



## TEACHERS' GRAMMAR ON THE ELECTRONIC HIGHWAY: DESIGN CRITERIA FOR *TeleGram*<sup>1</sup>

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This paper discusses the rationale and criteria for developing *TeleGram*, an electronic grammar database for English as a Second Language (ESL) teachers in Hong Kong. The paper begins by describing the importance of explicit grammatical knowledge in effective language teaching. It then moves on to describe the design criteria for *TeleGram*, which aims at providing a body of content knowledge and pedagogic content knowledge that is relevant to English language teaching. This discussion addresses two central issues which have implications for the selection and presentation of content for *TeleGram*: (a) How is a teachers' grammar different from a reference grammar?, and (b) How can information be presented more effectively in an electronic medium than a printed medium? The paper concludes by pointing out that *TeleGram* is still in its early stage of development and that teacher feedback will be used as a basis for revision. © 1997 Elsevier Science Ltd

### INTRODUCTION

*TeleGram* is an electronic grammar database which can be accessed by English as a Second Language (ESL) teachers in Hong Kong secondary schools who are linked up with *TeleNex* which is a computer network for teacher development. On the network are three other databases that teachers can access: *TeleTeach*, which is a teaching resources database; *TeleTest* which is a test item bank; and *TeleText*, which is a bank of newspaper articles. In addition, there is a messaging system. The aim of the network is to provide professional support to in-service ESL teachers by making available on the network these databases which are developed collaboratively by a team of ESL teacher educators at the University of Hong Kong and ESL teachers, and by allowing teachers to seek advice, share ideas and materials, and discuss their problems and frustrations through the messaging system. (For a more detailed description of the other component parts of the network, see Tsui *et al.*, 1994)

This paper consists of two main parts. The first part explains the reasons for developing an electronic grammar database for ESL teachers, and examines the relationship between content knowledge and teacher development. The second part discusses the design criteria

for *TeleGram*, and focuses on the following two issues: "How is a teachers' grammar different from a reference grammar?", and "How can information be presented more effectively in an electronic medium than in a printed medium?" Although the focus of the paper is on *TeleGram*, the issues are general enough to be of relevance to any ESL professionals.

## ESL CONTENT KNOWLEDGE AND GRAMMATICAL KNOWLEDGE

When designing the network and making decisions about the kind of support ESL teachers need for professional development, we share Shulman's (1986) view that content knowledge is an important, yet much neglected, component of teacher knowledge. The term "content knowledge", as expounded by Shulman (1986: p. 9), embraces subject matter knowledge, pedagogic content knowledge and curricular knowledge. Although different terminologies have been used in the delineation of the categories of knowledge in various models of teacher knowledge, subject matter knowledge and pedagogic content knowledge both figure importantly in all of them (see, for example, Elbaz, 1983; Wilson *et al.*, 1987; Grossman, 1990; Leinhardt *et al.*, 1991). Content knowledge, or a lack of it, has been found to affect what teachers teach (Grossman *et al.*, 1989), details in planning (Borko *et al.*, 1988), ability to pose questions and evaluate student understandings (McDiarmid *et al.*, 1989), and ways of evaluating and using textbooks (Hashweh, 1987).

We perceive the content knowledge of ESL teachers as consisting broadly of two components; first, knowledge about the language and, second, how to make that body of knowledge accessible to learners of different ages and how to help learners put the language to use. We also perceive grammatical knowledge as a very important component of knowledge about the language.

The perception of grammar as having a central role to play in language teaching dates as far back as the early twentieth century when linguists like Palmer pointed out that linguistics should constitute the scientific basis for language teaching (see Palmer, 1917, 1922). Although, in the 70s and early 80s, there was increasing scepticism about the relevance of linguistic theory to language teaching, and a widespread rejection of grammar teaching in schools, in recent years there has been a renewed emphasis on the need for language teachers to have explicit grammatical knowledge in order to teach effectively (see, for example, Cox, 1991). For example, Rutherford (1987: p. 209) argues that grammatical consciousness-raising ought to occupy a central place in language teaching. Littlewood (1993: p. 6) maintains that "Far from grammar being irrelevant in a communicative approach, then, the opposite is true: the more thoroughly a learner masters the grammatical system of the language, the more effectively he or she can use this language for communication". Leech (1994: p. 18) suggests that a "model" teacher of languages should be able to convey to learners how the language works as a communicative system, to analyse the grammatical problems that learners encounter, to evaluate learners' use of grammar in terms of accuracy, appropriateness and expressiveness, to present grammatical knowledge to learners of different ages, and to be aware of the differences between the learners' native language and the target language. (See also Harris, 1993; Tsui, 1992, 1993)

## A GRAMMAR DATABASE FOR ESL TEACHERS IN HONG KONG

There is an assumption that most teachers begin with some expertise in the content they teach but this assumption, as Shulman (1986: p. 8) points out, may well be unfounded. In Hong Kong, the ESL teaching profession largely consists of teachers who lack an explicit knowledge about the English language. According to the data of the teacher survey conducted in 1991, among 3700 graduate English teachers, although there are over 40% graduate teachers who have had professional training, only 27% are subject-trained (that is, they either studied English linguistics or English literature in their undergraduate studies) and only 21% are both subject-trained and professionally trained. If we look at the entire secondary school teaching force which is 5240, consisting of both graduate and non-graduate teachers, then the percentage of teachers who are subject-trained drops from 27 to 18.9% and the percentage of teachers who are both professionally trained and subject-trained drops from 21 to 14.2% (Tsui *et al.*, 1994).<sup>2</sup> Most teachers, therefore, acquire their knowledge about the English language system from the same books as their students (see also Chalker, 1994: p. 34). Yet, as Chalker (*ibid.*) observes, very often grammar books aimed at ESL/EFL learners make wrong observations based on half-digested knowledge, or are unable to convey grammatical knowledge clearly and accurately. Consequently, teachers do not have the necessary content knowledge to perform the tasks that Leech (1994) outlined for a "model" language teacher. Mitchell (1994: p. 222) observes that, "Such teachers need an understanding of grammar as offering a tool either for prescription or description; they need a set of concepts, and a metalanguage, which will allow them to deal with pragmatic, discoursal and rhetorical features of texts, as well as with sentence-level features". It is the need for this kind of teacher that prompted us to develop *TeleGram*.

### ISSUES ADDRESSED IN PRODUCING *TeleGram*

In designing *TeleGram*, we have found it necessary to address two fundamental issues. The first issue pertains to the differences between a teachers' grammar and a reference grammar. The second issue concerns how best to exploit the electronic medium as a device for organising grammatical information. These two issues have implications for the selection and presentation of content for *TeleGram*, and we will now discuss them in turn.

### TEACHERS' GRAMMAR VERSUS REFERENCE GRAMMAR

The kinds of information to include in *TeleGram* are determined by the defining characteristics of a teachers' grammar.

Unlike a reference grammar, which needs to be comprehensive in coverage (Greenbaum, 1987: p. 193), we decided that a teachers' grammar should be partial, and provide useful information for the effective teaching of English. Such information consists of a descriptive component and a pedagogical component (cf. Leech, 1994). The descriptive component should present language as meaningful activity, and offers a detailed description of

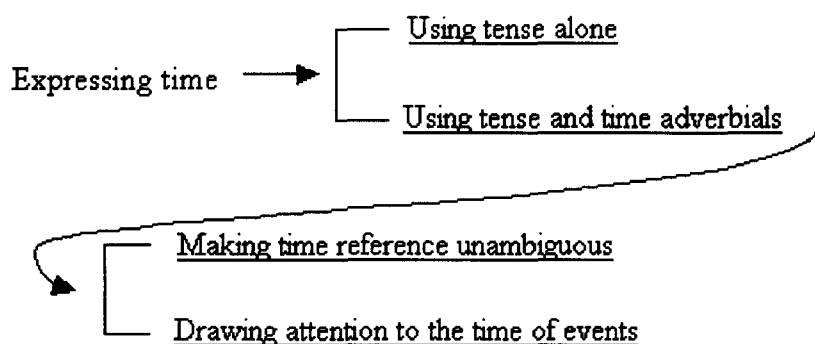
how modern English actually works. To help teachers to deal with students' language problems, there should be suggestions on how to explain errors and how to evaluate their gravity. As for the pedagogical part of a teachers' grammar, it should provide a bank of practical teaching activities which can be used in the classroom.

The above characteristics of a teachers' grammar lead to the formulation of four guiding principles when we produce *TeleGram*:

- (1) Grammar should be seen as a resource for making meaning.
- (2) Grammar should be considered in relation to texts.
- (3) Grammatical information should have a pedagogical orientation.
- (4) The needs of teachers with different levels of language expertise should be catered for.

#### *Grammar as a resource for making meaning*

In designing *TeleGram*, meaning is taken as the starting point of grammatical description. In contrast to most reference grammars, which take syntactic concepts such as tense and conjunction as chapter titles, *TeleGram* is organised under headings such as "expressing time" and "structuring information". These headings represent the things that people use language to do, and are shown to have realisations in various grammatical structures. These realisation relationships are indicated by "taxonomy maps", a typical example of which is given below.




The words underlined in the figure are hyper-jumps. When a teacher clicks on them, he or she can retrieve information on how time relations are expressed in English.

The functions of taxonomy maps in *TeleGram* are two-fold. First, they convey the important message that linguistic forms are resources for expressing meaning. Second, they serve as a source of teaching implications. In discussing comparison, for example, it is pointed out that there are four major means with which we can compare one person or entity with another. An implication of this is that in teaching comparison to students, it is inadequate to focus exclusively on the comparative and superlative forms.

### *Grammar in relation to texts*

Grammar will be seen to be relevant to communicative language teaching only if it goes beyond the sentence level and is considered in relation to texts. This view has guided the design of *TeleGram*, where extracts from authentic texts beyond the sentence level are used as examples wherever appropriate. These extracts are selected from a corpus of approximately three million words of running text. A case for using texts to illustrate grammatical concepts is found in the file on cohesive devices. Here, excerpts of authentic texts are presented, and the cohesive links between the sentences in these texts are examined.


The use of texts as examples has several distinct advantages. For example, it provides a discursal perspective on language, and illustrates the use of everyday contemporary English (Wright and Bolitho, 1993: p. 294). More important, perhaps, the use of authentic texts is helpful in explaining how the English language actually works. For example, in the file on the present perfect, text level examples show that in both spoken and written discourse, the present perfect is seldom used alone when people tell news. Instead, this grammatical structure is typically followed by sentences in the past simple, with implications for teaching.

Where the use of text extracts may be distracting, *TeleGram* uses isolated sentences as examples. These sentences are drawn from the corpus, and are all followed by a small "back to context" icon (). The following is an example from a file on direct speech:



### **Misconceptions**

Direct speech structure can be used to report not only what someone has said or written but people's thoughts as well. This latter function is common in written narratives or when people tell stories about themselves. For example:

*I ask myself, should we unilaterally disarm?* 

If a teacher clicks on the "back to context" icon, a temporary pop-up screen will be displayed, giving the surrounding text of the example sentence. This helps teachers to understand the original context in which the sentence is used.

### *Pedagogical orientation*

The kinds of grammatical information that are most useful to teachers are those with a pedagogical orientation. For this reason, we have organised *TeleGram* in the following ways.

*TeleGram* is composed of many files. Each file deals with one grammatical area, and is characteristically divided into seven sections: *Prof's Quiz*, *Overview*, *Uses*, *Misconceptions*,

*Student Errors, Teaching Implications, and Teaching Ideas.* The first section, *Prof's Quiz*, aims at raising teachers' awareness of the English language. Specifically, this section draws teachers' attention to grammatical facts that they may be unaware of (e.g. indirect speech can be used to report people's thoughts), or to fine details about language that may contradict many general statements found in textbooks or learners' grammars (e.g. superlative forms must always be preceded by *the*). Teachers may or may not want to teach these grammatical facts in class, but it is hoped that such a knowledge would be useful in various ways. As Wright and Bolitho put it:


... the more aware a teacher is of language and how it works, the better. A linguistically-aware teacher will be in a strong and secure position to accomplish various tasks—preparing lessons; evaluating, adapting, and writing materials; understanding, interpreting, and ultimately designing a syllabus or curriculum; testing and assessing learners' performance; and contributing to English language work across the curriculum. Indeed, we suspect that successful *communicative* teaching depends more than ever on a high level of language awareness in a teacher due to the richness and complexity of a "communicative view". (Wright and Bolitho, 1993: p. 292).

All *Prof's Quizzes* are designed as discovery exercises as this is a particularly helpful method in teacher education (Leech, 1994: p. 28). The following is an example:



### Prof's Quiz 3

Consider the use of *will* in the following sentence:

*"The Government told us it was too complicated to implement the housing allowance policy, but we **will** continue to fight for it. If we cannot do it this year, we **will** push for it next year," he said.* 

**Q.** In the above example, what are both instances of *will* used to indicate? Please click the answer.

likelihood

intention

willingness

Teachers are asked to click on the correct answer. After they have done so, a pop-up screen will appear, informing them whether their answer is correct or not, and why. All of the teachers' responses will be recorded in a log file. This has been made possible by a computer program specially written as a research instrument for investigating teachers' grammatical knowledge. (For details, see below.)

The second section of each file, *Overview*, gives a concise summary of a particular grammatical point. Important relationships between form and meaning are highlighted here, and useful generalisations are given.

The third section, *Uses*, describes the functions of a specific grammatical item in depth. This is usually the longest section of each file, and the information it provides draws on explanations that would be most useful for the effective teaching of English. This means that analyses that meet the criterion of theoretical but not practical adequacy are not adopted. A case in point concerns the past simple tense, which can be used to refer to a past event (e.g. *Yesterday, 30 of the survivors were still in hospital*) or to a hypothetical situation (e.g. *I wish it were a little pussy cat*). According to one analysis, these two uses share an underlying similarity of meaning: "remoteness". The remoteness in each case is of different kinds. In sentences such as *Yesterday, 30 of the survivors were still in hospital*, the simple past is used to indicate a remoteness in time. In contrast, in sentences such as *I wish it were a little pussy cat*, there is an element of remoteness in possibility (see Lewis, 1986: pp. 69–74). However, this analysis is not universally accepted. For example, structural linguists reject it on purely linguistic grounds (see, for example, Palmer, 1974: pp. 48–49; Huddleston, 1984: p. 148). In *TeleGram*, the idea of remoteness is adopted and introduced to teachers. The rationale for this is that it will help them and their students to see that there are regularities in English, a fact which should in turn help students to learn English more effectively.

The fourth section, *Misconceptions*, deals with commonly held misunderstandings about English among learners and even teachers. Examples of misconceptions include: that *will* is only an indicator of the future tense; that comparative adjectives are restricted to a comparison between two people or things; that the present perfect is used to refer to the recent past; and that there are three types of conditional sentences in English. Discussion of these misconceptions aims to help teachers to rectify their misunderstandings so that they will not give grammatical explanations that are mistaken.

The fifth section, *Student Errors*, describes errors commonly made by Hong Kong students. In dealing with these errors, *TeleGram* does not merely provide a catalogue of ungrammatical structures. Instead, it analyses a corpus of Hong Kong learners' English, which at present consists of approximately half a million words of running text, and then accounts for the possible causes of the errors. This explanation draws on a contrast between English and the students' L1, Cantonese, wherever appropriate. As an example, it is pointed out that when Hong Kong students use the comparative, many of them produce sentences such as:

*Watching films is a popular pastime of Hong Kong people as it costs cheaper but provides great fun for us.*

In this example, which is taken from the corpus of learners' English, the error is not a matter of the student failing to make the second half of the comparison explicit. Rather, from the context, it is clear that the student has used the *-er* form erroneously to mean "relatively" (i.e. the intended meaning of the sentence is that watching film is cheaper than most kinds of pastime). It is likely that this error is due to transfer from Cantonese, where the comparative is often used without requiring a comparison with another item. This is discussed in some detail in *TeleGram*, and it is hoped that this kind of explanation would not only help teachers to analyse and explain student errors but also raise teachers' awareness of the contrastive relations between native language and target language (cf. Leech, 1994: p. 18).


The sixth section, *Teaching Implications*, offers broad guidelines for the teaching of grammatical points. As mentioned briefly above, these guidelines are often derived from the descriptions of the uses of the grammatical items concerned. To illustrate, in discussing *will*, it is explained that this modal verb can be used to express likelihood, intention, willingness, frequency, and necessity. The first three functions are the most common uses of *will* while the last two are much less common and have much lower priority for most learners. On the basis of this description, it is suggested that more attention should be devoted to the first three uses of *will* in the classroom.

The last section, *Teaching Ideas*, provides a bank of interesting activities for teaching grammar meaningfully and communicatively. Some of these activities are designed by a team of teacher educators at the University of Hong Kong while most others are produced by practising ESL teachers in Hong Kong.<sup>3</sup> Those in the latter category have typically been tried out in local classrooms and have been edited by university staff. If available, students' work such as drawings and short writings has been included in the activities so as to demonstrate how students can be helped to use grammar to express their own meanings; in other words, as a resource for making meaning.

To summarise, the first six sections of each file in *TeleGram* aim primarily at enhancing the grammatical knowledge of ESL teachers. In contrast, the last section is designed to enrich teachers' pedagogic content knowledge, which is the ability to transform teacher knowledge into a form that is comprehensible to students (Shulman, 1986). This overall design meets Leech's (1994: p. 17) requirement that a teachers' grammar should be Janus-like; facing towards descriptive grammar on the one hand, and towards practical, task-oriented grammar for learners on the other.

#### *Catering for different levels of language expertise*


*TeleGram* is not aimed at non-subject trained ESL teachers only. Its target readers also include those with a degree in English, who may nevertheless still need to learn about the language for their professional development. These two groups of users have varied levels of knowledge about English, and their needs for different kinds of grammatical information have to be catered for. *TeleGram* attempts to achieve this by first classifying grammatical information into two broad categories. For lack of better terms, they are called "core" information and "peripheral" information in this paper. (Cf. Leech, 1994: pp. 22–25, where it is suggested that for each grammatical category, a distinction can be made between a hard core of clear and typical cases and a periphery of less clear cases.) "Core" grammatical information is deemed to be essential for all teachers. In contrast, "peripheral" information is of interest or use to only a portion of the teachers. Examples of "peripheral" information include definitions of grammatical terms and frequency of occurrences of various grammatical structures. In *TeleGram*, "core" information is displayed on main screens, while "peripheral" information is presented on small pop-up screens. Some examples should suffice to make this clear (opposite).

This example main screen offers an independent chunk of information which summarises the major uses of the present perfect for all readers. This screen is linked to another chunk of information by means of a "glossary" icon (  ). When this icon is clicked, a pop-up screen is displayed, defining the term "independent clause". This definition is unlikely to






## Present Perfect

In independent clauses , the present perfect always expresses a connection between the past and the present.

There are two ways in which past time may be related to present time.

(1) It may involve a state, a habit, or an event in a period leading up to now. (2) It may involve an activity having some relevance in the present. ....

be important to teachers who have a background knowledge of English linguistics, but may be very useful to those without this training. Depending on their knowledge, then, some teachers will click on the “glossary” icon to access more information while others will feel satisfied with the description given on the main screen and therefore not do the clicking. In other words, the needs of both groups of teachers are catered for in this case. In another example, it is explained briefly that the pronouns after *than* are usually in the objective case. If a teacher is not content with this concise description and wants to know more, he or she can click on a “note” icon () that follows the description. Then a temporary pop-up screen will appear, explaining that in a corpus of about three million words of contemporary English, there is only one instance of *than* followed by a subject pronoun while there are 30 instances of *than* followed by an object pronoun. This piece of information is considered “peripheral” and has therefore been put on a pop-up screen because, otherwise, those teachers who require only concise explanations will find the evidence from the corpus tedious to read and even distracting.

In summary, by providing a bank of “core” and “peripheral” grammatical information and by presenting it on either main or pop-up screens, *TeleGram* caters for the language needs of teachers with different levels of expertise in English. Guidance for teachers as to which pop-up screens they may want to read is given by means of different icons. In general, the “glossary” and “explanation” icons indicate information for teachers without a solid background in English linguistics while the “note” icon denotes facts for subject-trained teachers who may want to have an in-depth understanding of the finer details of the language.

## ELECTRONIC GRAMMAR VERSUS PRINTED GRAMMAR

Having addressed issues related to content selection, we will now turn to describe how grammatical information is presented in *TeleGram*. This discussion will focus on the following features which make an electronic grammar superior to a printed one:

- (1) Use of the hypertext technology.
- (2) Ease of revision.
- (3) Use as a research tool.

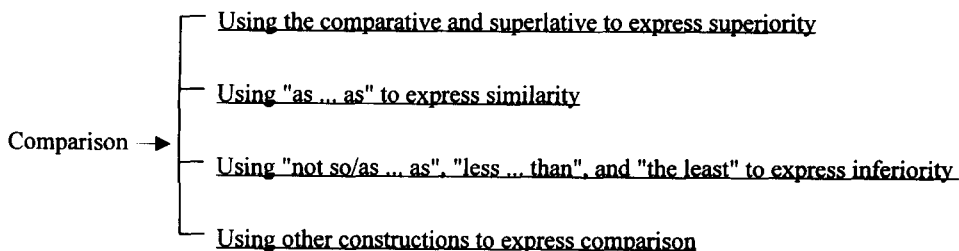
### *Use of hypertext technology*

As a non-linear and non-sequential way of organising text, hypertext is a better medium for presenting grammar than the printed medium. Grammar, as Chalker (1994: p. 37) observes, is "an interlocking system, or set of systems" and as such cannot easily be organised in a linear way. Greenbaum (1986: p. 9) explains this in the following way:

One reason for the complexity of grammar is that grammatical systems are interrelated: some topics must be treated, or at least alluded to, in more than one place. And to define one part of the grammar we must introduce other parts. The interrelatedness of grammatical systems poses problems for grammarians, and the more detailed the grammar, the more intractable the problem. How should topics be organized to minimize the dispersal of related matters? How much repetition is desirable?



Hypertext helps to overcome these problems. This technology makes it unnecessary to repeat information in different places as the same chunk of facts can be retrieved via different screens. Dispersal of related matters is no longer an issue, since topics are organised as systems in hypertext. Lastly, defining interrelated grammatical terms is facilitated by the use of pop-up screens. Imagine that a teacher wants to look up the meaning of the term "clause" while reading a screen. He or she can click on the "glossary" icon following this term, and a pop-up screen will appear saying that a clause is a group of words consisting of a subject and a finite verb. This definition refers to another related grammatical term, "finite verb". If the teacher needs a definition for it, he or she can click on the "glossary" icon, and a second pop-up screen will be displayed instantly, giving the necessary information. In other words, at any particular point of *TeleGram*, all related topics and grammatical facts are available, and they can be retrieved by simply clicking on the appropriate hyper-jumps. There is no need to turn to different pages to study cross-referenced material.

Hypertext has a further advantage. It gives the reader more control over what to read and how to read it. To illustrate, there are several ways of expressing comparison in English. In a printed grammar, these have to be described one after the other, and readers are expected to study the information in the sequence determined by the writer of the grammar. In *TeleGram*, the use of hypertext makes this unnecessary. Here, readers are first presented with a taxonomy map where the resources for making comparison are listed.



Each of the resources, underlined in the figure above, is a hyper-jump, and teachers can click on the jumps in any order they like. For example, they can choose to read the third resource for expressing comparison before returning to the first one. They can also choose to skip certain information altogether. In sum, the readers are in control over what they read and how they read it.

Yet another advantage of hypertext is that it can be designed, if necessary, in such a way that only one screenful of information is presented at a time. *TeleGram* is developed using this kind of hypertext, where each screen is a complete, meaningful unit. This ensures that grammatical information is presented in easily manageable and digestible chunks, and there is no cognitive over-load on users when they read the information on-line. In addition, the use of stand-alone screens, which obviates the need for scrolling, makes *TeleGram* user-friendly.

Although hypertext offers many possibilities, there are a few problems as well. Among these, the most serious one has to do with the possibility of users getting lost in hyperspace. This happens when there are too many jumps, and users experience difficulties in returning to a previous screen or moving forward to other parts of a hypertext system. To overcome these problems, several principles are followed in designing *TeleGram*. First, jumps are kept to the most essential minimum. Second, more than one way of navigation (i.e. moving backwards and forwards) is provided. For example, at any point of the electronic grammar, a reader can use a fast forward button () given on the ruler of the screen, or a next-page icon () put in at the bottom of the screen to jump to the following screen. This flexibility facilitates the navigation through hyperspace. Third, width is preferred to depth in writing the hypertext grammar. This means that layerings of pop-up screens are avoided. Instead, big pop-ups are used where they are justified. This precludes the need for repeated clicking. Lastly, a file map is provided at the end of every screen. This map has the function of a roadmap, which offers landmarks (i.e. related topics) and signposts (i.e. hyper-jumps) for navigation. With this map, readers can go where they want to easily.

### *Ease of revision*

While it takes a long time to revise a printed grammar, changes can be made to an electronic grammar very quickly. In the case of *TeleGram*, amendments have been made in the light of teachers' feedback. Before illustrating this, we need to describe the interactive nature of *TeleGram*.

*TeleGram* is not designed as a read-only database. Teachers can take an active role in shaping its content and organisation by sending in their comments to the development team. These comments can be sent via two channels. The first is a "comments" button at the top of every screen. When this is activated, teachers can type in their questions or comments on a small screen, save it, and then send it. The second channel is the messaging system of *TeleNex* through which teachers can send their suggestions or remarks directly to the developers of *TeleGram*. Where the comments are valid and useful, necessary revisions will be made to the appropriate files. The two examples below demonstrate this.

In the first example, it was initially suggested that in teaching the forms of superlative adjectives and adverbs to elementary students, the following guideline may be introduced:

Except for irregular superlative forms, use *-est* with one-syllable words and *most* with words of two or more syllables.

It was hoped that this concise guideline would help students to see and remember some simple patterns in a rather complicated grammatical area. However, after two teachers had read the guideline, they felt that it was not comprehensive enough as it did not cover words ending in *-y*. In a message sent in to the messaging system, they wrote:

We do not totally agree with the general rule given, as counterexamples are available, e.g. *the happiest, the funniest, the prettiest*, etc.

This was a valid comment, and rightly pointed out an omission in the guideline. Consequently, the guideline was amended. In a revised file, the following sentence was added after the original suggestion: "Use *-iest* for words ending in *-y*".

In the second example, a teacher took a grammar teaching activity from *TeleGram*, modified it, and tried it out on his students. After the experience, he felt that other teachers might be interested to know how he actually used the activity in class, and so he sent in a message describing the steps followed, the modifications made, and the students' reactions. The development team felt that the adaptations described were in some ways better than the ideas originally suggested in the activity file. This resulted in the writing of another file, where the teacher's ideas and comments are summarised. It is hoped that by making this file available, other teachers may be helped to see different ways of conducting the same teaching activity, and the rationale for the different steps used.

In summary, because *TeleGram* is interactive, teachers play a part in determining the content to be included in the grammar database.

*Use as a research tool*

*TeleGram* has a built-in device for finding out what teachers already know about grammar and what else they would like to know. This device is the log file, which is automatically activated every time a teacher uses *TeleGram*. This file captures details about the different screens that a teacher has read, and the time taken to read them. The following is an example.

On 05-25-1995@18:26:52+	#Prof's Quiz 1
On 05-25-1995@18:28:11+	#Prof's Quiz 2
On 05-25-1995@18:29:10+	#File map
On 05-25-1995@18:29:20+	#Prof's Quiz 2
On 05-25-1995@18:29:23+	#Prof's Quiz 1

This excerpt indicates that a teacher started reading *Prof's Quiz 1* at 18:26:52 on 25 May 1995. After reading it for about 1.5 minutes, she jumped to *Prof's Quiz 2*. Then about one minute later, she jumped to the file map, and so forth.

The log file provides very rich data for research. For example, teachers' answers to the *Prof's Quizzes* can be analysed as a means of measuring teachers' grammatical knowledge. The time taken to study certain chunks of information may reveal whether a screen contains too much information and so is cognitively demanding to process. The user patterns of experienced and novice teachers can be compared for the different ways in which these two categories of users interact with a hypertext grammar. In an on-going study, our preliminary findings indicate that both experienced and novice teachers read *TeleGram* in similar ways. For instance, both groups tend to revisit the *Misconceptions* section many times, and both are more interested in *Student Errors* and *Teaching Ideas* than other sections such as *Overview*. However, there are differences as well. To give one example, experienced teachers tend to spend less time on certain screens compared with novice teachers. But it must be noted that these are only initial findings. Further analyses are needed of exactly how experienced and novice teachers interact with hypertext grammatical material.

## CONCLUSION

This paper has discussed the rationale and criteria for producing an electronic grammar database for ESL teachers in Hong Kong. Examples used have demonstrated that this database is not just another source of grammatical description. Rather, it provides information that is relevant to English language teaching, and is presented in an electronic format that makes the browsing and retrieval of information fast and efficient.

In developing *TeleGram*, we, following McCarthy and Carter (1994), challenge the assumption that English language teachers already know enough about the language. To quote them:

It is often said that such teachers are surrounded by an array of well-researched and thoroughly tested grammars and dictionaries which provide extensive coverage, and that learning more about the language need not be something to consume too much of their valuable time. Instead, it is often said, their main concern should be with how to teach the language more effectively. We challenge this main assumption that methodology is all. (p. xi)

By making an electronic bank of grammatical information freely available, we hope to provide a source of language support for ESL teachers in Hong Kong. Our belief is that without a knowledge base in language, teachers' performance may be adversely affected.

At present, the development of *TeleGram* is still at an exploratory stage. New files are being written, innovative uses of hypertext are being experimented, and teachers' reactions are being collected. On the basis of users' feedback, changes will be made to the overall design of the grammar database to make it as useful to teachers as possible.

## NOTES

<sup>1</sup>This is a revised version of a paper presented at the Third International Conference on Teacher Education in Second Language Teaching, 14–16 March 1995, held at the City University of Hong Kong.

<sup>2</sup>This shortage of subject-trained teachers is due to the lack of a corresponding increase in teacher supply when nine years of compulsory education was introduced in 1978. The shortage of ESL teachers is particularly acute because competent English speakers are lured away by the lucrative offers by businesses.

<sup>3</sup>As at 31 May 1995, approximately 27% of the grammar activities are produced by university staff while 58% are produced by practising teachers. The rest are from published books and have been included in *TeleGram* with permission from the publishers.

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