

## **Using deaf students' visual skills to promote their knowledge of English literacy**

Oral English is related to written English in two ways. The first is by letter-sound correspondences. Letters represent the sounds of English language, so students need to access sounds in order to know what letters stand for. This is difficult for deaf children but many methods have been developed to improve their access to sounds. The second connection between oral and written English is less explored in teaching deaf students. Written English represents units of meaning, called morphemes. The word "magician", for example, has two morphemes, magic + ian: the "ian" is a suffix (i.e. a morpheme at the end of a word) used to form "person words" (e.g. mathematician, musician, electrician). Suffixes have the same spelling across words: they are **visual** units and it should be possible to help deaf students use them in reading and writing, if they understand how suffixes work in English.

Morphemes are important for word recognition and for reading comprehension as well. For example, the sentences "I visited my parents on Sunday" and "I visit my parents on Sundays" have different meanings. In order to understand the difference between these two sentences, you need to use information from suffixes. It goes without saying that when you want to convey meaning in writing, you need to use suffixes too. So, raising deaf students' awareness of morphemes should help them with reading comprehension and writing skills.

Finally, the written vocabulary in books used in primary school exceeds oral vocabulary by tens of thousands of words. If you are a primary school child and want to reach good reading comprehension in English, you will be better off if you know how to analyse written words, which are new to you, in morphemes. Think of the word "disheartened", for example. We can say that it is a bookish word. In conversation, we might say that someone was sad; it is unlikely that we would say "disheartened". "Disheartened" has four morphemes: "dis", "heart", "en" and "ed". Each one conveys some information about the meaning of disheartened. If you come across this word for the first time in a book, and you know something about morphemes, you can have a good stab at its meaning. The difference between oral and written vocabulary gives us one more reason to promote deaf students' awareness of morphemes.

With the support of the Nuffield Foundation and the National Deaf Children's Society, we carried a project in which we first assessed deaf children's awareness of morphemes. Later, we developed materials to promote this awareness and studied the impact of improving awareness of morphemes on reading comprehension and writing skills. Each step in the project is described here briefly.

### **Assessing deaf children's use of morphemes in writing**

In order to assess deaf children's awareness of morphemes, we analysed how they used suffixes in spelling. We dictated to them words in the context of sentences so that they knew what the words were. The sentences and words were spoken and signed. We also showed them pictures to help them know what we expected them to write. For example, we showed them a picture with many windows and asked them to write the word "windows", completing the sentence "These are \_\_\_\_\_". Some of the words had simpler suffixes, such as the "s" for plural and "ed" for past tense, and others had more difficult ones, such as the "ian" in the end of "magician" and the "ion" in the end of "confusion".

We compared the deaf children's spellings of suffixes were compared to the spellings produced by a sample of hearing children whose scores in the Schonell Spelling test were equivalent to those obtained by the deaf children in this same test. The deaf children's (N=270) age range was from 6 to 12 years; the hearing children's (N=72) age range was from 6 years to 9 years and 2 months. The hearing children were younger because we wanted them to have equivalent spelling scores to the deaf children. We then compared the deaf and hearing children's scores in suffix spelling – i.e. we analysed only how well they had written the 42 suffixes at the end of the words we asked them to spell in our own test. The deaf children's mean was 13.1 suffixes correct and the hearing children's mean was 19.4 suffixes correct. This difference was statistically significant, which indicates that the deaf children performed less well than the hearing children in the use of suffixes in spelling, even though they had similar spelling ability in other words that do not have suffixes.

The delay that the deaf children showed in knowledge of suffixes puts them at a disadvantage in word reading as well as reading comprehension because, as pointed out earlier on, much information in a sentence comes from suffixes. So we decided to develop a programme to raise deaf children's awareness of morphemes in written English.

### **Promoting deaf children's knowledge of suffixes and its impact on literacy**

In order to help deaf students use morphemes in reading and writing, it is necessary to raise their awareness of English grammar also. The "s" at the end of a noun indicates plural (e.g. The boys run in the playground) but, at the end of a verb, it indicates singular, present tense (e.g. The boy runs in the playground). So we designed a teaching programme to help students become more aware of grammar and morphemes in written English.

The programme was based on work that we had carried out with hearing children and designed over four years. We had the opportunity to test its effectiveness twice, once at the end of the first two years and a second time when we completed the project development. We will call these two tests First and Second Trial, respectively. Before each trial, the teachers who were going to test out the programme participated in a workshop, in which we discussed the basis for the programme and its different components. The teachers who signed up to test the programme and could not be invited for the workshop, due to large numbers already signed up, were asked to go on a waiting list. Their students formed the comparison group for analysis of the effects of the teaching programme. At the end of the project, the teachers in the waiting list were invited to a workshop, in which they had access to information about the programme and to all the materials.

The programme includes teacher-led activities, supported with the use of Powerpoint in the computer, board games and on-line computer games to offer the children further practice, and books designed to create opportunities for the children to use their knowledge of morphemes in text.

For both trials, we compared the progress made by the children who had been taught about morphemes to that made by the children in the comparison group over approximately 6 to 8 months. For both trials, the taught group made significantly more progress than the comparison group in the use of suffixes in spelling and also in reading comprehension and writing skills. Many teachers who tried out the programme have found

that their students developed an interest in learning new words and have continued to use it with their new students.

The programme can be downloaded from our website:

<http://www.education.ox.ac.uk/research/resgroup/cl/ndcs/resources.html>

The site contains information on the background to the programme, its aims and fit with the English framework for teaching literacy, and information on the assessment.