events for a minimum of ten times, it was noted down as a commonality and was included in the investigation.

### 4.1 Form of words (Morphology)

In this part, the commonalities are ‘Non-standard word formations’, ‘Analytic comparative’ and ‘Non-standard plural forms/Countability’. The speakers produce non-standard forms in word formation (e.g. *boringdom*, *discriminization*), the analytic comparative (e.g. *more narrow*, *more cheap*, *more clear*) and plural forms (e.g. *how many hydrogen*).

### 4.2 Grammar (Syntax)

In this part, the commonalities are dealt with at phrase and clause levels.

At the *phrase level*, starting with the *noun phrase (NP)*, the features found comprise ‘Not marking the plural on the noun’, ‘Problematic usage of articles’, and ‘Double comparatives/ superlatives’. One of the most interesting features perhaps is ‘Not marking of the plural on the noun’, considering the importance and frequency of quantity bundles in engineering (Biber, 2006: 170-171). The speakers seem to indicate the plural meaning merely by numbers or by adverbs or determiners before the noun but leave the noun itself without a declension. Some examples of this are given below (1-3):

- (1) They have a range from **50 to 500 meter**.
- (2) Typically you want to have **five kilogram of oxygen**.
- (3) For example, you take **two piece of glass**.

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<sup>3</sup> A part of the lecture recordings comes from already recorded lectures from one of the departments.

and (4)-(6):

- (4) In **many many case** you can gasify it.
- (5) There are **some difference**....
- (6) ..several **conclusion**...

When it comes to article usage, there are cases where the article is superfluous or incorrect, as in (7)-(9):

- (7) You will have **a** efficiency curve....
- (8) If you go to **the** Belgium, all the highways are lit.
- (9) You can use it in **the** different ways.

There are cases where the article is missing, exemplified in (10)-(12):

- (10) From those figures, you can have ▼ idea what reasonable speed....
- (11) You can add timing interphase for ▼ memory system.
- (12) Who has paid for the infrastructure? That's always ▼ interesting question.

The last group of features at the noun phrase level, 'double comparatives/superlatives', simply include examples such as *much more safer*, *much more wider*, *more bigger*, *the most cheapest available biowaste* etc.

The main cases of non-standard usage at *the verb phrase level (VP)* are 'Subject-verb disagreement', 'Tense and aspect issues' and 'Problematic usage of passive voice'. To start with, there are many cases of subject-verb disagreement in the material, a feature often found in L2 speech. The material in the present study has examples of this (13-15):

- (13) I will talk about how **a turbine operate** in the system.
- (14) However, **the blades was** not that good developed.
- (15) There is **a further method which are** sensitive to porosity in rocks.

The strongest feature when it comes to tense and aspect issues is the very frequent use of the verb-ing (the progressive form), again a common feature in ELF (Ranta, 2006). This is unlike native speaker academic discourse, for which the "simple aspect is overwhelmingly the preferred option" (Biber, 2006: 63). The speakers in the present context often make sentences to refer to scientific or technical phenomena that are always true or valid, and despite this, they use verb-ing instead of the simple form, as in (16)-(18):

- (16) A Francis turbine **is using** the whole turbine equation. (instead of *uses*)
- (17) Typically the energy of the sun **is emitting**... (instead of *emits*)
- (18) And **many many parameters is** affecting this one. (instead of *affect*)

The third group here deals with deviant passive voice. Although used much more frequently in engineering discourse than in other university registers, passive voice is rare in spoken university registers (Biber, 2006: 65). Correspondingly, there are few occurrences of deviant passive voice in the present material as in (19-21):

- (19) And the plates **get heat up** very quickly.
- (20) They are not directly **affect** by these concentrations.
- (21) It **can be happened** that sometimes...

At the *clause level*, there are three interesting cases of non-standard usage, namely ‘Non-standard question formulation’, ‘Pre- and post- dislocations’ and ‘Negation’.

To start with, there are numerous cases of non-standard question formulation in the corpus as shown in (22)-(26), observed both in Wh- and Yes/No questions:

- (22) So what kind of plant you have to consider?
- (23) Why is not good to combust directly?
- (24) Why it is black?
- (25) Why the function looks like that?
- (26) Anybody can define the renewability?

So speakers in ELF contexts seem to disregard question word order and ask questions mainly by using interrogative pronouns e.g. *what*, *why* in Wh- questions and follow the affirmative sentence word order in Yes/No questions. This type of usage is found mainly in the dialogic material in the present study. It is highly likely that the speech event type is the main factor behind this: in group-work, speakers often raise questions to complete the task whereas in lectures, it is much less frequent that the lecturer directs questions to the floor. This type of deviance differs from all others discussed here since it is the only one that has disturbed communication and led to repetition and rephrasing in some cases.

The next typical feature of ELF usage is a special case of deviance from standard written English which is shared by native usage: Pre- and post-dislocations. They occur frequently in academic speech and are used to topicalize or highlight information both by native and non-native speakers. There are many examples of it in the material, especially in the lectures as in (27)-(29):

- (27) **The pores that’s where** we have the large surface area.
- (28) And the **nano-particles they** are in the surface area.
- (29) **The supercapacitors** I don’t know much about **them**.

In the present material, post-dislocations make up about 15 % of the monologic examples and 13 % of the material in total. Some examples of post-dislocations are given in (30) - (32):

- (30) **This** could be 80 per cent **the margin efficiency**.
- (31) Well **it** is not so emission-free **hydropower**.
- (32) You have very big parts of **it flatland**.

Another quite interesting area is negation. Failure to raise negation from the subordinate clause to the main clause seems to be common especially in the dialogic material, i.e. student group-work, with some examples also in the monologic material (33)-(35):

- (33) It is a **not** very good generator.
- (34) It has **not** always a low complexity.
- (35) This point is supposed to **not** move.

### 4.3 Attitudes towards English as a Lingua Franca

The preliminary results of the attitude study, the questionnaire and interviews based on commonalities of lingua franca speech, suggest that listeners show relatively limited negative reaction to non-standard form, such as deviance in word form and grammar but react strongly to heavily-accented speech.

## 5. Conclusion

It is remarkable that despite the relatively high frequency of the non-standard forms of English, there is little communication failure because of grammar- or vocabulary-related oddities. The results show a clear tendency by engineers to reduce redundancy and to focus on function regardless of standard form. The only feature that seems to cause communication failure seems to be non-standard question formulation. However, audible problems at the accent level have already indicated irritation and distraction, which might adversely affect communication.

It should be borne in mind that this project has investigated spoken English and overt communication failure. Difficulties might lie in invisible, inaudible areas, such as what speakers do not or cannot say rather than what they say.

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