ENGLISH FOR SCIENTIFIC COMMUNICATION AT SWISS UNIVERSITIES: "GOD HELPS THOSE WHO HELP THEMSELVES"

Abstract

This article investigates English for scientific communication at Swiss universities in terms of supply and demand. After establishing the importance of English to Swiss researchers, we look briefly at special English courses provided by American and European universities, before describing course provision for students and staff in Switzerland. Our findings show that, as far as English courses are concerned, Swiss universities generally lag behind those in other prominent research nations, and only the Swiss Federal Institute of Technology in Zurich (the ETH) would appear to have a policy of providing both staff and students with writing courses in English free of charge. We conclude, therefore, with proposals for providing Swiss university researchers with more linguistic help in participating in the international research community.

1. Introduction

The international language of the scientific community at the end of this millennium is English. This claim is not only made by linguists such as Skudlik (1990, 1992) and Crystal (1997), but was also repeated by many of the Swiss scientists who replied to questionnaires we sent out in 1996 and 1997. It has implications for policy in the training and ongoing support of scientists keen to communicate their research to an international audience, as many universities throughout the world are now recognising.

In this article, we first examine the extent to which Swiss scientists actually use English in writing up their research. Then we look at courses that are offered at universities around the world to help researchers develop good writing skills in English. These include courses for both native speakers of English and those for whom it is a foreign language. As a third step we report on the kinds of courses that are offered at Swiss universities and on other ways researchers obtain help in writing English. Finally, we give several recommendations for improving current practices, which, in the long term, should improve the international reputation of Swiss science as well as ensuring that gifted researchers obtain the attention they deserve for their findings.

Before focusing on the Swiss scene, however, some comments on the claim that English is the international language of science are called for. Crystal (1997: 102) reports that, as long ago as 1981, well over 80% of scientific articles in biology and physics were written in English, with the other natural sciences and medicine lagging only slightly behind. In the social sciences and humanities, English does not dominate to such an extent, but in all fields the pressure to publish in English is increasingly felt and the proportion of articles written in English is rising. As Ammon and Hellinger (1992: viii) put it:

> "English has become so dominant as the international language of science, especially of scientific publications, that its use seems to be necessary if one wants to be read or discussed outside of one's own country."

This means that, in most disciplines, researchers who are interested in making their findings widely known (and thus in furthering their careers) will have to tackle the linguistic and stylistic intricacies of writing up their research in English. Swales (1990: 10) puts the point more strongly when he says:

> "the fact that English now occupies an overwhelmingly predominant role in the international world of scholarship and research ...entails that the coming generation of the world's researchers and scholars need – with relatively few exceptions in the arts and humanities – to have more than adequate professional skill in the English language if that generation is to make its way without linguistic disadvantage in its chosen world."

How, then, do scientists for whom English is not a first language cope with the assumption that they will report on their research in English? In what follows we describe the current practices of Swiss scientists. What we do not discuss directly in this article is the negative side of the increasing dominance of English (but see Skudlik, 1990 and 1992, and Truchot 1990, for comments on recent effects in Germany and France).

2. The importance of English for researchers at Swiss universities

As one of the leading research nations worldwide, Switzerland, and thus Swiss researchers, would appear to have a considerable need for English. We have tried to gauge the importance of English to researchers and students (as potential future researchers) at those institutions in a number of ways. One approach has involved surveying 110 junior and senior researchers at five universities in both French- and German-speaking areas of Switzerland by means of questionnaires or interviews.

In order to quantify their use of English, we asked our respondents to tell us how many of their articles and talks over the past five years had been in that language. Following the classification system of the Swiss National Science Foundation (Nationalfonds/ Fonds national), we grouped respondents into three categories according to their fields of research: I. humanities and social sciences; II. mathematics, natural sciences and engineering; III. biomedical or life sciences. The average percentage of papers and talks in English reported by researchers in the humanities and social sciences was 32%, and in the natural sciences, 57%. Swiss biomedical researchers reported the highest proportional use of English, with an average of 79%. Thus we obtain a rough picture of English use across the disciplines ranging from under a third in group I to over three quarters of papers in group III.

A second approach to quantifying the significance of English for Swiss researchers has involved tracing changes in their use of English over the past 20 years. Evidence of such change can be gleaned by examining the language used in project proposals selected for financial support by the Swiss National Science Foundation (SNSF) in 1975, 1985 and 1995, and is summarised in Figure 1. The graph shows that whereas in 1975 the number of English titles was very low in all disciplines, by 1985 it had increased dramatically in the fields of biology and medicine (from 14% to 55%), but only slightly in the natural sciences (2% to 7%) and the humanities (0% to 1%). By 1995 many more natural scientists (58%) submitted successful proposals in English and nearly all titles in the life sciences were in English (91%). That is, there is now a far greater tendency to use English in SNSF project proposals in the natural and life sciences than in the arts and social sciences. [1]

Fig. 1: Language of Swiss National Science Foundation Project Titles.

These figures show how senior researchers in all disciplines are increasingly using English in writing up their research. But word has also reached many junior researchers in Switzerland that it could help their careers to produce their doctoral dissertations in English. One senior researcher (a chemist) expressed regret that she did not have an English version of her dissertation to pass on to her international colleagues, and she and those in similar positions now tend to recommend that doctoral students use English. This practice is reflected in our findings about the numbers of Swiss doctoral dissertations with English titles (assuming an English title to mean the whole dissertation was written in English) accepted in 1975, 1985 and 1991, summarised in Figure 2 below.

Fig. 2: Dissertations in English at Swiss universities

The number of dissertations written in English more than tripled between 1975, when 135 (8% of all dissertations) were in English and 1991, when 422 (20% of all dissertations) were in English. The increase was most marked between 1985 and 1991, particularly in the natural sciences, with a rise from 18% in English in 1985 to 31% in 1991 (see Fig. 2). This marked upward trend has continued if the figures for Zurich

University for 1995 (when 59% of all natural science dissertations were in English) and 1996 (61% English) are representative.

English appears to be especially favoured as the language for dissertations in German- speaking universities. For example, in 1991 the highest percentage of natural science dissertations in English at a French-speaking university was 19% in Neuchâtel. In 1996 still only 39% of Lausanne's natural science dissertations were in English compared with Zurich's 61%. Why English should be less popular as the language of dissertations at French-speaking universities is not clear. Some fluctuations in the data, e.g. a large proportion of dissertations on economics in Lausanne (4 out of 10) and Geneva (5 out of 17) in 1975 were in English, may be due to the presence of English mother tongue professors. The percentage of medical doctoral dissertations written in English was unexpectedly low given the way English dominates research in the life sciences (compare Fig. 1 and Fig. 2). This, however, is probably due to the fact that medical dissertations are relatively short and have little to do with the international research community.

What our investigations show, then, is that the importance of English to Swiss researchers is not universally high, but very high in the majority of research fields and growing in all fields. The reasons our respondents give for using English (as opposed to French or German) indicate that not using English would lead to exclusion from international scientific forums, to a lowering of regard for their research, as well as to loss of recognition for Swiss science in general. English is thus viewed not so much as a matter of preference but as a communicative necessity in the academic world.

3. English for Scientific Communication and English for Academic Purposes

The fact that English so dominates international research communication may give native speakers of English an unfair advantage in the competition to publish results. However, it would be a mistake to think that native English-speakers grow up with a natural ability to write about their research. Learning to write for academic purposes is a complex process, which requires prolonged contact with scientific texts and a great deal of practice. At many North American universities this process is helped along by specially designed academic writing courses. Major universities such as M.I.T., Princeton, Yale, UCLA, Michigan, Purdue, and Toronto organise extensive writing programmes for both staff members and students. For example, the University of Michigan requires all students to attend an introductory writing course because most students need specialised writing assistance "particularly in the forms of argumentation and critical analysis that fall into the general category of *academic discourse*". As a further step, upper-level writing courses "designed to assist students with the special genres of their fields" are also mandatory for all students (Univ. of Michigan webpage 7/1997).

For reasons which include language, international reputation and finance, North American, Australian and British universities also enrol hundreds of thousands of foreign students. Many of these institutions provide substantial language help for their overseas students in the form of courses in English for Academic Purposes (EAP). Such courses usually aim, at undergraduate level, to facilitate students' learning in an English-speaking environment by boosting knowledge about English in academic settings as well as providing practice in reading, writing, speaking and listening to English academic discourse. In addition to EAP, there are courses like 'English for Computing Studies' and 'English for Chemists', that fall under the rubric of English for Specific Purposes (ESP). Graduate students are also given help with their English, particularly with writing up research. Some universities, such as the University of Birmingham (UK), maintain an EAP department with enough full-time staff to supervise all MA dissertations and PhD theses written by non-native speakers.

Before turning to English courses at Swiss universities, it is also relevant to look at EAP at other European universities. Here the picture varies not so much from country to country, but from university to university. Both EAP and ESP courses are offered at certain universities in all countries, but not at every university.[2] Institutions with a more professional orientation, such as the Gerhard-Mercator Universität Duisburg or L'Ecole des Mines de Nancy tend to offer a range of ESP courses such as 'English for Economics' or 'English for Engineering' and some even stipulate a foreign language requirement for students. Language centre staff members at the Vrije Universitaat Amsterdam run special English courses in scientific writing and have even produced their own excellent scientific writing textbook. On the other hand, the course description from the University of Aarhus in Denmark explicitly states that no EAP courses will be offered and that students must begin their studies with an adequate command of English.

But attending EAP or ESP courses is not the only way in which European students acquire English for their field of study or profession. There is an accelerating trend at many European (and Asian) universities to use English as the language of instruction in certain fields, such as natural science, economics and engineering (Flowerdew 1994). Thus, even without special language courses, students acquire professional competence in English by using it communicatively in their normal subject courses.

4. English courses for academic purposes at Swiss universities

How do Swiss academics learn to communicate about their research in English? Before presenting the results of our survey of Swiss EAP courses, it is important to mention a type of course we did not count. A great many EAP courses (e.g. in study skills, writing skills, and academic discussion) are offered to students majoring in English. In fact, every Swiss university English department provides its own EAP courses. However, we did not count such courses in our survey because they are neither principally aimed at preparation for scientific communication, nor are they open to students from other departments. What we did count were English courses which were open to other types of students (and in some cases staff), and which focused on providing university- or career-oriented skills. The figures were not easy to obtain[3] because at some universities courses which do not lead to degrees may not be published in the course catalogue. The results are presented in Table 1.

University or Polytechnic	**Offer EAP/ESP Courses to Students**	**Weekly hours/ semester**	**Total hours/ year (approx)**	**Provide Courses in Scientific English for Staff**	**Total hours/ year**
BASEL	No	-	0	Yes, for a fee	24
BERNE	Yes	6	156	Yes	21
FRIBOURG	Yes	6	156	Yes	see EAP
GENÈVE	No	-	0	No	0
LAUSANNE	Yes, for a fee.	15	390	Yes, for a fee.	see EAP
NEUCHÂTEL	Yes, for science and law	4	104	No	0
ST. GALLEN	Yes, for economics and law	10	260	?	?
ZUERICH	Sometimes for law	2	24	Yes, for a fee	approx. 100
ETH Z	Yes	12	312	Yes	
EPFL	Yes				

Table 1: EAP /ESP courses for students and staff at Swiss universities

The table shows that some Swiss universities (Basel, Genève) apparently offer no EAP courses at all, while others offer upwards of 300 hours per year. As is the case with other European universities, there is a tendency for institutions with a stronger professional orientation (St. Gallen, ETH) to provide more courses. The EPFL, with virtually no ESP teaching, and Lausanne, with nearly 400 hours of courses, would appear to be the exception here. Lausanne's high figures may be explained by the fact that the courses are not paid for by the university but are self-financing, and thus related to student and staff demand. The concentration on general English courses instead of EAP/ESP at the EPFL is difficult to understand.

The picture of English courses for researchers which emerges from this survey is one of patchiness and inadequacy. There are very few English courses for a great many active researchers. Given the inviolable sovereignty of Swiss university faculties, it is hardly surprising that there is no uniform approach to providing linguistic support for researchers struggling with dissertations, articles and talks, which their careers demand must be in English. On the other hand, given the fact that Swiss universities are relatively wealthy institutions by Europeans standards, their lack of appropriate courses shows how surprisingly unprepared they are to help their researchers compete in the international research arena.

On a brighter note, however, it should be mentioned that the majority of Swiss universities offer subject courses in English. This is most notably the case in Geneva at the Institut Universitaire de Hautes Etudes Internationales and Basel at the Biozentrum, where about half of the courses are in English. The trend towards internationalising academic study has also been clearly felt at the University of St Gallen and the ETH, with the latter recently altering its language policy to encourage the use of English in lectures for upper-level students.

5. Coping without courses: "God helps those who help themselves"

It is a fact of life for most Swiss scientists today that writing for publication means writing in English. But without the support of courses in scientific writing, what do Swiss scientists do to overcome the linguistic problem of producing a paper in respectable academic English? Attending general or special language courses is one way in which researchers try to cope with the demands placed on their English, and a number of respondents mentioned studying in an English-speaking country (postgraduate study abroad is often supported by the Swiss National Science Foundation or SNSF).

Figures from the SNSF's annual reports for 1975 and 1995 show first that the number of postgraduates receiving SNSF support for study abroad nearly doubled over a period of twenty years. Those going to English-speaking countries rose from 53% in 1975 to 75% in 1995, with the majority (74% in both years) going to the United States. A proportional drop in the number of those going to the United Kingdom was compensated for by a nearly seven-fold increase in those going to Canada, Australia or New Zealand.

Comparing fields, the pattern follows that found for dissertations and SNSF research projects: in both 1975 and 1995, the life sciences led the way in having the highest proportion of postgraduates studying in English-speaking countries (70% in 1975 and 89% in 1995), followed by the natural sciences (68% and 79%) and then the arts and social sciences (24% and 56%). Given that many use their stay abroad to improve their English, some pre-travel training is called for, in order to help them make best use of their linguistic opportunities.

Other means of coping with the lack of EAP courses at Swiss universities involve practices within university departments. It seems to be common practice to (mis)use native speaker research assistants for proofreading, or for senior researchers or professors to correct written work. How cost-effective is it, though, to use highly qualified subject specialists to correct colleagues' and students' English? And, it is also questionable whether specialists - native or non-native speakers - always provide reliable linguistic help. One doctoral student reported having terrible difficulty writing his thesis in economics because his Swiss professor had advised him to refrain from using the first person - questionable advice, to say the least.

In the life and natural sciences where the pressure to use English is strongest, some research groups organise weekly meetings in English to practise giving presentations and holding discussions in English. One respondent said, " No one is a native speaker, but we speak English with each other and present articles and research. The head of the department corrects if necessary." It seems to us that this is a practice which could helpfully be adopted by other research groups in fields where publishing in English is the norm. English specialists could be called in to help groups where there is no member prepared to give linguistic assistance.

In surveying Swiss researchers we were struck by the high number of respondents who said they received no linguistic help at all in producing papers in English. They reported self-study methods such as "learning by doing" or "trial and error" or "learning to write by imitating the literature". They seemed resigned to having no help with English, and to feel that the attitude in their department was, as one botanist put it, "God helps those who help themselves". It is a pity that so many gifted Swiss scientists are left to cope with reporting their findings in this amateurish way, when their research is often at an extremely high level.

6. Conclusions

This study has shown that publishing research for an international audience generally means writing about it in English. Increasingly, this applies as well to "national research", so that we find the majority of SNSF projects and a growing number of doctoral dissertations being written up in English. The situation has changed dramatically over the past ten years and it seems likely that English will continue its relentless expansion. This raises the question as to whether Swiss researchers are being well-prepared to meet this challenge. Our survey of special courses on offer at Swiss universities and research institutes shows that, with the exception perhaps of the ETH, the provision of EAP courses is really inadequate. The strategy of postgraduate study in an English-speaking country may not be sufficient to ensure that new generations of Swiss scientists can respond adequately as the demand for English moves further down the academic career ladder and more dissertations are written in English. Moreover, from the writing of researchers who have attended our scientific writing courses, it would appear that some otherwise good research is failing to be published because of poor English, even when written by those who have spent time at a university in an English-speaking country.

If Switzerland is to maintain or even better its position in international academic research communities, then we suggest that universities should coordinate in providing at least some of the following:

- Courses for students in writing scientific articles in general, and English scientific articles in particular. Day (1993: 177) in his classic guide wrote that "Many universities now provide courses in scientific writing. Those that do not should be ashamed of themselves." And he was writing about courses for English mother tongue scientists.
- Subsidised courses for staff, with special "writing clinics" to help those in the process of writing up research.
- Subsidised EAP courses for those preparing to spend time studying in an English speaking country so that they can be in a better position to improve their English skills while doing research.
- A coordinator, preferably an English specialist, at each university who can advise students and staff on how to obtain further assistance in writing papers, for example, by supplying information about online writing support or about specialist translators and editors as well as English teachers. The coordinator could also advise university departments on how to run, say, research colloquia in English so that participants could improve their English while exchanging ideas about their research.
- An email "hotline" where researchers could obtain quick answers to queries about grammar and stylistic problems in English.

At the same time as helping researchers struggling to write good scientific English, Swiss universities should also be ensuring that special scientific registers in the Swiss national languages are being maintained (e.g. by supporting the services of TERMDAT at the Bundeskanzlei). In this way, scientists will be well-placed to communicate their results not only to international colleagues but also to the wider society in Switzerland.

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[1] The increased use of English in SNSF project titles partly reflects SNSF guidelines. Since the mid-1980s, it has been a requirement that proposals in Section III should be in English. This rule was not enforced strictly until 1990, however. In 1992, section II changed the guidelines for researchers and requested them to submit proposals in English or with an English translation. The reason given was that proposals are often sent to foreign experts for assessment and these experts rarely know Swiss languages well enough to evaluate research proposals in them.

[2] The data presented here are based on each institution's Internet course catalogue as published in July 1997.

[3] We would like to express our gratitude for help in obtaining course and survey information to Miriam Bryant (ETH/Zürich), Barbara Schröder Würtz (ETH), Jeannette Regan and Pamela Buhayer (Lausanne), Anthony Clark (Fribourg), John Bennett and Ronald Ewart (St. Gallen), Christa Pieth (Genève), and Christian Schärer (EPFL).