RESLA, 16 (2003), 127-138

THE DEVELOPMENT OF A GRAMMAR CHECKER FOR SPANISH SECONDARY STUDENTS OF ENGLISH AS A FOREIGN LANGUAGE

JIM LAWLEY
Universidad Nacional de Educación a Distancia

ABSTRACT. *This article outlines the development of a grammar checker for Spanish secondary school students of English as a Foreign Language (EFL). Since conventional parser-based grammar checkers cannot provide reliable feedback on the compositions written by students at this level, databases of common errors found by the analysis of a corpus of students' written work were constructed and feedback on each error was written. Tests suggested that such databases and feedback would enable many errors of many students at this level to be corrected, encouraging the preparation of an on-line grammar checker program. Directions for future research leading to improvement of the grammar checker are suggested.*

KEYWORDS*: grammar checker, English as a Foreign Language (EFL), compositions, corpus.*

RESUMEN. *Este artículo describe el desarrollo de un corrector gramatical para estudiantes españoles de secundaria con Inglés como Idioma Extranjero. Ya que los correctores gramaticales basados en el análisis gramatical (parser) no ofrecen retroalimentación fiable sobre las composiciones escritas por estudiantes de este nivel, se ha construido una base de datos de los errores más comunes, encontrados en el análisis de un corpus de trabajos escritos por tales estudiantes, y se ha preparado una retroalimentación sobre cada error. Varias pruebas sugieren que este tipo de base de datos y su retroalimentación permiten corregir muchos errores de estudiantes de este nivel, lo cual aconseja la preparación de un corrector gramatical on-line. Se sugieren también directrices para futuras investigaciones que contribuirán a la mejora del corrector gramatical.*

PALABRAS CLAVE*: corrector gramatical, Inglés como Idioma Extranjero, composiciones escritas, corpus.*

1. INTRODUCTION

A computer program that enables EFL students to correct language mistakes in their own compositions is clearly an attractive proposition, enabling teachers to devote

more time to other aspects of the compositions –the quality and sequencing of ideas, for example– and, even more importantly, making students more aware of their own learning process and the nature of the mistakes they make when they write in English: self-correction is the best correction.

The search for a reliable grammar checker to help EFL students correct mistakes in their compositions started well over a decade ago (see for example Bolt 1992). Grammar checkers do not however appear to be in widespread use amongst EFL students and certainly there is no grammar checker that teachers of Spanish secondary school students of EFL could recommend to their students. The following shortcomings have been reported:

1. Non-detection of errors. The grammar checker fails to detect a mistake that a teacher would detect.
2. Over-flagging. The grammar checker suggests that there is a mistake where in fact there is none.
3. Misleading advice. The grammar checker rightly suggests that there is a mistake in the sentence – but it is not the mistake suggested by the grammar checker.
4. Unclear advice. The grammar checker correctly detects a mistake and provides appropriate advice but it is couched in metalanguage that students find difficult to understand.

(see Pennington (1992) and Jacobs and Rodgers (1999) for a fuller discussion of such shortcomings).

If, after revising and correcting their compositions, students are to hand them into the teacher, then Problem 1 above (missing errors) is perhaps the least serious since the mistakes missed by the checker will in any case be detected when the teacher reads the composition: the purpose of the checker is to help students correct with confidence as many mistakes as they can before the teacher sees the composition. Problem 4 (unclear advice) can be largely overcome by the use of the mother tongue, jargon-free advice and a judicious choice of examples. More serious are Problems 2 (over-flagging) and 3 (misleading advice) which can waste students' time and cause them to regard the grammar checker as untrustworthy. These problems are largely caused by the parsing programs which lie at the heart of most grammar checkers. In the case, for example, of the first sentence of this section ("The search for a reliable grammar checker to help EFL students correct mistakes in their compositions started well over a decade ago"), one grammar checker suggests replacing *students* with *student's* or *students'* . Inclusion of the (in fact erroneous) apostrophe placates the program which promptly ceases to flag the word as an error. Here then the grammar checker is actually encouraging users to make mistakes rather than eliminate them. The misleading advice seems to have its origin in a parsing error: the program has decided to treat *correct* as an adjective (instead of the verb that it is). The willingness of this grammar checker to treat the sequence *correct mistakes* as a semantically absurd oxymoron is a salutary reminder also of the inability of

grammar checkers to deal with meaning. Parsing programs, as Tschichold (1999a: 7) explains, focus on grammar not meaning:

> Like all natural language processing (NLP) applications, grammar checkers handle language in a way which is very different from the way humans deal with language. In order to arrive at a (for humans) meaningful analysis of an input text, they typically submit the text to a series of independent modules which segment, tag and parse the input. The two processes of tagging (assigning exactly one part-of-speech tag to each word) and parsing (syntactic analysis) form the major hurdles in this analysis process. State-of-the-art taggers have a success rate of 95 to 98 per cent…with progress becoming more and more difficult and costly. Considering that these percentages are achieved on correct text, a higher percentage of wrong tags has to be expected when the tagger is dealing with non-native partly erroneous text.

As will be seen below, the texts written by Spanish secondary school students of EFL can be very erroneous indeed. Not surprisingly therefore the advice given by parser-based grammar checkers is often unhelpful and misleading. The sentence below, for example, comes from a composition about favourite television programmes written by a Spanish secondary school student of EFL:

(1) *El comisario* is a programme that only watch the adults, the boys don't watch.

The advice given by one grammar checker is to change "*a programme that only watch"* to "*a programme that only watches[…]"*, or to "*programmes that only watch[…]*, when in fact, of course, the sentence should read "El comisario *is a programme that only adults watch[…]"* Again, then, the parser misunderstands the student author's intentions and suggests a semantically absurd alternative.

In the new grammar checker for Spanish secondary school students of EFL described below, therefore, an alternative to a parser is suggested. This approach relies to a great extent on giving students information about what certain words in their compositions mean and how they are used. That is, models of grammatically and semantically correct usage are provided, in the light of which students are invited to decide if and how to change what they have written. The capacity to help students detect semantic as well as grammatical errors is very important in a grammar checker designed for students at this level because semantic errors are also very frequent in their compositions. There is no prospect in the foreseeable future of a conventional parser-driven grammar checker program being able to flag as wrong a sentence such as *It is a very funny programme* (when in fact *It is a very enjoyable programme* expresses the intended meaning): the parser finds it is grammatically well-formed and has no means of evaluating meaning. Indeed, it is worth noting that since the phrase (unlike *the students' correct mistakes*) is semantically plausible, it may be that even a teacher would not be able to correct it: only the student author can say with certainty what meaning was in fact intended and therefore only the student author can correct with confidence.

The project described below takes into account not only the common errors and difficulties of Spanish secondary school students of EFL but also the wider pedagogic and social context in which they study English. Experience suggests that many students have no strategies for revising and evaluating their own compositions and instead hand them into their teachers more or less unrevised. The grammar checker designed for them therefore aims to foster a focused, purposeful checking procedure even though this will often be time-consuming. While grammar checkers intended for native speakers often offer the correct form of words in return for the mere click of the mouse and spell-checkers frequently correct spelling errors automatically, this is clearly undesirable in a pedagogic context. The aim is not to develop a program which automatically 'translates' substandard English into native speaker-like English, but one which helps students learn autonomously so that later (for example in their university entrance exam) when they write without the support of a grammar checker they will not make mistakes. In the school context, the time students spend carefully evaluating their own work is time well spent. (See Lawley 1999 for a fuller discussion of these points).

2. Error analysis, categorization and design of the database

A corpus of some 18,000 words comprising 160 compositions written in the 1995-6 academic year by students in a Spanish secondary school was analysed for errors. Decisions about exactly what constitutes an error are notoriously complex and sometimes subjective (see for example the discussion in Lennon 1991). The definition of error most likely to motivate the intended users of the proposed new grammar checker, however, is probably something like "anything which my teacher will mark as wrong". Fortunately Spanish secondary school teachers participating in a research project several years previously with different aims had in fact already marked the errors in the compositions comprising the corpus. (Further details of the construction and analysis of this corpus can be found in Rodríguez Aguado *et al*. 1997.)

A partial alternative to parsing soon suggested itself. There appeared to be in the compositions an abundance of two- and three-word sequences which seemed unlikely to occur in the English produced by native speakers. In the examples below such sequences are underlined:

Student wrote	**Native speaker would have written**
(2) We <u>arrived to</u> Madrid	We arrived in Madrid
(3) She goes to school <u>for to</u> learn	She goes to school to learn

Once identified, such sequences can be incorporated into a simple 'search and match' program so that any instance of them in student writing can be flagged, students told that they have almost certainly made a mistake, and appropriate advice given. Fortunately, the errors contained in these two- and three-word sequences can usually be described, and remedies prescribed, very accurately and succinctly. In this way, false

alarms and misleading advice are avoided and students will, it is hoped, come to regard the program as helpful and reliable.

Sequences were identified which occurred more than once in the corpus or which, while only occurring once, were documented in reference books as errors commonly committed by Spanish-speaking students of EFL. Each of the sequences was then tested against a 56-million word COBUILD corpus of native-speaker English to check if they do in fact occur in native speaker English. Many of them were in fact found to occur but with meanings and in contexts different from those intended by the authors of the student compositions. For example the sequence *…go of…* which occurs in student compositions (e.g. *When we go of the theatre,* where a native speaker would probably have written *When we leave the theatre*) does occur in native-speaker English in the phrase *let go of*. Reference to this exception was therefore incorporated into the feedback on this sequence (although it is doubtful in fact that Spanish secondary school students of EFL would in fact make use of or even be aware of this expression). Indeed the intended feedback on many points was revised in similar ways in the light of the COBUILD corpus. As a result of this process of comparing a corpus of student writing and a native-speaker corpus, a total of 350 incorrect sequences with appropriate feedback were prepared for the database1. Two examples of feedback are given below:

(4)
on autumn
Si quieres decir en otoño *usa*:
in autumn
IN + *ESTACION DEL AÑO*
(*aunque se dice, claro, por ejemplo* on autumn nights = *las noches de otoño*).

(5)
but isn't
A no ser que la frase termina con ?:
¿Pero no está feliz? = But isn't he happy*?,*
necesitas insertar un sujeto entre but *e* isn't*:*
…pero no es grande = …but it isn't big (*y nunca* …but isn't …)
…pero ella no está sonriendo = …but she isn't smiling (*y nunca* …but isn't …)

In other cases punctuation marks as well as strings of letters and word spaces help identify errors. For example in *I like Valladolid. Is a beautiful city.* it is the sequence of the full stop before the word *Is* which enables the program to draw the student's attention to the omission of *It* immediately before *Is a beautiful city.*

Providing the feedback in Spanish in this way seems more user-friendly, helping students to distinguish metalanguage from examples. Linguistic jargon is eschewed where possible and the advice is kept brief because reading text on screen is not comfortable.

It might be objected that this flagging of incorrect sequences will sometimes result in false alarms or misleading advice. Flagging *on autumn* for example is clearly necessary if the student has written for example *the days are shorter on autumn* but in other contexts (e.g. *on autumn nights*) the sequence *on autumn* is not incorrect. The important considerations here would seem to be that the "exception" should be addressed in the feedback, and that the feedback should be explicit, brief and clear so that the student who has written *on autumn* can decide quickly and easily if it is or is not correct.

These considerations become even more important in a second correction stage. Having in the first correction stage clicked on 'Incorrect Sequences' to obtain the kind of information discussed above, students next click on 'Problem Words' so that the program will highlight problem words and phrases in the composition. Problem words and phrases are words and phrases which are often misused by students. All occurrences of such words are highlighted: the program does not know if the word in question has been used correctly or not. They include false friends like *actually*, *sympathetic* and *large*, and other words which students often misuse (e.g. *funny* when *entertaining* or *nice* would convey the intended meaning), as well as words which are commonly associated with grammatical error. Usually these entries are quite short and designed to enable the student to decide quickly if his/her use of the word is correct or not. The entry for *actually* for example reads as follows:

(6)
Actually
1. *Si quieres decir de hecho, en realidad,* actually *está bien:*
…de hecho está en Londres = …actually he's in London

2. *Si quieres decir actualmente, usa* at the moment, at present, currently*:*
…actualmente está en Londres = … at the moment, he's in London
(*y nunca* actually, he's in…)

A few very common words with complex profiles also have to be treated at this stage since they are the source of many mistakes and the feedback given is necessarily longer. Here for example is the entry for *for*:

(7)
FOR
1. *No uses* for *delante de un verbo en forma de infinitivo.*
Es un buen lugar para descansar = It's a good place to rest *(y nunca …* for rest)
TO + *VERBO*

2. *Cuando hablas de duración con verbos en forma del perfecto, se usa a veces* for*, a veces* since:

He trabajado aquí desde hace dos meses = I've worked here for two months
FOR + *PERIODO DE TIEMPO*

He trabajado aquí desde junio = I've worked here since June
SINCE + *MOMENTO EN EL PASADO*.

3. *En la voz pasiva se usa* by *no* for:
Fue visto por dos personas = He was seen by two people
VOZ PASIVA + BY

This is clearly very far from a comprehensive treatment of *for* but it does cover the three most common problems associated with this word in the compositions written by Spanish secondary school students of EFL. Here we see the advantage of the frequency information derived from the empirical study of a corpus of student writing. Without it, other problems involving the word *for* (its sometimes inappropriate use as a conjunction in, for example, *For he had nothing to do, he was bored*) might seem plausible candidates for inclusion in the feedback. In general, analysis of the corpus seems to confirm what teachers have long maintained: that students make certain mistakes again and again.

The grammar checker program also provides explicit advice on the kinds of mistakes which it cannot detect. These include verb tenses, many prepositions, and such common errors as postpositioning of adjectives (*a book interesting* instead of *an interesting book*). Students are encouraged to search for these in the traditional way and given advice in the mother tongue about how to correct them. For example, in the case of postpositioning of adjectives, it is suggested that they search for each adjective they have used in turn and ask themselves if it is correctly positioned.

3. Evaluation

Preliminary trials were encouraging. Compositions which did not form part of the original corpus and which were therefore not taken into account when the database of the program was designed were found to contain many of the common mistakes included in the database. Below, for example, is a composition written by a 16-year-old Spanish secondary school student:

(8)

I watch the T.V. every days. I like watch the T.V. But my favourite programme don't is broadcoast always. This programme isn't broadcasting now. This programme is *"EL COMISARIO"*.

I watching the programme with my family. When the programme begin, old my family kept quiet.

I like *"El comisario"* because is a programme interesting of mystery, pursue and in this programme there are some polices, thief, criminal…

Before my favourite programme was broadcoast the monday at 22:00, later the news and the weather. Lasted approximate two hours.

El comisario is a programme that only watch the adults, the boys don't watch.

In the version below the twenty-four mistakes a Spanish secondary school teacher would be likely to indicate are underlined and numbered 1-24:

(9)

I watch the T.V. every days[1]. I like watch[2] the T.V. But my favourite programme don't is[3] broadcoast[4] always[5]. This programme isn't broadcasting[6] now. This programme is *"EL COMISARIO"*.

I watching[7] the programme with my family. When the programme begin[8], old[9] my family kept quiet.

I like *"El comisario"* because is[10] a programme interesting[11] of mystery, pursue[12] and in this programme there are some polices[13], thief[14], criminal[15]…

Before[16] my favourite programme was broadcoast[17] the monday[18] at 22:00, later[19] the news and the weather. Lasted[20] approximate[21] two hours.

El comisario is a programme that only watch the adults[22], the boys[23] don't watch[24]

Before they use the new grammar checker, students are asked to make use of the Microsoft Word spell-checker. As a result *broadcoast*, and *monday* could easily be corrected to *broadcast* and *Monday* respectively. The proposed grammar checker would then detect three incorrect sequences: *don't is*; *because is*; and, *the Monday*. In each case the feedback written as a result of analysing the 18,000 word corpus is also entirely relevant in these cases and would it is hoped therefore enable the student author to correct these sequences appropriately (that is, to *is not*, *because it is*, and *on Monday*). Stage two of the program, would flag the problem words *every*, *like* (both occurrences), *always*, *when*, *this*, and *before*. Again, it seems likely that the feedback offered on these words would enable the student to correct a further four errors: *every days* becoming *every day*, *like watch* changing to *like watching*, *always* being correctly re-positioned and *before* changed to *before this*. Equally, it is hoped that the feedback provided at the words *when* and *this* would enable the student to confirm that there was in fact no error associated with the use of those words. As a result of the feedback provided by the Microsoft spell checker and that which would be offered by the new grammar checker then, the student, it is hoped, would be able to correct nine errors. If the advice given by the grammar checker on looking for errors with tenses, on the use of *the*, the positioning of the subject before the verb, and the position of adjectives were successfully followed, another five errors could be located. At this point the composition to be handed into the teacher looked like this (the remaining errors are again underlined):

(10)

I watch the T.V. every day. I like watching the T.V. But my favourite programme isn't always broadcast. This programme isn't broadcasting now. This programme is *"EL COMISARIO"*.

I watching the programme with my family. When the programme begin, old my family kept quiet.

I like *"El comisario"* because it is an interesting programme of mystery, pursue and in this programme there are some polices, thief, criminal…

Before this my favourite programme was broadcast on Monday at 22:00, later the news and the weather. It lasted approximate two hours.

El comisario is a programme that only adults watch, boys don't watch.

The twenty-four errors have been reduced to twelve. Similar results were achieved in other trials with other compositions.

4. Conclusions

These results were considered sufficiently encouraging to warrant the expense of going ahead and producing the new grammar checker.

One major consideration justifying this decision is that the design of the prototype program is such that the database of errors can be vastly increased, making the grammar checker more efficient, without making it any slower at detecting incorrect sequences and problem words. The composition above, for example, offers the word *polices* and perhaps *boys* (when *children* is meant) and *later* for inclusion in the databases. The word *polices* is not flagged by the spell checker of course because it can be used as a verb. However Spanish secondary school students are extremely unlikely to use it in that way and perfectly likely –as this example shows– to use it when *policemen* would be correct. Clearly, then, as the corpus grows the grammar checker will be improved both by the inclusion of new errors and the better understanding of old ones: '… a corpus should be as large as possible and should keep growing' (Sinclair 1991: 18). Of other errors in this composition, *I watching* could be included as an incorrect sequence (with suitable recognition, of course, of the correctness of 'Am I watching….?') but it is interesting to note that both it and *When the programme begin* are detected by the Microsoft grammar checker - with appropriate suggestions for correction being made in both cases. This grammar checker, which is not of course specifically intended for students of EFL, is also capable, however, of raising false alarms and giving misleading advice. It would be interesting to see if Spanish secondary school students of EFL could learn to distinguish cases where this widely available grammar checker can help them and those where it might hinder them. Jacobs and Rodgers (1999: 518), teaching second year university students of French, made considerable efforts to help their students come to terms with such shortcomings:

> [...] the limitations of grammar checkers […] were discussed in class. We pointed out to the students that no-grammar checking program could interpret meaning and that all of them could be fooled by such things as word order. We reinforced the point that grammar checkers were capable of making absurd suggestions and missing obvious errors […]

Jacobs and Rodgers (1999: 518) report that their students subsequently made better use of the grammar checker. Second year university students, of course, are more intellectually mature and have a better understanding of the target language than secondary school students, but it would be worth seeing if the latter could be taught to make use of the strong points of the Microsoft or other grammar checker, and not be misled by its shortcomings. It might, for example, be able to discover specific areas (e.g. subject/verb agreement) in which its advice can help this group of students.

Other errors in the student composition such as the use of *approximate* instead of *approximately* and the remarkable use of *old* (when *all* seems to have been intended) will probably never be susceptible to detection by any grammar checker and serve to remind us that careful proofreading and teachers remain essential in the error detection process.

In general, Tschichold (1999a: 10) seems justified in asserting that:

> Given that the audience of a CALL program is known, the task of the grammar checker can be focused on one specific user group, their language background, their level in the target language, and their particular difficulties. Such a strategy will not lead to the perfect grammar checker, but to a more reliable grammar checker for a well-defined user group.

The work load certainly seems feasible. Building and analysing an initial corpus of 18,000 words and writing a database takes several months, but if the intended user group is sufficiently large this investment of time seems well justified. The grammar checker created as a result of the research reported above is written in Java and downloadable from a server. It can be found on the servers of the *Universidad Nacional de Educación a Distancia (UNED)*. Very early indications are that students –and not only Secondary school students– are finding the grammar checker useful. More research, however, will be needed of course into the way learners interact with the grammar checker. Two basic questions are: does it enable them in fact to detect and correct their mistakes, and can the feedback provided be improved? Other important questions are: can the database be expanded to make the Grammar Checker useful to other EFL learner groups and, indeed, can a similar Grammar Checker be usefully developed for students learning other languages?

NOTES

1. Many of these sequences could be 'extrapolated': for example, the presence of the incorrect sequence *it have got* –when *it has got* would be correct– in the corpus suggests that students would also be capable of producing the sequences *he have got* and *she have got* although these latter are not in fact attested in the corpus. In this way the number of incorrect sequences could be greatly expanded.

ACKNOWLEDGMENTS

I am very grateful to José I. Rodríguez Aguado, Blanca E. Villoria Díez, and Francisco J. Paredes Arranz of the *Departamento de Inglés del I.E.S. "Antonio Tovar"* in Valladolid, authors of *Las Redacciones en Lengua Extranjera en Bachillerato y COU: Investigación Pedagógica* for their generosity in allowing me to study their corpus.

I am also grateful to Mónica Aragonés and Ángeles de la Concha and many other colleagues at the *Universidad Nacional de Educación a Distancia (UNED)* for their support and encouragement during the development of the prototype grammar checker, and to Ricardo Mairal Usón who encouraged me from the very inception of this enterprise and who read an earlier version of this article and suggested numerous improvements for which I am most grateful.

I also wish to record my gratitude to my doctoral student Alicia García-Heras Muñoz for many instructive conversations which helped clarify ideas.

REFERENCES

Bolt, P. 1992. "An evaluation of grammar checking programmes as self-help learning aids for learners of English as a foreign language". *Computer-Assisted Language Learning* 5, 1-2: 49-91.

Edge, J. 1989. *Mistakes and Correction*. London: Longman.

Granger, S. 1998. "The computer learner corpus: a testbed for electronic EFL tools". *Linguistic Databases*. Ed. J. Nerbonne. Stanford: CSCI Publications. 175-187.

Granger. S. and F. Meunier. 1994. "Towards a grammar checker for learners of English". *Creating and Using English Language Corpora*. Eds. U. Fries, G. Tottie and P. Schneider. Amsterdam/Atlanta: Rodopi. 79-91.

Jacobs, G. and C. Rodgers. 1999. "Treacherous allies: foreign language grammar checkers". *CALICO Journal* 16, 4: 509-531.

Johns, T. 1991. "Should you be persuaded - two samples of data-driven learning materials in classroom concordancing". *ELR Journal* 4: 1-13.

Lawley, J. 1999. "A new computer-mediated writing aid for Spanish students of English as a foreign language". *English Language Teacher Education in Europe*. Eds. P. Faber, W. Gewehr, M. Jimenez and A.J. Peck. Frankfurt: Peter Lang.

Lennon, P. 1991 "Error: some problems of definition, identification and distinction". *Applied Linguistics* 12, 2: 180-196.

Pennington, M. 1992. "Beyond off-the-shelf computer remedies for student writers: alternatives to canned feedback". *System* 20, 4: 423-437.

Pennington, M. 1993. "Computer-assisted writing on a principled basis: the case against computer-assisted text analysis for non-proficient writers". *Language and Education* 7, 1: 43-59.

Rodríguez Aguado, J. I., B.E. Villoria Díez, and F.J. Paredes Arranz. 1997. *Las Redacciones en Lengua Extranjera en Bachillerato y COU: Investigación Pedagógica*. Valladolid: Universidad de Valladolid.

Sinclair, J. 1991. *Corpus, Concordance and Collocation*. Oxford: Oxford University Press.

Tschichold, C. 1999a. "Intelligent grammar checking for CALL" *ReCALL* 11: 5-11.

Tschichold, C. 1999b. "Grammar checking for CALL: strategies for improving foreign language grammar checkers". *CALL: Media, Design and Applications*. Ed. K. Cameron. 203-221.