An Analysis of Student Behavior and Error Sources in an Italian CALL Context

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ABSTRACT

This paper describes several sources of errors that students of Italian make and some of the problem solving behaviors they adopt when doing drill-and-practice exercises on direct and indirect object pronouns and the present perfect tense. While some of the error sources are well known to Italian instructors, an unexpected source is identified. The study also reveals a problem-solving behavior not found in the traditional learning environment and reports on the results of a survey completed by students at the end of an intermediate-level course. Lastly, avenues for future research are suggested.

KEYWORDS

CALL, Applied Linguistics, learner user, learner feedback, evaluation

INTRODUCTION

Students in an intermediate-level Italian course at York University in Toronto used the beta version of a CALL grammar program for two semesters in 1995. Approximately one hundred students were involved, mainly of Italian origin, most of whom had knowledge of an Italian dialect. Their familiarity with the dialect ranged from the ability to understand it to the ability to speak it fluently. The computer program in question (Karumanchiri 1995) was an electronic version of a workbook (Maiguashca, et al. 1993) that had been used since 1985 and which was revised in 1993. The book had been tried, tested, and used very successfully. The computer program was used by students to correct assigned exercises. All material was first taught in class; the workbook exercises were assigned and the students then used the computerized version in the language laboratory to correct them.
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The program automatically stores students' responses, coding them with plus or minus signs to indicating whether they are correct or incorrect. Students' identity remains anonymous because the system assigns an ID number to students' answer files which consists of an arbitrary set of eight letters and digits. In the 1995 academic year, the responses were saved on disk with the objective of making any corrections to the program that might be needed. Students had been informed at the beginning of the year that their responses would be stored for future study and had granted permission for the use of their work. It became clear at the end of the year that the database of students' responses could be examined for purposes other than program editing. After an initial review of the database, a working hypothesis emerged suggesting that examination of students' responses might lead to the identification of a typology of error sources and problem-solving behaviors. The study carried out and described here is not experimental but rather descriptive (See, for example, Chapelle and Jamieson 1991). This paper, then, will provide a number of observations based on the study of students' responses in the data base. The exercises chosen for examination covered direct and indirect object pronouns and the present perfect tense. These exercises were chosen because they present numerous difficulties for learners.

BRIEF DESCRIPTION OF THE COMPUTER PROGRAM

The computer program almost entirely reproduces the workbook which is divided into three main sections: the noun phrase, verbs, and pronouns, with each section providing a rich variety of fill-in-the-blank, short answer, and translation exercises. The latter exercise types were not included in the electronic format. The electronic version, however, has many more features than the workbook, the most important one being that the program contains the answers. In addition, each exercise is preceded by a recap of the grammatical point being practiced and a glossary. On concluding the exercise, students can view it again with all possible answers included. Some exercises have extra screens with charts of irregular syntactic or morphological forms. The authoring system chosen provides a number of feedback options, such as spell-checking and anticipating multiple answers, with the objective of providing appropriate feedback. The program attempts to customize feedback as much as possible and offers ample comments and hints to students. Relaxed pattern matching and pattern markup have also been implemented to eliminate trivial errors such as superfluous spaces and capital letters (Burston, 1990). Students can attempt a question as many times as they wish, the operative notion being that the computer is an ever-patient tutor allowing for exploration of the material. However, a “give-up” option is also available which be-
comes operative after one try.

The observations in the following sections outline a typology of error sources and problem solving behaviors found in the study of students' responses. A number of the observations will be familiar to language teachers.

**DISCOUNTING THE CONTEXT**

Teachers are well aware that students sometimes do not pay close attention to what they are reading. In fact, inattentive reading was found to be one frequent source of errors in exercises dealing with both pronouns and verbs. The examples in fig. 1 illustrate the fact that students may not read the question or take note of the contextual cues carefully.

**Examples 1A and 2A (correct answers)**

Example 1A: Fill-In-The-Blank (Scheda 114A, #2)
Perché non (mi) rispondete? (Voi) ho scritto tante volte e non vicevuto mai niente da voi.

Example 2A: Fill-In-The-Blank (Scheda 113A, #14)
(Lo) ammiro molto e (gli) sono molto riconoscente; è un uomo veramente generoso.

**Examples 1B and 2B (student's incorrect answer)**

Example 1B: Fill-In-The-Blank (Scheda 114A, #2)
Perché non (mi) rispondete? (Ti) ho scritto tante volte e non vicevuto mai niente da voi.

Example 2B: Fill-In-The-Blank (Scheda 113A, #14)
(Ti) ammiro molto e ...; è un uomo veramente generoso.

Fig. 1. Examples 1 and 2

Examples 1 and 2 illustrate the fact that students do not frequently read sentences carefully and, in particular, that they do not look at the preceding or following clauses which provide the contextual information that will lead them to the correct answer. Students insert answers mechanically, almost at random. The students in these two examples knew that a pronouns were required and filled in the blanks with pronouns, but the meaning of the sentences, i.e., the context did not seem to influence their choice. In example 1, the student filled in the first blank correctly but made a mistake in the second one, although the verb preceding the slot,
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rispondete, and the expression following the slot, da voi, provide the clues needed for the correct answer. In example 2, the student, who should have read on to the third clause, è un uomo veramente generoso, to fill in the blanks, erred in the first blank. This type of behavior is not limited to exercises on pronouns but was also found in exercises on the past tenses of verbs (see fig. 3).

Example 3A (correct answers)

Fill-In-The-Blank (Scheda 90A, #10)

Example 3B (student's successive attempts)

Fill-In-The-Blank (Scheda 90A, #10)
Ieri [ho lavorato] tutto il giorno come un matto in ufficio. La sera [ero] stanco morto e [sono andati*/sono andata*] a letto presto.

Fig. 3. Example 3

In example 3, the student enters the first two responses, both of which require the first person singular of the verb, with no agreements, correctly. In the third slot, the first person singular is required again, but the auxiliary verb essere requires agreement with the subject. The expressions un matto and stanco morto indicate that the subject is masculine singular and thus that the masculine singular form of the verb is required.

The student's first attempt, however, yielded the answer sono andati. The i in andati signals the masculine plural i.e. 'they went' rather than 'I went.' One could hypothesize that since the vowel i is located next to the letter ‘o’ on the keyboard, perhaps the student made a typographical error. The feedback message triggered by this response is Provi di nuovo! ‘Try again!’ with the i in andati highlighted in blue to indicate an incorrect letter. The student's second attempt, sono andata—which is the first person feminine singular, showed that inaccurate typing is not the source of the mistake. This response elicited the feedback message: Attenzione al contesto! ‘Pay attention to the context!’ and the word matto flashed in order to make the student aware that the masculine singular is required.

These examples show a lack of understanding that morphological and grammatical variations are tied to the sentence by means of its context. Students appear to supply an automatic answer, not an analytical one. Examination of this type of response led to the detection of a limitation of the fill-in-the-blank exercise in that it can foster mental passivity. Students attempt the item but in an almost stimulus-response type of situation (some-
thing akin to Pavlov’s dogs). It seems that students have a desire or even a priority to minimize the time involved in the activity, rather than an attempt to deepen their knowledge. The cognitive process is skipped or else comes later when the feedback forces students to look at the context. This problem occurred not only in fill-in-the-blank exercises but also in cloze passages (see fig. 4).

**Example 4A (correct answers)**

Cloze Exercise (Scheda 90A, #b)  
Da ragazza ero molto miope ... Poi la macchina **(si è ferma)** vicino a me ... Io (f.) **(mi sono seduta)** tranquillamente vicino a lui. Solo allora **(mi sono accorta)** che ...

**Example 4B (student’s successive attempts)**

Cloze Exercise (Scheda 90A, #b)  
Da ragazza ero molto miope ... Poi la macchina **(si è fermato)** vicino a me ... Io (f.) **(mi sono seduto)** tranquillamente vicino a lui. Solo allora **(mi sono accorto)** che ...

Fig. 4. Example 4

Example 4 shows that the student did not take the subject of the sentence into account. The student did not carefully read and did not attempt to understand the subject of the sentence.

**FOCUSING ON DISCRETE ELEMENTS AND LOSING SENSE OF THE WHOLE**

A common error in Italian occurs in sentences in the present perfect tense in which the auxiliary verb is preceded by a direct or indirect object pronoun whose vowel sound is the same as that of the auxiliary verb. The result is that students include the required pronoun and the past participle but omit the auxiliary verb. Most instructors tell their students to watch out for the sound and not to forget the auxiliary verb. However, observation of many examples of this type of error reveals that students do not make this mistake because of the sound factor but, rather, omit the auxiliary verb because they are preoccupied with inserting the correct pronoun and making agreements. By narrowly focusing on what the exercise requires, students lose sight of the whole picture (see figs. 5 and 6).
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Example 5A (correct answer)
Answering Question with Complete Sentence (Scheda 115A, #5)
Hai spedito il telegramma a Gino?
(Sì, gliel’ho già spedito.)

Example 5B (student’s incorrect answer)
Answering Question with Complete Sentence (Scheda 115A, #5)
Hai spedito il telegramma a Gino?
(Sì, glielo* già spedito.)

Fig. 5. Example 5

Example 6A (correct answer)
Fill-In-The-Blank (Scheda 113A, #21)
(Le è) piaciuta la conferenza di ieri, professore?

Example 6B (student’s incorrect answer)
Fill-In-The-Blank (Scheda 113A, #21)
(Le*) piaciuta la conferenza di ieri, professore?

Fig. 6. Example 6

Examples 5 and 6 might lead one to believe that the auxiliary verb is omitted because the final vowel sound in the pronoun has the same sound as that of the auxiliary verb as in the o in glielo (which sounds like ho and is abbreviated) or the e in le (which sounds like the verb è). This mistake is common to learners of Italian and instructors have traditionally attributed it to the two adjacent vowel sounds being merged into one. However this is not the case, as can be seen in the example in fig. 7, where the student, having omitted the auxiliary verb on the first try and having been prompted with the message that the auxiliary verb was missing, inserted the incorrect auxiliary verb (which has a different vowel sound).
Again, a focus on the discrete element in the exercise resulted in the student's actually omitting the auxiliary verb. Clearly, students have some difficulty when they have to create whole sentences to complete exercises as in example 5. One might hypothesize that the student was trying to answer the question within an allotted time; however, there are no time limits to the exercises, so students do not have to be concerned with the system's rushing them in any way. Fortunately, the program alternates this type of exercise with fill-in-the-blank exercises.

**Interference from an Italian Dialect or from English**

In the case of reflexive verbs taking a direct object in the present perfect tense, speakers of many dialects, particularly those of Central-Southern Italy, make the agreement with the subject, and not the direct object as required by standard Italian. The errors noted in examples 8 through 10 are typical of dialect speakers, who represented the majority of students enrolled in the course. In the example in fig. 8, the past participle should be comprata, agreeing with the direct object macchina and not comprati, agreeing with the subject noi.

**Example 8A (correct answer)**

Answering Question with Complete Sentence (Scheda 117A, #2)
Quando vi siete comprati la macchina?
(Ce la siamo comprata) un mese fa.

**Example 8B (student's incorrect answer)**

Answering Question with Complete Sentence (Scheda 117A, #2)
Hai spedito il telegramma a Gino?
(Ce la siamo comprati*) un mese fa.
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Example 9A (correct answer)

Answering Question with Complete Sentence (Scheda 117A, #4)
Elena, quando ti sei presa questo brutto raffreddore?
(Melo sono preso) una settimana fa.

Example 9B (student’s incorrect answer)

Answering Question with Complete Sentence (Scheda 117A, #4)
Elena, quando ti sei presa questo brutto raffreddore?
(Melo sono presa*) una settimana fa.

Fig. 9. Example 9
In the example in fig. 9, the past participle should be preso, agreeing with the direct object raffreddore and not presa, agreeing with the feminine subject.

In example 10, interference with the dialect is demonstrated in the doubling of consonants (see fig. 10). The student, asked to correct any errors, correctly removed the final e from the word ragioniere but doubled the g, displaying the interference from her dialect.

Example 10A (correct answer)

Rewriting Sentence Making Appropriate Corrections (Scheda 118B, #13)
Ragioniere Marini, come state?
(Ragioniere Marini, come sta)?

Example 10B (student’s incorrect answer)

Rewriting Sentence Making Appropriate Corrections (Scheda 118B, #13)
Ragioniere Marini, come state?
(Ragioniere* Marini, come sta)?

Fig. 10. Example 10

The example in fig. 11 shows interference from English in that the student used the English structure ‘Can I give you the essay tomorrow?’ (where “you” has the appearance of a direct object pronoun and is interpreted as a direct object) rather than the clearer Italian structure “Can I give the essay to you tomorrow?”
THE COMPUTER GAME PLAYER

Examination of students’ responses in the data base identified a problem-solving behavior that renders the computer activity a form of entertainment and, as such, seems to be a new way students deal with drill-and-practice exercises. We see this behavior illustrated in the examples in figs. 12-14, in which students insert all manner of possible answers virtually at random until arriving at the correct response. These types of students, who have some knowledge of the material, are playing and having fun but are not actively involved in the learning process.

Example 12A (correct answer)
Fill-In-The-Blank (Scheda 114A, #9)
Ho bisogno di soldi. Dottore, (la) prego, potrebbe prestar (mi) diecimila lire!

Example 12B (student’s successive answers)
Fill-In-The-Blank (Scheda 114A, #9)
Ho bisogno di soldi. Dottore, (vi*/lei*/lo*/lei*/la) prego, potrebbe prestar (mi) diecimila lire!
FEEDBACK AFTER 1st ATTEMPT: (io) prego lei

In example 12, the student’s initial error elicited the feedback prompt indicating that the third person formal form of the pronoun was required.
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This pronoun begins with the letter l as in the lei of the feedback message. The student was clearly aware that one of the pronouns beginning with the letter l was required, but, rather than using this information thoughtfully, answered randomly until arriving at the right answer.

Examples 13 and 14 illustrate the approach taken by students who do not know the correct forms of the past participles needed to complete the sentences.

<table>
<thead>
<tr>
<th>Example 13A (correct answer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fill-In-The-Blank (Scheda 74A, #18)</td>
</tr>
<tr>
<td>Beethoven (ha composto) una sinfonia in onore di Beethoven.</td>
</tr>
</tbody>
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<table>
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<tr>
<th>Example 13B (student's successive answers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fill-In-The-Blank (Scheda 74A, #18)</td>
</tr>
<tr>
<td>Beethoven (ha compose*/ha composte*/ha composo*/composto*/ha composto) una sinfonia in onore di Beethoven.</td>
</tr>
</tbody>
</table>

Fig. 13. Example 13

<table>
<thead>
<tr>
<th>Example 14A (correct answer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fill-In-The-Blank (Scheda 74A, #11)</td>
</tr>
<tr>
<td>Pierino non viene più in questa scuola: lo (hanno espulso) per cattiva condotta.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example 14B (student's successive answers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fill-In-The-Blank (Scheda 74A, #11)</td>
</tr>
<tr>
<td>Pierino non viene più in questa scuola: lo (hanno espluso*/espelso*/hanno espelso*/hanno espluso*/give up) per cattiva condotta.</td>
</tr>
</tbody>
</table>

Fig. 14. Example 14

In examples 13 and 14, we see that the student did not take the time to review the irregular past participles and did not look them up during the session. All of the forms were available in the program. It must be noted that in these examples, feedback came in the form of a spell-check feature of the program. This feature displays the incorrect reply on the screen with extraneous or incorrect letters highlighted and a blank inserted if a letter has been omitted. It is possible that this spell-checking feature, which is meant to facilitate the student's arrival at a correct answer, may have had the opposite result, that of creating a game-like situation in which the goal is to score and the side effect that the student thought less critically. The student, following the clues whose objective is to get her to insert the
right letter or to remove the wrong one, concentrated on the task at hand in such a way that she neglected to process the information she should be trying to learn. In example 13, the student finally arrived at composto but forgot the auxiliary verb!

Obviously the answer reached by the student was the same whether the student was actively thinking or playing. However, in the first case, arriving at the correct answer required cognitive involvement whereas, in the second case, the goal of scoring did not presuppose any concern about learning. According to the game-playing student’s perception, winning amounted to achieving the correct response, whereas the real objective of the exercise was to help evoke in the student an understanding of the correct form or use of the syntactic structure. In example 14, the student used the feedback cues to try to “score” (and came very close with espelso) but had to give up finally because the only way to find the correct answer would involved looking it up.

The format of the written workbook does not give rise to this type of problem-solving behavior. It is the interactive nature of the computer exercise that permits the game-playing situation, even in a text based program such as the one under discussion here. Ultimately, the goal of language acquisition is to be able to use the language for communication and not merely to type in mechanical answers to questions. This program allows students to attempt to answer as many times as they like, the notion behind this option being that students can explore the language and that the computer is a perpetually patient tutor available to handle the replies. The problem of the game-playing student was not foreseen. Of course, this phenomenon could be easily eliminated by limiting the number of attempts students are permitted. One could let students have three tries before the system automatically generated the answer, which would allow for some genuinely attempted answers without the game-playing factor coming into play. Nevertheless, with a generation of students raised on computer games, more studies on feedback need to be carried out so that feedback stimulates the quest for knowledge and not the quest to score.

USE OF THE GIVE-UP FEATURE

The give-up feature can be activated only after an answer has been attempted. Occasionally, students entered a gibberish answer in order to be able to activate the give-up feature but did not use this strategy very frequently. It might seem logical to assume that students who did not know much or who were not well prepared would have taken frequent advantage of the give-up feature, but such was not the case. Nor was the feature used very often by the students who were in the game mode since their goal was to score rather than to gain knowledge.
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Interestingly, the give-up feature was often, though not exclusively, used by more thoughtful students, those who had prepared the work more thoroughly, pondered possible answers, and realized that they did not know the answer. In this kind of situation, recourse to the give-up feature seems to have been used as a stimulus to the cognitive process, to seek greater understanding.

SURVEY RESULTS

Towards the end of the academic year, students were asked to complete a survey on their satisfaction with the computerized grammar exercises. The questions centered on the usefulness of various types of screens, feedback, the frequency of use of the grammar recap, and the feature which allows the entire completed exercise to be read at the end of a session. While students were generally satisfied with the program, two unexpected results emerged. First, many students reported that vocabulary screens had not been useful. When queried subsequently as to the reason why, many indicated that they had never used the vocabulary screens at all. This result also suggests that perhaps students did not consult other help features such as those on irregular verb forms. Second, the overwhelming majority of students indicated that they never reread their completed exercises. These findings coincide with Chapelle and Jamieson's (1991) assertion that software features that can be used are not necessarily used. They also reinforce the concepts of (1) students who focus on the specific task at hand without taking into account the greater whole and (2) students who treat exercise sessions as a game. It must be noted that students' lack of interest in many of these help features in no way reflected their feelings about the course. Fully 70% of them continued on to the next level Italian course the following year.

CONCLUSION

Most of the sources of errors examined in the pronoun and verb exercises under discussion here are typical of learners of Italian and reflect problems learners frequently encounter in their acquisition of grammatical structures. As such, the review of the errors served as a confirmation of problems that have come to the fore in years of observation of areas of students' weaknesses. One new error source was identified. In cases in which students omit the auxiliary verb adjacent to an object pronoun having the same vowel sound, the reason was found not to be that the vowel sounds were merged into one but, rather, that students were so focused on finding the correct pronoun that they neglected the auxiliary verb.
For motivated students, the electronic workbook functions very well, providing them with the ability to correct their work by means of feedback and other help features. However, the typology of errors set out above supported by the survey results indicate that, for some, exercises represent a game in which the process of learning is secondary. The very fact that many students did not consult vocabulary screens, did not read the grammar recap, and did not reread their completed exercises, signals a deficiency where there should be personal involvement. Although the program’s goal is to develop linguistic competence, some students treat it as a form of “edutainment.” This attitude explains, perhaps, the popularity of programs such as vocabulary games which, in giving oral and visual stimuli to develop vocabulary, seems to bridge the gap between language and video games. Certainly, as Robinson (1991) has pointed out, further research into feedback strategies that maximize active learning is much needed. She notes that feedback which leads the learner to discover appropriate responses should improve achievement more than feedback which simply reveals errors.

The implications for future programs seem to indicate two possible options: (1) programs with activities organized explicitly in the form of games which actively motivate student learning or (2) multimedia programs which provide written, oral, and visual stimuli that can activate the learning process in the student. However, Dingman (cited in Saddy 1996) notes that since it is the left hemisphere of the brain that handles most of our language processing and the right hemisphere that processes visual images and multimedia content, we must be circumspect with respect to multimedia programs. The right hemisphere does not filter information as critically as the left and it does little higher-order linguistic processing. The challenge, then, for developers of multimedia software will be to develop programs that take these factors into account so that their products are not just slick commercial packages but useful tools for language learners.
REFERENCES


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