CONTENT AND LANGUAGE INTEGRATED LEARNING (CLIL) FOR FUTURE SPECIALISTS IN THE FIELD OF NATURAL SCIENCES

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Abstract. This paper explores language in the natural science subjects of Biology, Physics and Chemistry in the secondary curriculum, outlines ways for identifying this language, where to look for it and how to record it and makes suggestions about what the implications are for second language learners of these science subjects in terms of task in the classroom.
Keywords: future science teacher, multilingualism, CLIL, English, directive, method.

INTRODUCTION

The background to this paper is one where the author carried out research of numerous secondary science textbooks, curriculum documents and made use of transcripts of video recordings of English-medium and mother-tongue Science lessons. The discourse analysis which was the result of this research ultimately fed into the writing of a vocabulary resource for second language learners of secondary science subjects

MAIN PART

Which words should we be learning?

- 750,000 – words in English
- 650,000 – words in OED
- 40,000-45,000 – used by average speaker
- Every 12th – 'the'
- 2,500 = 80% of all words we use
- 7,500 = 90% of all words we use (star words)
- 10% = the rest, topic specific (black words)

Fig. 1. Word frequency and usage

According to Fig. 1 there are roughly three quarters of a million words in the English language. There are 650,000 of these words in the OED. An average native speaker of English uses between 40,000 and 45,000 words. Every twelfth word we see and hear in the English language statistically is the word 'the'. All of this information is out there for us to find out and know, and good dictionaries today offer information about usage of words. The Macmillan advanced learners' dictionary (Macmillan Education, 2007), for example, iden- tifies the 2,500 most frequently used words in the English language with three red stars. These words make up 80% of all the words we use in our daily lives. The words between 2,500 and 5,000 are given two red stars and 90% of all the words we use comes to a sum total of 7,500 words, one red star. All of the rest of the three quarters of a million words are 'black words'.

One way of gathering qualitative (use) and quantitative (frequency) informa- tion about this language is to analyse the discourse of the secondary science classroom. This means investigating the language of the science textbook, the classroom and the science teacher and learners themselves. Recording language use and frequency in the classroom is a time and energy consuming business, but it is only by carrying out such research that we can be certain

that we are offering second language learners of science the right language at the right time. Language can be recorded using audio recording equipment, by video recording lessons and by transcribing the language used. Another less time-consuming, but no less simple way to start to carry out such an analysis is with concordancing software and with electronic text versions of textbooks. The following table shows the top one hundred science words from one integrated science textbook

Clearly, there are questions for teacher education in the light of the discussion above. Teachers need an awareness of the language of their subject beyond the noun phrases which make up the concepts of their subjects. In addition they need strategies and techniques for dealing with and making accessible this language for the learners in their classrooms. This paper has only touched on the issue of task design and teacher education and is the substance of a further paper on this topic. Teachers working in a subject through a foreign language will also need considerable knowledge of the general academic language of learning in their school environment and this carries expectations for colleagues to be familiar with the content and language of other subjects in the school curriculum, it suggests that there is a need for close collaboration between subject teachers, and between subject teachers and language teachers to enable learners to have an efficient preparation in the language they encounter throughout the curriculum.

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