Feedback Strategies for Second Language Teaching with implications for Intelligent Tutorial Systems

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Abstract

A major focus of research in Intelligent Tutoring systems (ITS) has been the identification and implementation of feedback strategies that facilitate student learning. Much of this research has been carried out on systems teaching procedural skills in domains such as algebra, physics or computer programming. There has been little effort devoted to ITS for foreign languages or Intelligent Computer-Assisted Language Learning (ICALL). This thesis aims to inform the design of feedback strategies in ITS for learning Spanish as a Second Language, using empirical data about student-teacher interactions. We explore empirical evidence about the type, frequency and effectiveness of feedback strategies used by Spanish teachers in studies of three different learning contexts: an observational study of face-to-face classroom interactions, a case study of one-on-one tutorial interactions, and an experimental study in which students interacted with a web-based tutoring program.

To provide guidelines for researchers developing feedback strategies for ITS for second language learning, we studied both positive and negative feedback strategies. For positive feedback we consider repetition and rephrasing, whereas for negative feedback, we consider two groups of strategies: (1) Giving-Answer Strategies (GAS) which include repetition of the error, recast, provision of the correct answer, and explicit correction, and (2) Prompting-Answer Strategies (PAS) which include elicitation, metalinguistic cues, and clarification-requests. The results of our empirical studies suggest that in negative feedback, PAS are more effective for dealing with grammar and vocabulary errors, and GAS are more effective for dealing with pronunciation errors. For positive feedback, repetition and acknowledgement are the most frequently used strategies. We suggest that an ITS for Spanish as a foreign language should implement feedback strategies that prompt students for answers with grammar or vocabulary errors and give the target form for pronunciation errors.

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Declaration

I declare that this thesis was composed by myself, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or professional qualification except as specified.

(*Anita Å Ferreira-Cabrera*)

To Sebastian, Benjamin and John, my lovely and unconditional support.

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Chapter 1

Introduction

The design of Intelligent Tutorial Systems (ITS) is founded on two fundamental assumptions about learning. First, individualized instruction by a competent tutor is far superior to the classroom style because both the content and the style of the instruction can be continuously adapted to best meet the needs of the situation (Bloom, 1956). Secondly, students learn better in situations which more closely approximate the situations in which they will use their knowledge, i.e. they learn by doing, by making mistakes, and by constructing knowledge in a very individualized way (Bruner, 1966; Ginsburg and Opper, 1979).

Indeed, empirical evidence has shown that tutorial mode is superior to normal learning experiences in traditional classroom settings, and it is mainly due to conversational dialogue patterns (Graesser *et al.*, 1995) which facilitate the treatment of errors and correction in tutorial mode (Fox, 1993; Merrill *et al.*, 1992). Recently, Chi and colleagues (Chi *et al.*, 2001) have suggested that students have greater opportunities to be constructive in tutorial mode than in a traditional classroom. Tutoring is effective because it affords opportunities for students to be more generative, that is, it engages students more actively in constructive learning.

Most research on the effectiveness of tutoring has investigated feedback and guidance moves (e.g., prompting, hinting, scaffolding, and pumping) in teaching procedural skills in domains such as algebra, geometry, physics and computer programming (Anderson *et al.*, 1995; Merrill *et al.*, 1992; Graesser *et al.*, 1995; Zhou and Freedman, 1999; Hume *et al.*, 1996; Coleman, 1998; Chi *et al.*, 2001). However, little

effort has been put into areas such as ITS for Foreign Language (FL) or Intelligent Computer-Assisted Language Learning (ICALL). This situation seems to have arisen for following reasons:

- *The specific and complex nature of errors and corrective feedback in Second Language Acquisition (SLA):*

  In the L2 classroom, the focus has generally been on errors made by learners and on the correction of those errors–as they occur frequently. In addition, there is general agreement among language teachers and researchers in SLA that evaluation and feedback are central to the process and progress of language learning (Van Lier, 1988). This situation is completely different from other teaching domains in which language errors are usually accepted by teachers without correction. Indeed, errors and corrective feedback are a natural part of language learning. **Errors** can be defined as deviations from the norms of the target language (Ellis, 1997). **Corrective Feedback** refers to an indication to the learner that his/her use of the target language is incorrect.

  According to Ellis (1997), empirical evidence reveals that the treatment of error is an enormously complex process. This can be seen in the models of feedback proposed (Long, 1977; Day, 1984; Chaudron, 1977; Lyster, 1998b) and also in the different taxonomies of feedback strategies (Allwright, 1975; Chaudron, 1977; Seedhouse, 1997; Lyster and Ranta, 1997). Some of these strategies are markedly different from those typically found in ITS for procedural domains, such as repetition of the error, recast, and meta-linguistic cues.

- *The relative merits of different types of feedback are still a matter not completely resolved in SLA:*

  SLA research on feedback reveals that teachers have a wide variety of strategies available for the treatment of students' errors (Allwright, 1975; Chaudron, 1977; Seedhouse, 1997; Lyster and Ranta, 1997). However, it is only recently that systematic studies into the type, frequency and effectiveness of different feedback strategies have been carried out (Doughty and Varela, 1998; Seedhouse, 1997; Lyster, 1998b; Lyster, 1998a).

The results of these empirical investigations show that (1) the relative merit of different types of feedback is still a matter that is not completely resolved, and (2) the relative effectiveness of feedback strategies depends on multiple variables, including the particular aspects of language being corrected, the conditions relating to the provision of teacher correction, and the characteristics of the students (e.g., sophisticated meta-linguistic explanations are not appropriate for beginner students). Remaining work needs to be done in order to establish which strategy should be the most suitable and the most effective based on these variables. Thus, it is crucial to carry out further investigations with the purpose of clarifying and providing more empirical evidence about these feedback strategies.

- *The shortage of empirical research on the effectiveness of ITS for FL or ICALL systems in general, and feedback strategies in particular:*

  ICALL systems have used NLP techniques (i.e., specific parsing techniques), to analyse the student's response and identify errors or missing items. The detection of students' errors enriches the tutoring environment and adds the language dimension to evaluation. These NLP capabilities have allowed systems to handle more sophisticated types of feedback strategies, such as meta-linguistic feedback, and "error report" to correct particular student errors based on a textual analysis of them (Criswell *et al.*, 1991; Sams, 1995; Levin and Evans, 1995; Nagata, 1995; Nagata, 1997b).

  However, the unnatural and obstructive form that this feedback presents is only suitable in the context of grammar exercises, where there is a focus on linguistic forms, and for advanced learners–who are capable of handling a series of involved technical explanations. In consequence, ICALL systems have not yet incorporated the typical strategies studied by SLA researchers (Allwright, 1975; Chaudron, 1977; Seedhouse, 1997; Long, 1977; Lyster and Ranta, 1997; Lyster, 1998a; Doughty and Varela, 1998).

- *The lack of knowledge about SLA studies by the ITS community:*

  Most ICALL systems appear to be created without reference to the many re-

search studies concerning language students' abilities–how they might best learn languages, and how teachers deal with students' errors (Bull, 1997; Chapelle, 1997; Holland *et al.*, 1995).

ICALL systems require designers to pay more attention to SLA research. In particular, it should not be assumed that just any classroom teaching strategies may be suitable for teaching in an ICALL system, or that one can come up with governing tutorial principles to serve as control structures for a system without having examined, in detail, natural classroom/tutorial interactions between teachers and learners (Tomlin, 1995).

Despite these problems, the value of the feedback component is unquestioned in the area of ICALL (Garrett, 1995). However, it is necessary to find out the extent to which feedback actually contributes to the language development of the average learner. Hence it is crucial to obtain more detail about how learners respond to these strategies, and whether the resultant strategies provide a change in their learning, either temporarily or permanently.

1.1 Nature of Feedback in a Second Language Domain

SLA researchers have been interested in finding out how students learn languages, what kind of strategies teachers use most frequently, and what kind of effect these strategies produce in the teaching-learning process. The type of reaction made by L2 teachers when students make an error is an important issue in second language research.

There is a considerable amount of literature dealing with corrective feedback (Long, 1977; Hendrickson, 1978; Chaudron, 1988; Allwright and Kathleen, 1991; Doughty and Varela, 1998; Lyster and Ranta, 1997); much of it addresses aspects such as–whether, when, and how errors should be corrected, and who should correct them (Long, 1977):

1. *Deciding whether to treat errors:*

   In second language teaching, teachers have a responsibility to help learners do their best. In consequence, they need to pay attention to individual students'

errors. However, excessive feedback on errors can have a negative effect on motivation, so teachers must be sensitive to the way their students react to correction (Lightbown and Spada, 1999).

Some research has shown that teachers' and second language learners' perspectives differ in the desirability of error treatment. Seedhouse (1997) found that teachers perform a great deal of interactional work to avoid performing direct and overt negative evaluation of the learner's linguistic errors. However, the students do not want to repair their own errors–they want the teacher to conduct other-initiated other-repairs (Nunan, 1988), and they want to be corrected when they make oral errors (Cathcart and Olsen, 1976; Chun and Day, 1982; Chenoweth *et al.*, 1983). Although learners want teachers to conduct other-initiated other-repair on their linguistic errors, teachers in general tend to avoid doing so and tend to prefer other-initiated self-repair.

2. *Deciding when to treat errors:*

   The teacher may deal with an error immediately, or delay it and treat the error within the boundaries of the same lesson in which it occurred. The problem with immediate error treatment is that this often involves interrupting the learner in mid-sentence–a practice which can certainly be disruptive, and could eventually inhibit the learner's willingness to speak in class. Immediate reaction to errors in a classroom may embarrass some students and discourage them from speaking, while for others such a correction is exactly what is needed to help them notice a persistent error at the moment when it occurs.

   Alternatively, teachers may postpone the treatment for longer periods of time. This is especially true if error types are patterned and shared by the group of learners, in which case the treatment can be used as a focus to begin a future lesson. However, psychological research has shown that feedback becomes less effective as the time between the performance of the skill and the feedback increases (Long, 1977).

3. *Deciding what treatment to provide:*

   The type of correction which is offered will also vary according to specific characteristics of the students. Children and adults with little education in their first language will not benefit greatly from sophisticated meta-linguistic explanations, but university students who are advanced learners of the language may find such explanations of great value.

   Corrective feedback includes a variety of responses that a language learner receives. This can be explicit (e.g., "No you should say "goes", not "go"") or implicit (e.g., "Yes, he goes to school every day"), and may or may not include meta-linguistic information (e.g., "Don't forget to make the verb agree with the subject") (Lightbown and Spada, 1999).

   The teachers need to choose the best type of strategy in order to help the learners correct their errors. Chaudron (1977) produced a catalogue which listed over thirty different strategies a teacher can use following an oral error, including "repeat", "prompt", "clue", etc. However, learners may not recognize strategies such as "recast" as a correction unless the teacher has a means of signalling correction to the student. Recently, it has been argued that students in content-based second language classrooms–where the emphasis is on meaning–are less likely to notice recasts than other forms of error correction. This is because when recasts are provided, students assume that the teacher is responding to the content rather than the form of their speech (Lyster and Ranta, 1997).

4. *Deciding who performs the treatment:*

   The most common source of feedback to language learners in the classroom is treatment provided by the teacher. If it is not the teacher who treats the error, then it could be either the learner who erred (self-correction) or another member of the class (peer-correction).

   Studies of repair in naturally-occurring conversations have shown a preference for self-initiated and self-completed repair (Van Lier, 1988). The type of repair work is likely to reflect the nature of the lesson which the teacher and learners have jointly created.

From the perspective of learning theories, student-generated repairs may be important in classroom interaction because:

- they provide learners with opportunities to automate the retrieval of target-language knowledge that already exists in some form (i.e, declared knowledge).
- they actively confront errors in ways that may lead to revisions of their hypotheses about the target language.

Curiously, there have been few studies that have investigated what effect formal corrections have on language acquisition. An investigation by Tomasello and Herron (1988; 1997) provides evidence that formal correction can have a real effect on acquisition. Lightbown and Spada (1990) examined the effects of corrective feedback in the context of communicative language teaching, in which learners who did receive error correction were found to achieve greater accuracy in the production of some structures. Lyster and Ranta (1997) examined students' language behavior immediately after receiving the different feedback strategies. Repaired errors were found to be less likely to occur after recasts, and much more likely to occur when they received feedback in the form of elicitation, clarification-requests, meta-linguistic feedback, or repetitions.

Even though these studies provide some suggestions about what constitute effective feedback, there are many issues which remain to be resolved. In particular, we need more empirical work targeted at identifying how often teachers use the various feedback strategies for different types of errors, and which strategies are likely to be the most appropriate and effective for them. Longitudinal research is greatly needed to determine the extent of learning possible from feedback, and the types of feedback that would best succeed in promoting progress in the target language.

1.2 Claims and Research Questions

In this thesis we present an approach for using empirical data on student-teacher interactions with a view towards informing the design of feedback strategies in Intelligent Tutorial Systems (ITS) for learning Spanish as a Second Language. Many previous

empirical studies in the ITS area have used student-tutor interactions as models. However, in second language (L2) teaching the interaction usually takes place in a classroom environment.

We propose that the incorporation of effective teaching strategies into ITS for Spanish as a FL can be informed by (1) the SLA research findings on the effectiveness of corrective feedback, (2) the analysis of feedback strategies used in Spanish as L2 classroom interactions, (3) the analysis of feedback strategies used in Spanish as L2 tutorial interactions, and (4) the findings of a longitudinal experiment in which feedback strategies were controlled so as to observe the effects in learning gain after a treatment process.

Our aim is to explore the type, frequency and effectiveness of feedback strategies in both classroom and tutorial modes. We believe that this approach is an appropriate starting point for developing a feedback component for an ITS for Spanish as FL.

Research Questions

With regard to feedback strategies, we set out to answer the following research questions based on classroom interactions:

1. *What are the most frequent types of positive feedback used by teachers of Spanish as L2 after a student's correct answer?*

2. *What are the most frequent types of corrective feedback used by teachers in Spanish as L2, and how do they relate to learner errors?*

3. *What are the most effective types of corrective feedback which could be employed in a feedback component for an ITS for Spanish as FL?*

We investigated feedback strategies for both positive and negative forms. Specifically, our study involves two types of **positive feedback**:

1. **Repetition**: the teacher repeats the student's correct answer.

2. **Rephrasing**: the teacher exhibits a new structure which rephrases the correct answer given by the student.

For **corrective feedback**, we consider two groups of strategies:

1. **Giving-Answer Strategies (GAS):** types of feedback moves in which the teacher directly gives the target form corresponding to the error in a student's answer, or shows the location of the student's error. GAS strategies include:

   - **Repetition of the error** with a rising intonation (not the whole utterance)
   - **Recast** (reformulation of the student answer including the target form)
   - **Provision of the correct answer**
   - **Explicit correction**.

2. **Prompting-Answer Strategies (PAS):** types of feedback moves in which the teacher pushes the student to notice some type of language error in his/her response and self repair his/her error (Chi *et al.*, 2001). PAS strategies include:

   - **Meta-linguistic cues** or useful information about the error (but without repeating the error)
   - **Clarification requests**
   - **Elicitation of the student's answer** (but without giving the answer).

1.3 Empirical Studies

There is empirical evidence in ITS that the best way to understand "correction" is by examining the overall structure of the tutoring sessions (Fox, 1993). However, in second language teaching the interaction usually takes place in a classroom environment. For this reason, we have carried out three types of empirical research (observational, case studies and experimental) with the purpose of establishing the most frequent and effective feedback strategies in different teaching modes, with a view towards informing the design of feedback strategies for an ITS for Spanish as a second language. Our studies include:

- *An observational study of face-to-face classroom interactions:* an analysis of naturalistic data from traditional classrooms. We propose that one appropriate approach for incorporating effective teaching strategies into ITS for FL can be

informed by an observational analysis of lessons from human teachers. The aim is to investigate, at a fine level of structure, how human teachers deal with particular issues, such as the treatment of errors, and learning.

Specifically, this study involves two types of positive feedback: Repetition (i.e teacher repeats the student's correct answer) and rephrasing (i.e., the teacher displays a new structure which rephrases the correct answer given by the student). For corrective feedback, two groups of strategies are investigated: Giving-answer Strategies (GAS) and Prompting-answer Strategies (PAS).

- *A case study of one-on-one tutorial interactions:* a case study in which we compared the feedback between traditional and tutorial mode. We study feedback strategies in tutorial interaction by comparing tutoring sessions with classroom interactions. Our approach considers the use of empirical data on student-teacher interactions to guide the design of feedback strategies in the context of ITS for learning Spanish as FL. This study is further fuelled by the need for developers of ITS to know which tutoring heuristics and strategies to implement for treatment of feedback in L2 Spanish teaching.

  Our general aim is to establish whether the teacher in a tutorial interaction uses the same types of feedback strategies as in classroom mode. We believe that in order to deal with feedback in ITS systems for FL, it is crucial to gain more knowledge about the type, frequency and effectiveness of different corrective-feedback and positive feedback strategies in a tutorial mode.

- *An experimental study:* involves a longitudinal experiment aimed at looking for further evidence about the effectiveness of the two classes of feedback strategies (GAS and PAS).

  In order to determine whether the tendencies found in the first two studies can be experimentally reproduced, we carried out a longitudinal experiment on grammar aspects. We controlled feedback strategies so as to observe the results in learning gain after a treatment process. We used a Web tutoring interface to gather empirical data on students' interactions. The study addresses the following research question: *Are PAS or GAS feedback strategies more effective for*

teaching the Spanish subjunctive mood for foreign language learners?

1.4 Organization of this Thesis

In this thesis we suggest that an ITS for Spanish for FL should implement feedback strategies that prompt students for answers in response to grammar or vocabulary errors, and give the target form in response to pronunciation errors. The thesis is organized as follows:

- In Chapter 2, related research on feedback in ITS for FL teaching and SLA is described. This chapter also describes some representative empirical findings regarding corrective feedback in SLA.

- In Chapter 3, we present an observational study of traditional classrooms aimed at determining the most frequent and effective feedback strategies in L2 learning of Spanish. We explain the results and the main implications for designing ITSs in the context of foreign language learning.

- Chapter 4 presents a case study aimed at determining the most frequent and effective feedback strategies in L2 tutorial mode. The results and main implications for designing ITSs in the context of foreign language learning are highlighted.

- Chapter 5 describes an experimental study aimed at answering the following research question: *Are PAS or GAS feedback strategies more effective for teaching the Spanish subjunctive mood for foreign language learners?*.

- In Chapter 7, the findings discussed in the empirical studies are put in the context of the development of future ITS.

Chapter 2

Related Work

Most research in Intelligent Tutorial Systems (ITS) has investigated feedback and guidance moves (i.e., prompting, hinting, scaffolding and pumping) for teaching procedural skills in domains such as algebra, geometry, physics and computer programming (Anderson *et al.*, 1995; Merrill *et al.*, 1992; Graesser *et al.*, 1995; Zhou and Freedman, 1999; Hume *et al.*, 1996; Coleman, 1998; Chi *et al.*, 2001). However, little effort has been put into areas such as ITS for Foreign Languages (FL) or Intelligent *Computer-Assisted Language Learning* (ICALL). Much less work in this domain has considered the research on corrective feedback in SLA. The research within which this thesis is situated seeks to gain an understanding of feedback in second language (L2) teaching with the aim to develop useful ideas for exploitation in the development of future intelligent tutorial systems for FL.

The purpose of this chapter is to focus our interdisciplinary approach on feedback strategies based on different working areas. Accordingly, the organization of this chapter is as follows:

In section 2.1, **Intelligent Tutorial Systems** (ITS) and general characteristics of this kind of educational technology are discussed. Furthermore, the main contributions of feedback and guidance moves for teaching procedural skills in the context of ITS are described. Section 2.2 presents a critical review of several approaches to feedback moves in applications concerning ITS for Foreign Languages. Finally, in section 2.3, we highlight the main contribution of research on **Second Language Acquisition (SLA)** to the understanding of corrective feedback in L2 teaching.

2.1 ITS and Feedback Moves

Feedback moves have constituted one of the central means of producing effective learning for procedural domain-based ITS. Hence it is worth studying the main feedback features of ITS, and investigating approaches for feedback moves. Before that, the main characteristics of ITS are highlighted.

2.1.1 Intelligent Tutorial Systems

Intelligent Tutoring Systems have been pursued for more than three decades by researchers in education, psychology, and artificial intelligence. ITS are computer-based instructional systems with models of instructional content that specify what to teach, and teaching strategies that specify how to teach (Wenger, 1987; Ohlsson, 1987). ITS's main goal is to provide the benefits of one-on-one instruction automatically and cost effectively. Like training simulations, ITS enable participants to practise their skills by carrying out tasks within highly interactive learning environments.

However, ITS go beyond training simulations by answering user questions and by providing individualized guidance. Unlike other computer-based training technologies (i.e., Intelligent Computer-Aided Instruction), ITS assess each learner's action within an interactive environment and develop a model of their knowledge, skills, and expertise. Based on the learner model, ITS tailor instructional strategies, in terms of both content and style, and provide explanations, hints, examples, demonstrations, and practice problems as needed.

Research on prototype ITS indicates that ITS-taught students generally learn faster and translate the learning into improved performance compared to classroom-trained participants. For example, in the early 90s, the *Sherlock* ITS (Katz *et al.*, 1992) was developed and used to train Air Force personnel on jet aircraft troubleshooting procedures. Learners taught using Sherlock performed significantly better than the control group and, after 20 hours of instruction, performed as well as technicians with four years of on-the-job experience.

ITS are typically made up of four basic modules as shown in figure 2.1. The **Expert Model** represents subject matter expertise and provides the ITS with knowledge

of what it is teaching. The **Student Model** represents what the user does and does not know, and what he or she does and does not have. This knowledge lets the ITS know who it is teaching. The **Tutor Model** enables the ITS to know how to teach, by encoding instructional strategies used via the tutoring system user interface. **The User Interface** which is the environment for communicating with the learner, is characterized by a graphical interface of the tutoring system. It is through an interface in an ITS that all the instruction is communicated (Swartz and Yazdani, 1991).

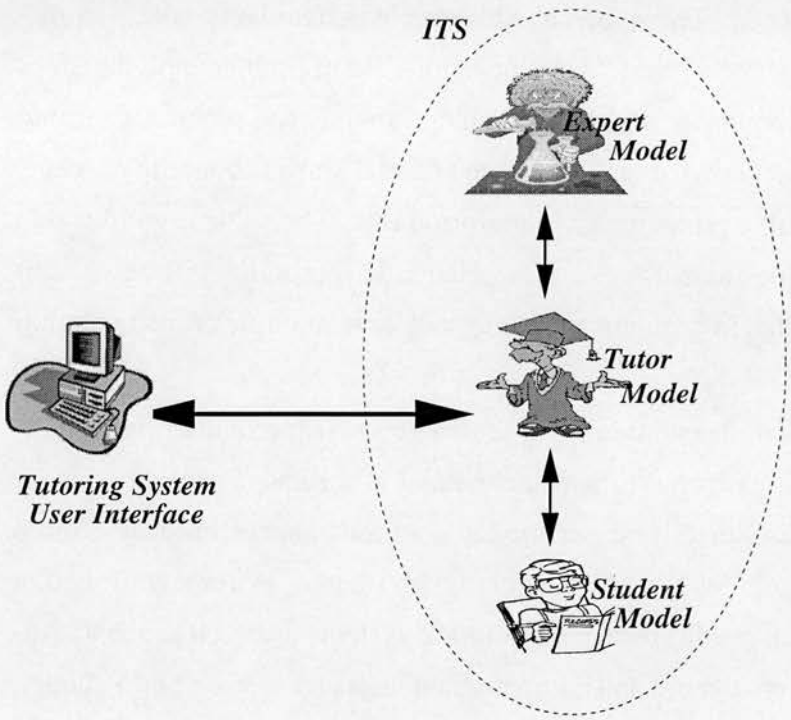

Figure 2.1: *Components of an Intelligent Tutorial System*

The Student Model contains a summary of the student's relevant past experiences, learning styles, and learning preferences (profile). The ITS will use and maintain a student model reflecting the current student's knowledge base. This dynamically updated model contains the ITS's inferred estimation of the mastery level of important concepts and procedures. The student model will allow individually paced learning that progresses according to demonstrated competency (as well as student's interest). The ITS will adapt the selection and sequencing of instructional content to respond to the student. Tutoring strategies will be encoded so as to select material based on the stu-

dent model, and the characteristics of the current topic or task. The ITS will adapt the teaching style dynamically to respond to the student. Multiple tutoring strategies are implemented and used to afford this instructional flexibility. Meta-strategies are used to select the best tutoring strategy for a given situation.

The Expert model is a computer model of a domain expert's subject matter knowledge and problem-solving ability. This knowledge enables the ITS to compare the learner's actions and selections with those of an expert in order to evaluate what the user does and does not know. The expert model may be cognitively valid, so that learners will be able to ask "how" and "why" questions about problem solving steps or concept relationships. Explanations will be available so they can probe deeper into the rationale behind domain knowledge. The **Expert Model** knows about the concepts or procedures needed to solve problems or to perform tasks. The student will be able to ask the expert model questions about a task. Heuristic reasoning will be used to simulate the expertise needed in problem situations that have multiple correct solution paths.

ITS researchers have long been attempting to develop a **Tutor model** that can interact naturally with students to help them understand a particular subject domain. However, language and discourse have constituted a serious barrier in these efforts. Language and discourse facilities have been either nonexistent or extremely limited in the most impressive and successful intelligent tutoring systems available, such as Anderson's tutors for geometry, algebra and computer languages (Anderson and Pelletier, 1991), Van Lehn's tutor for basic mathematics (Van Lehn, 1981), and Lesgold's tutor for diagnosing and repairing electronic equipment (Lesgold *et al.*, 1990). There are three very challenging aspects in dialogue management that are worth highlighting:

1. The inherent difficulty of getting a computer to understand the language of users, including utterances that are not well-formed syntactically and semantically,

2. The difficulty of getting computers to effectively use a large body of open-ended, fragmentary, and unstructured world knowledge, and

3. The lack of research on human tutorial dialogue.

The fact that the tutor manages conversation when there is a breakdown in common ground, and the existence of complex feedback mechanisms, make tutoring a fascinating phenomenon to study from the standpoint of theories of communication and discourse processing.

It is well supported that one-to-one tutoring is superior to normal learning experiences in traditional classroom settings. The advantage may be attributed to conversational dialogue patterns used even by unskilled tutors rather than to pedagogical strategies of skilled tutors (Graesser *et al.*, 1995). The notion that conversation mechanisms might have a major impact on learning is hardly a revolutionary idea. The importance of collaborative "talk" has been emphasized in contemporary theories of education, literacy, and situated cognition. But what is it about conversational dialogue that might explain its impact on learning? Researchers need to dissect conversational patterns occurring during tutoring and to relate them to learning outcomes. According to Graesser (1995) some characteristics which naturalistic tutoring protocols come up with should be kept in mind:

- Active student learning: instead of the student being a passive recipient of information, the educational experiences encourage active student learning.
- Sophisticated pedagogical strategies: a good teacher/tutor implements sophisticated pedagogical strategies that are effective in promoting learning.
- Learning anchored in specific examples and cases: a good teacher/tutor anchors the material in specific examples and cases rather than relying on didactic, declarative information.
- Collaborative problem solving and question answering: a good learning experience involves a balanced collaboration between the teacher/tutor and the student while they solve problems and answer questions.
- Deep explanatory reasoning: the teacher/tutor and student focus on deep conceptual models and explanation rather than superficial facts.
- Converge toward shared meaning. The teacher/tutor and student achieve shared knowledge (a meeting of the minds).

- Feedback, error diagnosis, and repair: a good teacher quickly gives feedback on the quality of student contributions. When a student makes an error, the teacher/tutor identifies the error, corrects the error, diagnoses the misconception that explains the error, and rectifies the misconception.

- Affect and motivation: a good teacher/tutor bolsters student motivation, confidence, and self-efficacy while mastering the material.

2.1.2 Feedback Moves in ITS for Procedural Domains

Most research on tutoring effectiveness has focused on identifying the repertoire of tactics or moves available to tutors (Merrill *et al.*, 1992; Evens *et al.*, 1993; Putnam, 1987) such as giving explanations, giving feedback, and scaffolding. In particular, these studies have tried to determine how tutors decide and choose among these different tactics (McArthur and Stasz, 1990), how they generate explanations and feedback (Merrill *et al.*, 1995), and what variety of hints they use (Hume *et al.*, 1993).

One of the most frequent student moves considered in these approaches has been that of making an error. The research question typically focuses on the tactics a tutor would undertake when the student either makes an error or makes a correct move.

By examining natural human tutoring in terms of understanding tutors' moves following students' correct or incorrect actions, in a Lisp tutor context, (Merrill *et al.*, 1995) found that 66% of students' correct actions were followed by a tutor's confirmation feedback (i.e., "Right, uhhuh."). This suggests that confirmatory feedback is a useful tactic as it guides the students to continue the same line of correct reasoning.

Anderson (1995) manipulated the kind of feedback students received in another Lisp tutor. Experimental studies showed that students' post-evaluation scores were superior when the students received feedback on errors compared to when they did not receive feedback. In addition, the time required by the students to reach the target topic was reduced by half when the feedback was given immediately after an error. However, the students' post-evaluation scores did not improve significantly as compared to the delayed feedback group.

This suggests that tutors' feedback moves might be responsible for students' learn-

ing, especially for a procedural skill, when examined in the context of one kind of student move (errors). This result indicates that tutors give responsive (confirmatory and negative) and on-going feedback, in that they guide students and keep them on track in acquiring the problem solving skills (Anderson *et al.*, 1995; Graesser *et al.*, 1995).

2.1.2.1 Fox's Correction

One of the early approaches to correction strategies (Fox, 1986; Fox, 1993) claimed that the best way to understand correction is to examine the overall structure of the tutoring sessions. This means that correction is best studied within the sequential organization of the interactions themselves. Note that human tutors seldom give direct corrective feedback immediately. Instead they pause and ask questions designed to elicit the students to self-correct their own errors and line of reasoning. Thus, these portrayals of more indirect tutoring are consistent with the hypothesis that these tactics give students more opportunities to construct knowledge.

Starting from data collected for a project on human tutorial dialogue, four main positions were established in which the tutor engages in correction or initiation of correction:

1. When the student has produced a display of understanding that is, in some way, incorrect: the tutor withholds correction and in this gap the student, anticipating disagreement from the tutor, invites correction. The tutor responds with correction.

   S: Because secant squared of theta is square root of

   S: Can I do it that way?

   S: S- can I three minus one?

   T: Mm

   T: No, you want to say three squared. Because the secant is three.

2. When a wrong answer is produced after a tutor question: the tutor regularly initiates correction and the student attempts self-correction. Example:

T: Did the area change?

S: Would not the area be the same?

T: We only have the same amount of copper.

S: Yeah.

T: Well think of taking silly putty.

T: Like a block of silly putty like this and you pulled it out? What would happen?

S: It is the same.

T: It would get long and skinny, though.

In this case, when the correction was not invited by the student, the tutor does not overtly correct the student: rather the tutor tries to redirect the student's thinking. The behaviour of the tutor is clearly sensitive to the context of utterance of the problem.

3. When an utterance or set of utterances follows the student who usually exhibits being stuck. The tutor regularly initiates correction and gives the student the opportunity to accomplish the final correction. Example:

S: Tangent of theta is going to be: sine of theta over cosine of theta. One over cosine of theta. So, three.

T: Okay. Now,

S: Okay.

T: it's looking up here, just at what

S: Aha

T: they've done, cause I can tell, we're headed in the wrong direction.

S: Yeah, they used to con they use one of the pythagoreans.

T: Where did this minus sign come from?.

S: It's minus ex. This minus ex. shouldn't be here.

4. When the student produces an utterance that completes a tutor prompt. In this case, the tutor initiates and accomplishes correction by simply producing the rest of her/his original utterance, with the correct piece of completing material serving as an embedded correction. Example:

   T: One over ex gives

   S: one ex.

   `T: Natural log`

From these examples, it can be seen that, when an error arises, it significantly affects the way it is handled by both the tutor and the student. In order to model mechanisms to deal with the types of strategies employed in specific teaching domains, it is worth investigating the feedback interaction in each domain.

2.1.2.2 Graesser's Feedback Moves

Empirical studies on human tutoring have also been carried out to analyze the tutor responses to error-ridden student contributions (Graesser and McMahen, 1993). Tutors were found to give feedback to student contributions according to the following levels of quality: error ridden, vague, partially correct, and completely correct. Two related types of feedback were defined:

- Short feedback: consisted of a brief positive, negative, or neutral response (e.g., "yeah, right, good, okay, uh huh, not so, head nod, pause").

- Long feedback: consisted of longer comments on the answer quality (e.g., "That is correct because, there is a problem with that prediction").

Graesser et al., (Graesser and McMahen, 1993) also stated some relevant facts on the complexity of this kind of dialogue move. They established that an effective tutor should give the student feedback in relation to the student's contributions so the tutor can handle the errors by acknowledging that the error occurred, identifying where the error occurred, instructing the student how to repair the error, diagnosing the bugs and

misconceptions that generated the error and setting new goals that remediate the error, bugs, and misconceptions,etc.

These principles were implemented in an ITS, **Autotutor**, developed by the University of Memphis' tutoring research group (Graesser *et al.*, 1995; Graesser *et al.*, 1999; Wiemer-Hastings *et al.*, 1998). In this system, the treatment of different kinds of dialogue moves and the specification of these moves is based on a series of empirical studies with human tutors and students. The researchers then analyzed systematically the collaborative discourse that occurs between human tutors and students. One frequent outcome in several of these studies was that human tutors tended to rely on pedagogically effective dialogue moves that were embedded within the conversational turns of the tutorial dialogue. These uncovered dialogue moves were found to be triggered under specific conditions during the collaborative evolution of an answer to a question or a solution to a problem. Some of these moves include:

- **Pumping**: tutors pump the student for more information during the early stages of answering a particular question (or solving a problem). Pumping consists of positive feedback (e.g., "right", "yeah"), neutral feedback ("uh-huh", "okey"), or explicit requests for more information ("tell me more", "what else").

- **Prompting**: tutors supply the student with a discourse context and prompt them to fill in a missing word, phrase, or sentence. Example: prompt for specific information; "The primary memories of the CPU are ROM and .."

- **Immediate feedback**: tutors are normally polite conversation partners, so they are reluctant to give corrective feedback following student contributions which are poor in quality. Instead, they give positive (i.e., "that's right", "yeah"), neutral (i.e., "okay", "Uh-huh"), or indirect feedback (i.e., "Not quite", "no").

- **Splicing**: tutors jump in and splice correct information as soon as the student produces a contribution that is obviously error-ridden. The tutor needs to be able to recognize errors, bugs, and slips in order to do this.

- **Hinting**: when the student is having problems answering a question or solving a problem, the tutor provides hints by presenting a fact, asking a leading question,

or reframing the problem (i.e., "What about the hard disk?").

- **Summarizing**: unskilled tutors normally give a summary that recaps an answer to a question or solution to a problem. Examples: summary; "So to recap" (succinct recap of an answer to a question), elaboration (e.g., "CDROM is another storage medium").

2.1.2.3 Hume's Hints

Hume et al. (1993) also analyzed transcripts of human-to-human tutoring and determined that hinting was the most frequent strategy used by tutors in these interactions. From these results, Hume et al. start developing a theory of hints with implications for the design of ITS' feedback strategies. In this theory, hinting is intended to either:

- provide the student with a piece of information that the tutor hopes will stimulate the student to recall the facts needed to answer a question, or
- provide a piece of information that can facilitate the student's making an inference that is needed to arrive at an answer.

Furthermore, Hume et al. (1996) states that the tutors' desire to encourage active learning convinces them to prompt the student with hints. Hinting or reminding is a strategy that stimulates the recall of inert knowledge or activates the inferences needed in the completion of a task, and can be characterized as having the following functions:

- To provide explicit information or to simply allude to information.
- To be followed up with explicit questions or with implicit follow up questions.
- To be phrased as statements, when the intention is to ask a question.
- To be phrased as questions, when the intention is to answer a student question.
- To summarize segments of preceding dialogue or to introduce new information.
- To guide the student towards self discovery.

In Hume's study, two categories of hints were identified: "point-to" hints (PT-Hints) and "convey-information" hints (CI-Hints). A **CI-Hint** explicitly conveys information in the form of an explanation or summary and is followed up with a question. A **PT-Hint** alludes to information presumed to be available to the student. This information does not contain any part of a desired answer but provides information that should enable the student to proceed.

Based on interviews with tutors, a scheme to evaluate the students was defined and as a result, two types of assessment were observed: local, and global assessment. Local assessment is the tutor's assessment of how the student is responding during a short segment of the tutoring session. The tutor's global assessment of the student is a measure of the student's behaviour throughout the entire tutoring session. From these, it was observed that tutors use some rules to determine when to hint (Hume *et al.*, 1996):

1. Tutors initially try hinting when errors are made. The exception is when global assessment is very low.

2. If global assessment is sufficiently high, they try a second hint if the first hint is not successful.

3. They continue to provide hints on a topic as long as:

   (a) global and local assessment are sufficiently high, and

   (b) the number of hints while tutoring one topic is sufficiently low

4. If a follow up hint is to be provided then (a) tutors use a PT-Hint when local assessment is high, and (b) use a CI-Hint when local assessment is low.

2.1.2.4 Zhou's Categories for Student Answers

In an effort to use feedback moves in ITS context, Zhou and colleagues (1999; 1999) studied how to simulate the behaviour of a human tutor when the student cannot answer a question in a dialogue-based tutoring system. It was suggested that it is important for an ITS to have sophisticated retry strategies available when the student cannot answer a question, specially for helping him/her to find the desired answer without being told.

As Hume et al. (1996) stated, human tutors frequently use hints as a pedagogical tactic to help students to find the desired answer when they fail to answer a question. In trying to put Hume et al.'s theory of hints into practice in the *CIRCSIM* tutor, Zhou and colleagues (1999) found the theory to be too broad and too hard to simulate because of the following reasons:

- Hinting is a very subtle tactic, which is not yet fully understood.
- The form hinting takes is very flexible.
- The content of hints is context sensitive.

By analyzing human tutoring transcripts, Zhou et al. (1999) identified specific hints and methods of hinting which were implemented in the *CIRCSIM* tutor. In particular, seven categories of student answers were established:

- *Partial answer (the answer is part of the correct answer):* the tutor helps the student to focus on the missing part. To do so, the tutor will give a hint about the missing part, then ask the student about it. The *CIRCSIM* tutor simulates this kind of behaviour as follows:

  `T: What are determinants of stroke volume?`
  `S: Inotropic state.`
  T: right, inotropic state is one determinant of stroke volume. The other determinant represents preload. What is the other determinant of stroke volume?

- *"Near miss" answer (pedagogically useful but not the desired answer):* the *CIRCSIM* tutor will first acknowledge that the "nearmiss" answer is correct and then ask a question to lead the student toward the desired answer from the near miss answer;

  `T: What are the determinants of stroke volume?`
  `S: preload (this is true, but preload is not one of the variables on the student's worksheet.)`

T: right, preload determines Stroke Volume. What parameter in the prediction table represents preload?

- *"I don't know" answer:* to simulate this tutoring state in *CIRCSIM*, a hint strategy was implemented in order to offer information relating the variable in question to the desired answer. The computer tutor response will be a hint and a follow-up question to retry the task:

  `T: What determines central venous pressure?`

  `S: I don't know.`

  T: remember, the central venous compartment is very compliant. Again, what determines Central Venous Pressure?

- *"Grain of truth" answer (the student gives an incorrect answer but also indicates a partially correct understanding of the problem):* the *CIRCSIM* tutor recognizes a fixed set of "grain of truth" answers. A follow-up question is restricted to retrying the original question in different words. Thus, after a "grain of truth" answer, the system picks up the grain of truth, acknowledges it briefly, then rephrases the earlier question:

  `T: What are the determinants of stroke volume?`

  `S: Heart rate and cardiac output. (i.e., SV = HR *CO.)`

  T: Well, it is true that CO = SV * HR. But what I was asking is what determines how much blood is ejected from the heart each time it beats (the SV)?

- *Misconception (a common confusion or piece of false knowledge about the concept being tutored):* human tutors typically give lengthy explanations about misconceptions, so the computer tutor will first give a similar explanation and then give the correct answer:

  `T: By what mechanism is Inotropic State controlled?`

  `S: It is filling.`

  T: Well, you are confusing the Frank-Starling effect (increased filling gives

greater output) and contractility. Inotropic State (contractility) is the force of contraction at any given..

- *Other incorrect answers:* the response strategy to other incorrect answers is similar to the strategy after a "I don't know" answer. However, in this case, the computer tutor first gives a negative acknowledgment:

  T: What determines central venous pressure?

  S: TPR.

  T: No. Remember, the central venous compartment is very compliant. Again, what determines Central Venous Pressure?

- *Mixed answers (combination of answers from the other categories):* the student's answer can be a combination of different categories (i.e., a partial answer plus a "near miss", a correct answer plus a misconception, etc). To handle these answers, the computer tutor generally acknowledges any correct part of the utterance and then handles errors and gives correct answers:

  T: What are the determinants of Mean Arterial Pressure?

  S: CO and RA. (one correct, one near miss)

  T: right, CO is one determinant of MAP. Think about what parameter in the prediction table relates to Arterial Resistance. What is the other determinant of Mean Arterial Pressure?.

2.1.2.5 Chi and Colleagues' Prompting

One of the drawbacks of traditional feedback moves (i.e., acknowledgement, explanation, etc.) is that their effectiveness has not widely been proved. Besides, some less frequent strategies (i.e., scaffolding) might be found more effective in learning than those that are more frequent in tutorial interactions.

In this context, there is a significant evidence that a great deal of tutors' tactics can be reframed as prompting or encouraging students to construct knowledge, either

through the use of content-free prompts or scaffolding prompts. Scaffolding (or scaffolding episode) has been considered to be a pivotal kind of adult-child interchange in which the adult "guides" the child to develop and achieve to the child's fullest potential. Since tutoring is similar to adult-child interaction, scaffolding may be the pivotal step in tutoring as well (Vygotsky, 1978).

In a tutoring context, scaffolding involves any kind of guidance that is more than a confirmatory or a corrective feedback. This guidance means that in structuring the task, a tutor might decompose a complex task into simpler ones, do part of the task, initiate a task and let the student do the rest, remind the student of some aspects of the task, and so forth (Brown and Palinscar, 1989). However, from a feedback move viewpoint (Chi *et al.*, 2001), scaffolding is defined to exclude feedback-type of guidance (i.e., "guidance" is a more general term). A scaffolding episode then, is simply a multi-turn dialogue containing scaffoldings and addressing the same concept or topic.

Chi and colleagues (2001) use these scaffolding tactics to investigate the effectiveness of tutoring moves in the context of feedback strategies. To this end, three contrasting hypothesis were tested: the tutor-centered (T-hypothesis), student-centered (S-hypothesis), and interactive (I-hypothesis):

- The **T-hypothesis** claims that tutoring is effective because of specific actions undertaken by the tutors, resulting in a research goal of identifying which moves are important for tutors to undertake and when they should be undertaken.
- The **S-hypothesis** suggests that a number of tutor moves may be effective because they promote constructive and effortful responses from the student.
- The **I-hypothesis** embodies two testable claims:

    1. Both tutors and students are maximally interactive.
    2. Students' interactive construction (i.e., elicited responses) should foster more learning than students' non-interactive (i.e., self-initiated) construction.

The input data for the analysis consisted of adjacent pairs of comments in which four tutor moves were determined: explanation, direct (either positive or negative)

feedback[1], scaffolding, and asking comprehension gauging questions (CGQ). Next, the students' responses were coded according to the categories established by Clark and Schaefer (1989):

1. A continuer with comments such as "uh huh", or "okay".
2. A shallow follow-up which could be an elaborative paraphrase (Stenstrom, 1984).
3. A deep follow-up, which is an elaborative inference that extends what the tutor said.
4. A reflecting response, such as "I don't understand.", or
5. An initiating response that introduces a new topic (it did not answer nor expanded on the same topic that the tutor advanced).

Examples of obtained shallow and deep follow-ups are shown below, along with tutor-generated text sentences:

```
<Sentence 1>: Human life depends on the distribution of
          oxygen, hormones, and  nutrients  to cells in all part.

<Tutor>:  Basically, what we are talking about is the circulatory
          system is an exchange of material"

<Student>: (shallow follow-up) You take out the  waste and you
          put in the nutrients.

<Sentence 16>:  Each of the valves consists of flaps of
          tissue that open as blood is pumped out of the ventricles.

<Tutor>:  Blood actually flows out through there.
```

[1]Chi and Colleagues (2001) define "direct feedback" (either positive or negative) as followed by a short corrective explanation if the feedback is negative. For example: "No, when it went through the atrium, it went through the tricuspid valve" (when the student was about to say that blood flows through the "bi one").

```
<Student>: (deep follow-up)  This contracts like a balloon and
        forces this venous blood up here.
```

In this analysis, shallow and deep follow-up, reflecting, and initiating a new topic are considered to be constructive responses, whereas a continuer is a kind of non-constructive response.

Several interesting findings show the correlational results of the statement coding (Chi *et al.*, 2001):

1. Tutor scaffoldings definitely elicited more shallow follow-up than deep follow-up. This result explains why students' responses to scaffolding correlated only with shallow learning.

2. Among students' constructive responses to tutor explanations, shallow follow-ups were the most dominant; therefore, it makes sense that tutors' explanations only correlated with shallow learning.

3. Explanation is the only category of tutor moves that elicited more continuers than any other kinds of constructive responses. This suggests that relatively, explanations were not as effective at eliciting constructive responses from students as scaffolding, CGQ and feedback, in decreasing order. Hence students learn minimally from explanations (given the large number of explanations).

4. Feedback elicited the fewest total number of constructive responses. This explains why tutor feedback did not correlate with learning at all–the feedback did not elicit much constructive responses from the students. Note that "feedback" is referred to as acknowledgement followed by a short corrective explanation.

These results contrast the importance of a S-hypothesis versus a T-hypothesis, in that it is not the tutors' moves "per se" what is important but whether or not they elicit constructive responses from the students. This suggests that whether students learn at all or whether they learn shallowly or deeply, depends on the amount and kind of responses they gave, which in turn depends on the kind of moves tutors undertake to

elicit these responses. In Chi et al.'s study (2001), some tutor moves (i.e., scaffolding) elicited more shallow follow-ups than continuers, whereas others (i.e., feedback) elicited very few constructive responses altogether. Thus, there is clearly an interaction between tutors' moves and students' responses, supporting the I-hypothesis.

Students were also found to learn well without the benefit of hearing any tutor explanations and feedback (acknowledgment and short explanation). Although the prompted students did not learn more in the interactive style of tutoring, it is worth considering in which ways a more interactive style of tutoring can be beneficial. Basically, students given prompting were more constructive overall since the tutors prompted and scaffolded more often than in tutoring. Students' greater opportunities to be generally more constructive meant that they displayed to the tutors more of what they knew and did not know. This display in turn allowed the tutors to evaluate more accurately what the students knew and did not know. This evaluation allowed the tutors to pursue extended scaffolding episodes on concepts that the students did not know until the students had mastered these episodes.

Following Chi's approach concerning prompting strategies, we are specially interested in investigating the most likely effects between two groups of corrective feedback strategies (PAS and GAS) on FL learning. We wish then to find out whether prompting strategies are more effective than giving-answer strategies in learning some aspects of Spanish as FL.

2.2 ITS for Foreign Languages

Intelligent Computer-Assisted Language Learning (ICALL) systems incorporate Natural Language Processing (NLP) techniques e.g., analyzing language learners' language production or modelling their knowledge of a second language in order to provide them with more flexible feedback and guidance in their language learning process.

In this regard, Swartz and Yazdani (1991) points out that in ITS for FL domains (ICALL), some important issues are usually involved: (1) the representation of linguistic knowledge in the expert and learner models, (2) the implementation of parsers that must process ungrammatical input and reason about it in view of learners' pre-

dictable inter-lingual productions during learning, (3) the representation of tutoring knowledge that is appropriate for language learning (teaching strategies and principles for language learning are different from other types of skill learning), and (4) the understanding of the foreign language acquisition process.

Many ICALL systems have been organized around the classical architecture of ITS (Swartz and Yazdani, 1991; Rypa and Feuerman, 1995). However, the key differences in their modules rely on the following aspects:

1. **An Expert Module** usually contains linguistic domain knowledge and procedural plans (i.e., topics and practice examples); it may incorporate a diagnostic capability based on expected areas of difficulty. In language domains, it is necessary to have some kind of grammar and lexicon for the target language (the expert knowledge), and a parser (the expert inference engine) to process language inputs. The grammar is used to define the legal rules for that portion of the language to be taught. This component of the expert knowledge base usually follows some syntactic theory (e.g., Definite Clause Grammar, Functional Unification Grammar, etc.), used to formally represent a particular grammar. The expert model's grammar knowledge does not need to be exhaustive but adequate for the skill level (beginning, intermediate, advanced) to be addressed by the system. A lexicon is another component in the knowledge base to provide coverage for the words to be acquired by the learner, which will permit the parser to to understand language input during various activities and learning experiences. The parser provides the means for the computer system to reason about and to process the language. In ITS for FL, the parser does not only allow for the provision of natural language understanding capabilities, but also for the processing of imperfect input as learners never have complete control of the used L2. Parsing involves both means of interaction for the learner with the system and and understanding of the domain skill that is being taught.The parser must be capable of accepting divergent input strings from learners and of identifying a plausible divergence from nonsensical language to reason properly about learners' attempts to use the L2.

2. **A student model** keeps track of information about the student, goals success-

fully met, and strategies for repair. In order to properly model the learner and perform diagnosis, the system must have knowledge about learner errors. In traditional ITS, these errors are stored in bug catalogues or lists of mal-rules that get accessed when the system is engaging in learner diagnosis. While similar methods can be employed in ITS for FL, the nature of the error and the way the system should understand it are different for foreign language learning.

3. **A tutoring component** maintains information about the states of the tutor and transition rules that determine tutor responses. In an ITS for FL, the type of approach selected for representing the tutoring knowledge should be based on an understanding of the nature of foreign language acquisition. Current theories of foreign language teaching and learning support the "Focus on Form" approach. This means that tutoring should use materials focusing on linguistic forms and meaning simultaneously.

4. **A communication module** represents the interface between tutor and student. In an interactive tutor, student input is accepted and some computationally based response is provided. In an ITS for FL, the interface of learning environment should provide a means for entering language input to be parsed by the system as well as different media (graphics, animation, text, sound, video) to present language in meaningful communicative situations.

The development of an ICALL system requires one to deal with a number of fundamental issues about *Second Language Acquisition* (SLA) and instruction. Yet, relatively little research is available that links basic questions about acquisition to applied questions regarding the design of a useful tutoring system (Tomlin, 1995). One of the best known aspects in ICALL is the development of sophisticated parsers and the effort to tailor output to provide linguistically precise feedback on grammatical structure for the benefit of learners. However, it is still not very clear which other types of feedback strategies can be useful to be incorporated in ITS for FL so as to help the students with language errors.

2.2.1 Feedback in ITS for Second Language Learning

Initially, the feedback produced by *Computer-Assisted Language Learning* (CALL) systems was limited to simple error messages, utilizing a "wrong-try-again" approach to interaction that offered little information about the nature of the learner's errors. Accordingly, four types of feedback are proposed for treatment of error (Garrett, 1987):

1. Feedback that presents only the correct answer.

2. Feedback that pinpoints the location of errors on the basis of the computer's letter-by-letter comparison of the student's input with the machine's stored correct version (pattern markup).

3. Feedback based on analysis of the anticipated wrong answers. Error messages associated with possible errors are stored in the computer and are presented if the student's response matches these possible errors (error-anticipation technique).

4. Feedback based on an NLP approach, such as the "parsing" technique, in which the computer does linguistic analysis of the student's response, comparing it to an analysis derived from the relevant grammar rules and lexicon of the target language, and identifies problematic or missing items of the student's response.

However, CALL systems cannot handle the four types of feedback suggested by this classification, due to the fact these systems cannot analyze the student's answer nor explain why the response is wrong. In contrast, ICALL systems use NLP techniques, such as parsing, to analyze the student's response and identify errors or missing items. Indeed, detection of student's error enriches the tutoring environment and adds the dimension of language evaluation. In general, ICALL systems have employed "error report" and "meta-linguistic explanations" based on error analysis for correcting particular student errors.

In this context, as part of their ITS for German, Criswell et al. (1991) considered an advice/feedback selector component, which prescribes how often and what type of feedback and advice to present. This component draws heavily on error reports received from an NLP module and determines how much information from the

error reports will be given to the student, considering some specific types of feedback, including:

- Informing the student that an error was made and providing the location of the error in the sentence (feedback plus one type of advice),
- Informing the student that an error was made and providing additional information about the nature of the error (feedback plus another type of advice).

In subsequent work, Sams (1995) included information about the student's error as a type of feedback in the **BRIDGE** ITS for German learning. Students received feedback on the correctness of their responses for all exercise types. The most specific and diagnostic feedback was provided as a result of those exercises sent to an NLP module. The module analyzed student's input and identified the specific grammatical error the student made, and classified the grammatical errors into primary and secondary errors, a distinction modifiable by authors. This classification scheme was developed to promote uninterrupted language use by an intermediate-level student. Thus, the tutor could determine which errors to bring to the immediate attention of the student and which errors were less important for overall lesson objectives.

Students were automatically presented with details of their primary errors, and were given a choice of viewing details about their secondary errors. The following example shows the feedback produced after a preposition-related error, which had been classified as primary in the sample lesson:

```
T: Wo liegt die Stadt Lauterbach im Verhaeltnis zu dem Tal?
  (Where is Lauterbach located in relation to the valley?)
S: Lauterbach liegen bei das Tal.
  (Lauterbach is located near the valley.)
T: Your response contained 1 primary and 1 secondary errors.
   Primary error feedback (automatically displayed): The
         preposition bei (dat) does not agree with
         das Tal (student used accusative case, das,
         when it should have been dative (dat) case  dem.
```

```
Secondary error feedback (displayed at student request):
      Subject and verb do not agree: Lauterbach with
      liegen (student used plural, liegen, after the
      singular subject, Lauterbach, when should
      have been singular, liegt)
```

Sams (1995) noted that one of the main problems with the BRIDGE tutor was the way in which the error feedback was presented–in an unnatural form. He suggested that feedback be handled as in the real world, by using, for example, a recast strategy. However, in order to handle the feedback this way, the computer must have deeper understanding of the semantics and pragmatics of the student's utterance than was provided by the NLP component in BRIDGE.

Levin and Evans (1995) also indicated that ICALL can benefit from NLP by dealing with error feedback based on linguistic analysis. Indeed, NLP-based ICALL might be used to improve student acquisition of a second language or, at least, to record and study their interaction in order to deepen our understanding of second language errors. Levin and Evans developed an ICALL system, ALICE-chan, which can find the location of errors and also explain the errors in terms of linguistic relations. This type of feedback was proved to be instructionally effective in the acquisition of case marking particles (Nagata, 1993). However, the feedback provided by ALICE-chan is not pedagogically optimal because it uses technical terms which may be confusing. It was then suggested to explore more effective approaches to the treatment of feedback in the foreign language domain.

Although ICALL systems have been developed, there have been few empirical studies demonstrating the effectiveness of feedback in these systems (Nagata, 1993; Nagata, 1997a; Nagata, 1997b). Nagata (1995) investigated the effectiveness of two types of feedback-CALL and ICALL. CALL feedback is a type of traditional feedback that indicates only missing or unexpected words in the learner's response. ICALL feedback, on the other hand, provides further information about the nature of the errors in the form of meta-linguistic rules. The results of an achievement test, followed by a retention test three weeks later, showed that the second type of feedback (ICALL) was more effective than the first one for improving grammatical proficiency of learners of

Japanese as L2 in the use of complex structures. Examples of responses with CALL feedback and ICALL feedback are shown as follows:

CALL feedback:

```
Your colleague has told you that he wants to see
a Japanese word processor. Tell him that this letter
is written with a Japanese word processor.
Colleague: Nihongo no waapuro o mitai n desukedo..
You:

> * Kono tegami ga nihongo no waapuro ni kakaremasita.
Read the following messages:
-NI is not expected to be used here,
-DE is missing.
-KAKAREMASITA is wrong.
```

ICALL feedback:

```
> S: * Kono tegami ga nohongo no waapuro ni
       kakaremasita
  T: Read the following messages:
  <Particle Error>
  - NI is not expected to be used here.
  - DE is missing.
  - In your sentence, NIHONGO NO WAAPURO is the
  'direction' (where the action moves toward), but
  it should be the 'instrument' (by means of which the
  action occurs). Use the particle DE to mark it.
  <Verbal predicate error>
  - Use the predicate KAKU in a passive, gerund form.
  - Use the predicate IRU to describe a continuing state
  from the past.
```

The study (Nagata, 1995) showed the advantage of NLP-based analysis of answers to generate feedback that is tailored to the students' needs and that is highly informative about the nature of their errors. Although the form that this feedback adopts is unnatural and obstructive, it may be suitable in the context of grammar exercises with a focus on linguistic form and for advanced learners that are capable of handling the series of technical explanations involved.

In a further study, Nagata (1997b) compared the effectiveness of feedback of an ICALL system and workbook-based instruction. The main observed difference was that the ICALL system provided a type of elaborative and explanatory feedback based on detailed grammatical analysis of the student's attempts to produce Japanese sentences, while workbook-based instruction provided answer sheets for the students to check their own responses without any detailed feedback targeted to individual errors. Overall, the results showed that given the same grammar notes and exercises, intelligent computer feedback was more effective than simple workbook answer sheets for developing learners' grammatical skill in producing Japanese particles and sentences. However, according to Nagata (1997b), the effectiveness depends on the complexity of the target structures, the kinds of tasks assigned to the students, and learner's knowledge level. This suggests that in some contexts workbook instruction might be as effective as ICALL systems. Hence, it is necessary to investigate these aspects to determine the conditions in which ICALL feedback can be most effective.

Overall, ICALL systems have shown the value of incorporating sophisticated parsers in analyzing the output of second language learners and in providing them with feedback. However, this feedback has typically taken the form of an "error report" or "meta-linguistic explanations" (Criswell *et al.*, 1991; Sams, 1995; Levin and Evans, 1995) and it is not clear that the underlying theory of feedback and correction that implicitly guides these systems aligns well with what human tutors and learners actually do. Consequently, ICALL systems require designers to pay more attention to research on SLA. In particular, it should not be assumed that just any classroom teaching strategies may be suitable for teaching in an ICALL system. Neither should it be assumed that one can come up with governing tutorial principles to serve as control structures for a system without having examined, in detail, natural classroom/tutorial interactions

between actual teacher/tutors and learners (Tomlin, 1995).

2.3 Corrective Feedback in SLA

There is considerable research dealing with the treatment of errors in second language acquisition (Hendrickson, 1978; Chaudron, 1987; Chaudron, 1988; Allwright and Kathleen, 1991; DeKeyser, 1978). Much of this work has been conducted to address whether, when, and how errors should be corrected and, if so, who should correct them (Ellis, 1997). Apart from general instruction, the primary role of language teachers is often considered to be the provision of both error correction (a form of corrective feedback), and positive sanctions or approval of learners' production.

In the L2 classroom, the focus has generally been on errors committed by learners and on the correction of these errors, since they occur frequently. This situation is completely different from other teaching domains in which language errors are usually accepted by teachers without correction. In second language classroom, more problems needing repair occur as the participants are not yet fully competent users of the target language. Thus, errors and corrective feedback constitute a natural part of the teaching and learning process in a second language. As stated by Van Lier (1988) "everyone involved in language teaching and learning will readily agree that evaluation and feedback are central to the process and progress of language learning."

As we noted earlier, errors can be defined as deviations from the norms of the target language (Ellis, 1997). They reveal the patterns of learners' development of inter-language systems, showing where they have over-generalized a second language rule or where they have inappropriately transferred a first language rule to the second language (Lightbown and Spada, 1999). **Corrective feedback** refers to an indication to a learner that his or her use of the target language is incorrect. This includes a variety of responses that a language learner receives. Corrective feedback can be explicit (e.g., "No you should say "goes", not "go"") or implicit (e.g., "Yes, he goes to school every day"), and may or may not include meta-linguistic information (e.g., "Don't forget to make the verb agree with the subject") (Lightbown and Spada, 1999).

From the language teacher's viewpoint, the provision of feedback is a major means

by which to inform learners of the accuracy of both their formal target language production and their other classroom behaviour and knowledge. From the learners' viewpoint, the use of feedback in repairing their utterances, and the involvement in repairing the interlocutor's utterances, may constitute the most powerful source of improvement in both target language development and other subject matter knowledge (Chaudron, 1988).

The effectiveness of corrective feedback depends on multiple factors, including:

- the particular features of language being corrected.
- the conditions relating to the provision of teacher correction.
- the appropriateness of the student's stage in his/her language learning process to benefit from the correction (timing of the process).
- The ability of learners to notice a gap between what they want to say and what they can say, leading them to differentiate what they do not know from what they know only partially (the noticing function) (Schmidt and Frota, 1986; Swain, 1985).

When corrective feedback occurs in response to naturally-occurring errors or in the context of ongoing efforts to communicate, it becomes helpful for SLA purposes. Cognitively, the function of corrective feedback is to provide useful information that learners can use actively to modify their behaviour. This information allows learners to confirm, disconfirm, and possibly modify the hypothetical, transitional rules of their developing grammar. However, this effect depends on the timing of the individual learner's developmental stage and the student's ability to notice the information available in the feedback. Student-generated repairs may also be important for learning because they provide learners with opportunities to automate the retrieval of target-language knowledge. When repair is self-generated, learners draw on their own resources, that is, they actively confront errors in ways that may lead to revisions of their hypotheses about the target language (Chaudron, 1988).

2.3.1 Associated Terminology for Treatment of Errors in SLA

A number of terms have been used to refer to the general area of error treatment; for example, feedback, corrective feedback, correction, repair. "Corrective feedback" has been used by second language teachers, whereas "Repair" is a somewhat narrower term used by ethnomethodologists, such as Schegloff (1977), to refer to attempts to identify and remedy communication problems, including those that derive from linguistic errors.

Feedback serves as a general cover term for the information provided by listeners on the reception and comprehension of messages. Feedback is conceived as a source of learning, which includes the notion of error correction (Chaudron, 1984).

Correction has a narrower meaning, referring to attempts to deal specifically with linguistic errors; it constitutes an attempt to supply negative evidence in the form of feedback that draws the learners' attention to the errors they have made. In fact, negative evidence provides information to learners about what is not possible in the target language (Lightbown and White, 1987; Long, 1996; White, 1990). This evidence can be provided preemptively through an explanation or grammar rules, or reactively through error correction.

Reactive negative evidence highlights differences between the target language and a learner's output and as such is often described as **Corrective Feedback** (Long, 1996), which can be either explicit (i.e., explicit correction), or implicit (i.e., repetition, confirmation checks, clarification-requests and recast). In contrast, positive evidence is the input that language learners receive about the target language. This can be provided as authentic input, such as that occurring in teacher talk (Chaudron, 1988; Schinke-Llano, 1983).

2.3.2 Classifications for Corrective Feedback

Several observation schemes have been used in classroom research on second language teaching and learning. Some of them cover a wide range of instructional practices and procedures, whereas others focus on a specific feature of classroom interaction. One of the essential features of L2 classroom interaction is feedback. There are many different

ways in which a teacher can correct learner utterances. For this, many classifications in the context of SLA have been proposed to determine the various types of strategies that the L2 teacher uses in classroom interactions.

Interestingly, some types of strategies are recurrent in the different classifications which will be discussed later. Among these are repetition, prompt (i.e., elicitation), recast, etc. This evidence makes explicit the key role that these strategies have in the teaching strategies used in the context of second language classrooms.

Early on, Chaudron (1977) distinguishes four types of treatment of errors:

1. Treatment that results in learners' autonomous ability to correct themselves on an item.

2. Treatment that results in the elicitation of a correct response from a learner.

3. Treatment that results in any reaction by the teacher that clearly transforms, disapprovingly refers to, or demands improvement.

4. Treatment that results in positive or negative reinforcement involving expressions of approval or disapproval.

Furthermore, Chaudron (1988) states 31 different types of corrective reaction which a teacher can make, including:

- **Repetition with no change**: teacher (T) repeats the student's (S) utterance with no change or omission of error. Example:

```
S: n'a pas de feux de circulation
T. (les auto-routes) n'a pas de feux de circulation.
```

- **Repetition with no change and Emphasis**: teacher repeats the student's utterance with no change of error, but adds emphasis, and locates or indicates the error. Example:

```
S. Mille
T. Mille?
```

- **Repetition with change**: teacher simply adds correction and continues to other topics. Normally only when emphasis is added will the correcting change become clear, or teacher will attempt to make it clear. Example:

```
S. Le maison est jaune
T. La maison est jaune
```

- **Repetition with change and Emphasis**: teacher adds emphasis to stress location of error and its correct formulation. Example:

```
S. Doo tout
T. Du tout (stress)
```

- **Repeat**: teacher asks the student to repeat an utterance with intent of having the student self-correct.

- **Loop**: teacher honestly needs a replay of the student utterance due to lack of clarity or certainty of its form.

- **Prompt**: teacher uses a lead-in cue to get the student to repeat an utterance, possibly at point of error; possible slight rising intonation. Example:

```
S. Petit. Grande
T. Petit...
```

- **Original question**: teacher repeats the original question that led to the erroneous response.

- **Altered question**: teacher alters the original question syntactically, but not semantically.

- **Clue**: teacher's reaction provides student with isolation of type of error or of the nature of its immediate correction, without providing correction. Example:

```
S. Les stations-services sont rares
T. Sont rares? Au present?
```

From a Conversational Analysis (CA) viewpoint and based on a database of L2 lessons and extracts from L2 lessons, Seedhouse (1997) found that teachers perform a great deal of interactional work to avoid performing direct and overt negative evaluation of the learner's linguistic error. When negative evaluation does occur, it is predominantly mitigated in some way. The preferred structure appears to be motivated by and derived from pedagogical recommendations, in that explicit negative evaluation of learner responses is strongly disfavoured in current L2 pedagogy (Tsui, 1995; Harmer, 1983; Edge, 1989).

In general, there seems to be a close correspondence between pedagogical recommendations and interactional evidence from transcripts concerning what teachers actually do. Pedagogical recommendations seem to spring from a humanistic paradigm in which the learners' feelings and emotions are taken into account. Negative evaluation, then, is thought to offend and demotivate learners. However, in doing so, teachers are interactionally marking linguistic errors as embarrassing and problematic. On the other side, the students do not want to repair their own errors - they want the teacher to conduct other-initiated other-repair (Nunan, 1988), and they want to be corrected when they make oral errors (Cathcart and Olsen, 1976; Chun and Day, 1982; Chenoweth *et al.*, 1983). Although learners want teachers to conduct other-initiated other-repair on their linguistic errors, teachers in general tend to avoid doing so and tend to prefer other-initiated self-repair. There seems to be a consensus (Edge, 1989; Ellis, 1997; Tsui, 1995) that learner self-repair of linguistic errors is better than teacher-repair. So, paradoxically, learners appear to have grasped better than teachers and methodologists that, within the interactional organization of the L2 classroom, making linguistic errors and having them corrected directly and overtly is not an embarrassing matter. Nevertheless, teachers and methodologists seem to persist in treating linguistic errors as face-threatening and problematic on an interactional level (Seedhouse, 1997).

Based on these considerations, eight strategies for conducting repair were determined (Seedhouse, 1997), none of which uses direct negative when a learner makes a spoken error of linguistic form:

1. Use a next-turn-repair-initiator to indicate (indirectly) that there is an error that the learner should repair. This type of repair may be a problem since it does not

locate precisely the item to be repaired (Tsui, 1987). Example:

S: They runs they runs quickly.

T: Once more.

S: They run quickly.

T: Yes, that's better.

2. Repeat the word or phrase or part of a word which the learner used immediately prior to the error. This repair has the advantage of locating the repairable item precisely (Westgate *et al.*, 1985). Example:

S: Er ... Qu'est-ce que .... qu'est-ce que vous dési... (trans.: er, what do you, what do you desi..)

T: Qu'est-ce que vous...? (trans.: what do you..?)

S: Avez comme fruit? (trans.: .. have in the way of fruit?)

T: Comme fruit. (trans.: .. in the way of fruit)

3. Repeat the original question or initiation. The problem is that this technique does not locate or treat the error in any way (Wong, 1985). Example:

T: What is a suffix?

S: Beautiful?

T: This is something we forget all the time.
what is a suffix?

4. Repeat part of the learner's erroneous utterance with a rising intonation. This technique locates the error but has sometimes been criticized for providing the learners with erroneous input (Council, 1985). Example:

S: I am very good person and give she another one.

T: Give she?

S: Give her another one.

5. Supply a correct version of the linguistic forms. This is possibly the simplest and fastest repair technique but of course it does not allow the learner the opportunity to self-repair (Tsui, 1995). Example:

   S: Because she can't

   T: Because she counted..

   S: Because she counted the wrong number of tourists.

6. Provide an explanation of why the answer is incorrect without explicitly stating that it is incorrect (Malamah-Thomas, 1987). Example:

   T: Fine, right. The doctor's office. What do we call a doctor's office in English? Go on, go on, Louisa fine, say it.

   S: Consult ..consultation.

   T: It's a consultation that they are going to give, it's a very good try, a good try. We call it a surgery, a surgery.

7. Accept the incorrect forms and then supply the correct forms: this is, in effect, acceptance of the incorrect forms followed by repair. This technique appears unsatisfactory for two reasons. Firstly, the erroneous forms are accepted by the teacher. Secondly, the learners may also become confused: if their utterances were acceptable, then why is the teacher undertaking repair? (Long, 1983). Example:

   T: OK. What other kind of conductor is there? There's the musical conductors, but what else?

   S: The person who drives a car?

   T: Well, yeah I guess you could say he's a conductor but he's we usually say he's a driver, a car driver...

8. Invite other learners to repair: this may or may not include direct negative evaluation. It could also be termed teacher-initiated peer-repair (Banbrook and Skehan, 1989). Example:

S: Don't losing weight.

T: OK. (to the others) Can you help him? ... Not 'don't'. Don't say 'don't'. Use the gerund. OK. So.

Lyster and Ranta (1997) developed a classification which focuses exclusively on descriptions of the different types of feedback on error provided by teachers and students' immediate responses to them. They investigated how students react to different feedback strategies in four primary French immersion classrooms where second language students learn the target language via subject-matter instruction (i.e., content-based instruction). It was found that the corrective feedback given to students could be classified into six types:

1. **Explicit correction**: Explicit provision of the correct form by the teacher. As the correct form is provided, the teacher indicates that what the student had said was incorrect (e.g., "Oh, you mean...", "you should say...")

2. **Recast**: The teacher's reformulation of all or part of the student utterance, minus the error, but without making it clear that this is a correction (e.g., S. Why you don't like Marc?, T. Why don't you like Marc?)

3. **Clarification-request**: indicates to students that either their utterance has been misunderstood by the teacher or that the utterance is ill-formed in some way and that a repetition or a reformulation is required. A clarification-request includes phrases such as "Pardon me.", "What?", "What do you mean?".

4. **Meta-linguistic feedback**: contains comments, information or questions related to the well-formedness of the student's utterance without explicitly providing the correct form (e.g., "That's not quite right", "Is that right?", "X is masculine").

5. **Elicitation**: the teacher directly elicits a reformulation from students by asking questions such as "How do we say that in Spanish?", by pausing to allow students to complete the teacher's utterance, or by asking students to reformulate their utterances.

6. **Repetition**: refers to teacher's repetition, in isolation, of the student's erroneous utterance, usually with the error intonationally marked (e.g., S. We is... T. We is?..But..)

Although this classification was elaborated by observing the different types of corrective feedback provided in French immersion classroom interaction, this may also be used to analyze other types of second language instruction (Lightbown and Spada, 1999). Like Lyster and Ranta (1997), we are interested in determining the types of corrective feedback but in a corpus of Spanish as a FL. Hence we believe that their classification constitutes a relevant basis to start investigating and analyzing Spanish classroom interaction for tutoring purposes.

2.3.3 Approaches to Language Teaching and Corrective Feedback

The different approaches to language teaching are characterized by the target focus to which the process points. This leads to a distinction between the relevant focuses used in SLA: "Focus on FormS", "Focus on Meaning", and "Focus on Form".

Focus on Forms concerns the instruction that seeks to isolate linguistic forms in order to teach and test them one at a time. It is typically found when language teaching is based on a structural syllabus. Doughty and Williams (1998), have noted that teachers and researchers have used a variety of terms to refer to instruction involving "Focus on FormS", including: "grammar instruction", "formal instruction", and "form-focused instruction". This distinction has led to confusion as these terms usually have been contrasted with the terms "Focus on Meaning" or "Communication". The main claim for **Focus on Meaning** is that students learn languages best not by treating the language as an object of study but by experiencing it as a medium of communication. In this approach, grammar is considered to be best learned incidentally and implicitly (Long, 1991; Long *et al.*, 1997).

The strengths and limitations of focusing on linguistic forms as opposed to focusing on meaning have been one of the most controversial debates in L2 teaching during the last decade. As a result, there has been a shift from an explicit focus on the language itself (i.e., grammar, phonology, and vocabulary) to an emphasis on the

expression and comprehension of meaning through language. This change has led to a greater tolerance for errors in learners' speech and an emphasis on creating opportunities for learners to use language in more authentic and spontaneous ways (Lightbown and Spada, 1990). The teacher accepts without commenting or correcting any and every minimal, pidginised inter-language form which the learner produces (Seedhouse, 1995). Early communicative approaches to English Language Teaching (ELT) tried to ensure comprehensive coverage in two main ways:

1. There is a gradual progression from form-focused activity to meaning-focused activity, from accuracy to fluency. These terms are usually referred to as "pre-communicative" and "communicative" activities, respectively (Littlewood, 1981).

2. While learners carry out a meaning-focused activity, the teacher notes down errors or deficiencies and uses them as subsequent input for a form-focused activity. Both approaches cover accuracy and fluency, form and meaning, but do not attempt to do so simultaneously.

Recent teaching approaches (Long, 1991; Ellis, 1997; Seedhouse, 1995; Doughty and Varela, 1998; Doughty and Williams, 1998) address the possibility of focusing on linguistic forms and meaning simultaneously. Indeed, whereas the content of lessons with a "Focus on FormS" is on the forms themselves, a syllabus with a "Focus on Form" teaches something else (e.g, the geography of a country where the foreign language is spoken, the culture of its speakers) and overtly draws students' attention to linguistic elements as they arise incidentally in lessons whose overriding focus is on meaning, or communication (Long, 1991).

Ellis (1997) argues that a "Focus on Form" can be achieved in two possible ways. First, activities can be devised that require learners to communicate while also focusing their attention on specific formal properties. Secondly, teachers can choose to provide feedback on learners' errors during the course of communication activities.

From a conversation analysis perspective, Seedhouse (1995) suggests a simultaneous dual focus on both accuracy and fluency, on both form and meaning. It would offer a way of avoiding the disadvantages of focusing separately on each one. That is, an emphasis on the correction of erroneous linguistic forms is usually associated with a

focus on form and accuracy. However, in the case of an extreme focus on meaning and fluency, a complete absence of correction of erroneous linguistic forms is found. Correction policy can thus be seen to play a vital role in the establishment of a focus on either form and accuracy or meaning and fluency.

Doughty and Varela (1998) point out that "a quintessential element of the theoretical construct of **Focus on Form** is its dual requirement that the focus must occur in conjunction with -but must not interrupt-communicative interaction"[2]. Accordingly, implicit "Focus on Form" techniques are potentially effective as they aim at adding attention to form to a primarily communicative task rather than to depart from an already communicative goal in order to discuss a linguistic feature.

Focus on Form addresses the question of how focal attentional resources are allocated. Although there are degrees of attention and both attention to forms and attention to meaning are not always mutually exclusive, during an otherwise meaning-focused classroom lesson, "Focus on Form" often consists of an occasional shift of attention to linguistic code features- by the teacher and/or one or more students- triggered by perceived problems with comprehension or production.

In this context, Doughty and Williams (1998) address several pedagogical decisions including the pedagogical choice between a proactive or reactive stance to "Focus on Form". A **proactive approach** would entail selecting in advance an aspect of the target to focus on, whereas a **reactive stance** would require that the teacher notices and is prepared to handle various learning difficulties as they arise. It is claimed that both stances are appropriate and effective depending upon the classroom context. For a proactive stance, the teacher must also determine the form- among the language forms that are potentially good candidates for focus- for attention at any particular time.

Other pedagogical decisions are concerned with the degree of explicitness of "Focus on Form" techniques. It is necessary to choose between tasks and/or techniques (feedback strategies) aimed at drawing the learner's attention to form unobtrusively, or to direct learner attention to the problem area more explicitly.

---

[2]This orientation is motivated by the findings of immersion and observational acquisition studies (Harley, 1997; Harley and Swain, 1984; Vignola and Wesche, 1991) and its crucial distinction is that focus entails a prerequisite engagement in meaning before attention to linguistic features can be expected to be effective (Doughty and Varela, 1998).

Earlier studies in "Focus on Form" and corrective feedback in communicative language teaching (Lightbown and Spada, 1990; Lightbown, 1991; Spada and Lightbown, 1993) have shown that accuracy, fluency and communicative skills are best developed through instruction that is primarily meaning-based but in which guidance is provided through timely form-focused activities and correction in context. These findings are also evidence that teachers who focus learner's attention on specific language features during interactive, communicative activities of the class are more effective than those who never focus on form or who do so only in isolated "grammar lessons" (Lightbown, 1998).

The integration of corrective feedback in the context of "Focus on Form" teaching was investigated by Doughty and Varela (1998). In their study, all meta-linguistic aspects of corrective feedback were eliminated to attract the learner's attention more implicitly through repetition of error with rising intonation and recast. We will describe this investigation in more detail in the next section.

Above all, it seems likely that a "Focus on Form" approach is promising not only because it integrates both accuracy and fluency but also because it provides a more appropriate approach for integrating corrective feedback strategies in order to use them in a more beneficial learning context. However, this does not seem to be the most frequent approach used by Spanish teachers in the educational contexts from which our corpus of classroom interactions was gathered. The vast majority of the classrooms in our study are focused on meaning and the rest are focused on forms.

2.3.4 Empirical Studies on Corrective Feedback

Studies in instructional psychology (e.g., (Levine, 1975)) suggest that learners' performance can be improved with appropriate feedback that points out errors. Instructional psychology further suggests that informative feedback-telling learners the nature of their error rather than simply informing them that there is an error-works better for most learners (Kulhavey, 1977; Kulik *et al.*, 1986). High-ability learners who are also field-independent (a cognitive style characteristic grounded in research by Witkins et al. (1977) may do better if they have to figure out their error, that is, if they receive simple, uninformative feedback.

As we pointed out before, research on SLA reveals that teachers have a wide variety of techniques available for the treatment of student's errors. Corrective feedback in the form of **Recast** has been the focus of a number of recent studies including (Long *et al.*, 1997; Lyster, 1998b; Lyster, 1998a; Doughty and Varela, 1998; Mackey *et al.*, 1990).

A study by Long et al. (1997) to assess the relative utility of recast in Japanese and Spanish as L2, defines a "corrective recast" as a response which, although communicatively oriented and focused on meaning rather than form, incidentally reformulates all or part of a learner's utterance, thus providing relevant morpho-syntactic information. Here the reformulated part is missing or incorrectly supplied in the learner's answer because the student is rather concentrating on the central meaning. Using a multiple-test based design (pretest, post-test, control group), Long et al. (1997) found some evidence of adults' ability to learn from such implicit corrective feedback, and therefore they suggested that recast can be more effective than preemptive positive input in achieving, at least, short-term improvements on previously unknown L2 structures.

Some aspects of communicative classroom discourse that may influence the success of recast have also been examined by Lyster (1998b), who studied recasts that are intended to be noticed as negative evidence (i.e., information about what is unacceptable in a given language) by young L2 learners (primary level). Recasts were classified as one of four types, according to their pragmatic function in the classroom:

- *Type 1:* an isolated declarative recast that provides confirmation of a learner's message by correctly reformulating all or a part of the utterance with falling intonation and no additional meaning. Example:

```
S: Avant que quelqu'un le prendra.
   (Before someone takes it.)
T3: Avant que quelqu'un le prenne.
   (Before someone takes it.)
   (Teacher3, Language Arts, Feb.6)
```

- *Type 2:* an isolated interrogative recast that seeks confirmation of the learner's message by correctly reformulating all or part of the utterance with rising intonation and no additional meaning. Example:

S: On pense que, qu'il est prisonniere, comme, um,
quelque part.(They think that, that he's a prisoner
[feminine form], like, um, somewhere.)
T4: Prisonnier?...
(Prisoner?.)
(Teacher4, Language Arts, Mar.17)

- *Type 3:* an incorporated declarative recast that provides additional information by including the correct reformulation of all or part of a learner's utterance into a longer statement. Example:

S: Ou une bateau. (boat)
T5: Oui, c'est vrai que ca pourrait etre un bateau,
mais la on donne des adresses.
(Yes, it's true that it could be a boat,
but there they're giving addresses.)
(Teacher5, Language Arts, Mar.14)

- *Type 4:* an incorporated interrogative recast that seeks additional information by including the correct reformulation of all or part of a learner's utterance into a question. Example:

S: Elle changer de couleur.
(It changes color)
T3: Pourquoi elle change de couleur.
(Why does it change color?)
(T3, Science, Jan.16)

All the recasts were compared to teachers' use of non-corrective repetition, that is, the repetition of students' well-formed utterances. The findings revealed that recast and non-corrective repetition fulfill identical functions distributed in equal proportions. Teachers frequently use positive feedback both to express approval of the content of learners messages, irrespective of well-formedness, and to accompany, also in equal

proportions, recast, non-corrective repetition, and even topic-continuation moves following errors. Corrective feedback observed to be given exclusively in the form of conversational recast passes unnoticed. The students do not recognize it as teacher correction, as they assume that the teacher is responding to the content rather than to the form of their language.

Other interesting research related to "recast" strategy was carried out by Doughty and Varela (1998). They studied the effectiveness of the "Focus on Form" as well as the corrective recast strategy[3]. The "Focus on Form" consisted of unobtrusive but targeted, corrective-recasting by teacher of inter-language (IL) utterances. The aim of this study was to establish whether it is possible to draw learners' attention to form successfully without distracting them from the class content. Their study involved two content-based ESL science classrooms: an experimental class (21 students) and a control class (13 students) ranging in age from 11 to 14. The study targeted the simple past and conditional past forms, which were necessary to accurately report the results of laboratory experiments conducted in the classes. During classroom discussion, a corrective-recasting strategy was used by the experimental teacher with the target form (form which is being learned) of interest (past tense). Corrective-recasting was composed of two phases: Repetition to draw attention, followed by recast to provide the contrastive L2 form. In some instances, the teacher would repeat a phrase containing an incorrect past verb putting the error in focus by using stress and rising intonation to help the student notice the non target-like form. Recasts were used when the student did not attempt any past tense reference at all. Such a recast was provided by the teacher, emphasizing the verb with added stress, as seen in the following example:

```
Jose: I think that the worm will go under the soil
Teacher: I "think" that the worm will go under the soil?
Jose: (no response)
Teacher: I "thought" that the worm would go under the soil.
```

[3]The study is based on empirical evidence provided by both L1 acquisition and L2 classroom studies. L1 acquisition studies (Demetras *et al.*, 1986; Bohannon and Stanowicz, 1988; Farrar, 1990; Farrar, 1992) suggest that not only do adults provide negative evidence to children but that children notice this information and make use of it in the acquisition process, and L2 classroom studies (Oliver, 1995; Doughty, 1994) show that recasting behaviours arise naturally and frequently in second language classrooms.

```
Jose:I "thought" that the worm would go under the soil.
```

This investigation showed that the "Focus on Form" strategy was far superior to meaning focused instruction alone in facilitating accuracy in the use of tense. This suggests that it is possible to have a dual focus on form and meaning. In addition, the implementation of "Focus on Form" as corrective-recasting in the science curriculum was more effective than leaving students to their own devices to develop target-like ability in past tense reference.

Feedback strategies have also been investigated in terms of the ways learners perceive the interactional feedback (Mackey *et al.*, 1990). In these investigations, experiments involving learners of English and Italian as L2 were carried out to explore learners' perceptions about the feedback provided to them through task-based dyadic interactions. Learners received feedback focused on a range of morpho-syntactic, lexical, and phonological forms. After completing the tasks, learners watched videotapes of their previous interactions and were asked to introspect about their thoughts at the same time the original interactions were in progress. The results showed that learners were relatively accurate in their perceptions about lexical, semantic, and phonological feedback. However, morpho-syntactic feedback was generally not perceived as intended. Furthermore, this study found that the nature as well as the content of the feedback may affect learners' perceptions. This indicates that the cognitive processes involved in accessing and applying grammar knowledge are more complex than those involved in the retrieval of lexical information (Lyster, 1998a).

Two of Lyster's studies (Lyster and Ranta, 1997; Lyster, 1998a) provide crucial evidence about explicit correction, recast, meta-linguistic feedback, elicitation, repetition and clarification-requests (details of these strategies can be seen in section 2.3.2) in the context of the effectiveness of different types of corrective feedback.

The overall results showed that **recast** (the most commonly used form of feedback) had the lowest rate of uptake with about half of the reformulations being correct. **Explicit correction** obtained only half the rate of corrections. **Clarification-requests**, **meta-linguistic feedback**, and **repetition** are similar in that they are effective at eliciting uptake from the student. Even though meta-linguistic feedback is more successful at eliciting repair than either clarification-requests or repetition, the most successful

strategy for eliciting uptake was **elicitation**. The use of elicitation always required the students to attempt to generate the correct form themselves.

In order to get a clearer understanding of the relationships among error types, feedback types, and immediate learner repair, Lyster (1998a) carried out another study in four French immersion classrooms at the elementary level. In this study, the elicitation, meta-linguistic feedback, clarification-requests, and repetition of error strategies were regrouped into a single category called **negotiation of form**, a term which captures more accurately the ways in which teachers focused on form during meaningful interaction than the term **negotiation of meaning** (Lyster, 1994; Lyster and Ranta, 1997). **Negotiation of form** provides learners with timely opportunities to make important form-function links in the target language without interrupting the flow of communication (Lyster, 1998b). The research findings indicate that lexical errors favored the negotiation of form compared to recast; grammatical and phonological errors invited recast, but with different effects in terms of learner repair–negotiation of form proved more effective at leading to immediate repair in the lexical and grammatical cases, whereas for phonological errors, recast is more effective than negotiation of form.

Despite the benefits that the research findings show regarding "recast" and other corrective feedback, it is still unclear which of these contribute more effectively in terms of improving learning. According to Doughty (2001), results of studies (Doughty *et al.*, 1999; Ortega and Long, 1997) suggest that children and adults are provided with cognitive resources that allow them to notice the difference between an old utterance and a new utterance. This is particularly useful in cases where the form of two utterances is similar to one another and the "Focus on Form" strategy places them in a contingent relationship. As pointed out by Doughty (2001), the cognitive comparison leads to form-function-meaning mapping and, hence it can be considered a successful means to promote processing for language learning.

However, in spite of these obvious advantages, the type of **corrective recasting** described by Doughty and Varela (1998) "..does not occur naturally" in Lyster's study (1998b). Therefore, according to Lyster, (1998b) Doughty and Varela's study (1998) supports a role for corrective feedback as negative evidence in classroom SLA but does not provide evidence that recasts on their own, without additional attention drawn to

the corrective reformulation, contribute to classroom SLA.

Nevertheless, Doughty (2001) explains that "isolated interrogative recast" (Lyster, 1998b) and "corrective-recasting" (Doughty and Varela, 1998) are good candidates for the provision of negative evidence because they often contain the clear signalling factor of rising intonation, thus providing a direct contrast of forms. According to Doughty (2001) recasting is most likely to be effective when it is targeted at only one or a few features. Consequently, there is no justification for the abandonment of recast as an effective means to draw learner attention to form. Moreover, this does not justify a "Focus on Forms" approach, such as negotiation of form. Instead, studies support the notion that L2 learners have the cognitive resources to notice the gap. Learners will be clear about what material they need to be utilizing in these cognitive comparisons (Doughty, 2001).

2.4 Summary

In this chapter we have discussed the main studies related to our multidisciplinary approach. The different contributions in feedback and guidance moves for teaching procedural skills in the context of ITS are useful for our approach because these show a variety of feedback strategies studied and their positive effects on learning.

One of the early approaches to correction strategies (Fox, 1986; Fox, 1993) claimed that the best way to understand correction is to examine the overall structure of the tutoring sessions. This means that correction is best studied within the sequential organization of the interactions themselves. Empirical studies on human tutoring have also been carried out to analyze the tutor responses to error-ridden student contributions (Graesser and McMahen, 1993). Graesser et al. (1993) stated some relevant facts on the complexity of this kind of dialogue move. An effective tutor should give the student feedback in relation to the student's contributions so the tutor can handle the errors by acknowledging that the error occurred, identifying where the error occurred, instructing the student how to repair the error, diagnosing the bugs and misconceptions that generated the error and setting new goals that remediate the error, bugs, and misconceptions,etc.

The tutors' feedback moves are responsible for students' learning in a procedural skill. The tutors give responsive (confirmatory and negative) and on-going feedback, in that they guide students and keep them on track in acquiring the problem solving skills (Anderson *et al.*, 1995; Graesser *et al.*, 1995; Merrill *et al.*, 1995). Hume et al. (1996) states that the tutors' desire to encourage active learning convinces them to prompt the student with hints. Hinting or reminding is a strategy that stimulates the recall of inert knowledge or activates the inferences needed in the completion of a task.In trying to put Hume et al.'s theory of hints into practice in the *CIRCSIM* tutor, Zhou and colleagues (1999) found the theory to be too broad and too hard to simulate.

There is a significant evidence that a great deal of tutors' tactics can be reframed as prompting or encouraging students to construct knowledge, either through the use of content-free prompts or scaffolding prompts. Scaffolding (or scaffolding episode) has been considered to be a pivotal kind of adult-child interchange in which the adult "guides" the child to develop and achieve to the child's fullest potential. Since tutoring is similar to adult-child interaction, scaffolding may be the pivotal step in tutoring as well (Vygotsky, 1978).

Like Chi et al. (2001), we are adopting the prevailing notion of the active learner as one that constructs an understanding by interpreting the new, to-be-learned material in the context of prior knowledge. This can be accomplished by making inferences, elaborating the material by adding details, and integrating materials. Being constructive can be manifested by observable behavioral activities such as spontaneously self-explaining (Chi *et al.*, 1989), asking questions, answering the teacher's prompting strategies. Chi et al. (2001) suggest that there is significant evidence that a great deal of tutors' tactics can be reframed as prompting or encouraging students to construct knowledge, either through the use of content-free prompts or scaffolding prompts. For this, we are interested in investigated the effects of using prompting strategies in FL interactions in both classroom and tutorial modes.

Although ICALL systems have been developed, there have been few empirical studies demonstrating the effectiveness of feedback in these systems (Nagata, 1993; Nagata, 1997a; Nagata, 1997b). The study (Nagata, 1995) showed the advantage of NLP-based analysis of answers to generate feedback that is tailored to the students'

needs and that is highly informative about the nature of their errors. Although the form that this feedback adopts is unnatural and obstructive, it may be suitable in the context of grammar exercises with a focus on linguistic form and for advanced learners that are capable of handling the series of technical explanations involved.

Overall, ICALL systems have shown the value of incorporating sophisticated parsers in analyzing the output of second language learners and in providing them with feedback. However, this feedback has typically taken the form of an "error report" or "meta-linguistic explanations" (Criswell *et al.*, 1991; Sams, 1995; Levin and Evans, 1995) and it is not clear that the underlying theory of feedback and correction that implicitly guides these systems aligns well with what human tutors and learners actually do. Consequently, ICALL systems require designers to pay more attention to research on SLA. In particular, it should not be assumed that just any classroom teaching strategies may be suitable for teaching in an ICALL system. Neither should it be assumed that one can come up with governing tutorial principles to serve as control structures for a system without having examined, in detail, natural classroom/tutorial interactions between actual teacher/tutors and learners (Tomlin, 1995).

As a result of our bibliographical review concerning different teaching approaches and corrective feedback, we believe that the incorporation of effective strategies in ITS in the context of a Focus on Form approach can be favorable for learning. Indeed, Focus on Form is a promising teaching approach in second language because it integrates both form and meaning and provides a more appropriate context for integrating corrective feedback strategies.

Corrective feedback in the form of **Recast** has been the focus of a number of recent studies including (Long *et al.*, 1997; Lyster, 1998b; Lyster, 1998a; Doughty and Varela, 1998; Mackey *et al.*, 1990). Despite the benefits that the research findings show regarding "recast" and other corrective feedback, it is still unclear which of these contribute more effectively in terms of improving learning. According to Doughty (2001), results of studies (Doughty *et al.*, 1999; Ortega and Long, 1997) suggest that children and adults are provided with cognitive resources that allow them to notice the difference between an old utterance and a new utterance. This is particularly useful in cases where the form of two utterances is similar to one another and the "Focus on

Form" strategy places them in a contingent relationship. As pointed out by Doughty (2001), the cognitive comparison leads to form-function-meaning mapping, hence it can be considered a successful means to promote processing for language learning.

Empirical investigations in SLA indicate that the relative merit of different types of feedback is still a matter to be resolved. It is not clear how often teachers use these strategies for the different types of errors nor which strategy is likely to be the most appropriate and effective for them. As a consequence, it is crucial to carry out new research to obtain more evidence about the effect of corrective feedback on L2 learning. Specifically, it is necessary to investigate on issues related to the frequency, distribution and effectiveness of feedback strategies.

Chapter 3

Observational Study: Analysis of Classroom Data

As our discussion of previous research shows, the treatment of feedback is a problem that has not yet been solved by SLA research or work in ITSs for foreign language learning. We believe that in order to inform the design of effective feedback strategies in ITSs for Spanish as L2, it is crucial to gain more knowledge about the type, frequency and effectiveness of different corrective feedback strategies. It is also important to study the type and frequency of positive feedback, in order to determine whether instructors use anything other than positive acknowledgement.

Many previous empirical studies in the ITS area have used student-tutor interactions as models. However, in second language teaching the interaction usually takes place in a classroom environment. We have carried out three types of empirical research (observational, case studies and experimental) with the purpose of establishing the most frequent and effective feedback strategies in different teaching modes, with a view towards informing the design of these strategies for an ITS for Spanish as a second language.

In this chapter, we explore some empirical evidence about the type, frequency and effectiveness of the feedback used by Spanish teachers in face-to-face classroom mode. Our aim is to explore the type, frequency and effectiveness of feedback strategies in classroom mode. We believe that this approach is an appropriate starting point for

developing a feedback component for an ITS for Spanish as L2 because the classroom is the most natural and typical teaching mode in this domain.

We investigated feedback strategies for both positive and negative forms. Specifically, our study involves two types of **positive feedback**: **Repetition**: the teacher repeats the student's correct answer, and **Rephrasing**: the teacher exhibits a new structure which rephrases the correct answer given by the student.

For **corrective feedback**, we consider two groups of strategies:

1. Types of feedback moves in which the teacher directly gives the target form corresponding to the error in a student's answer, or shows the location of the student's error. We call these **Giving-Answer Strategies (GAS)**. These include: **repetition of the error** with a rising intonation (not the whole utterance), **recast** (reformulation of the student answer including the target form), **provision of the correct answer**, and **explicit correction**.

2. Types of feedback moves in which the teacher pushes the student to notice some type of language error in his/her response and self repair his/her error. Following Chi and colleagues' study (Chi *et al.*, 2001), we have labelled this group **Prompting-Answer Strategies** (PAS). PAS include three types of strategies: **Meta-linguistic cues** or useful information about the error (but without repeating the error), **clarification requests**, and **elicitation of the student's answer** (but without giving the answer).

With regard to these strategies, we set out to answer the following research questions based on classroom interaction:

1. *What are the most frequent types of positive feedback used by teachers of Spanish as L2 after a student's correct answer?*

2. *What are the most frequent types of corrective feedback used by teachers in Spanish as L2, and how do they relate to learner errors?*

3. *What are the most effective types of corrective feedback which could be employed in a feedback component for an ITS?*

3.1 Method

For the purposes of our study, we collected a corpus of classroom interactions which included 19 transcriptions of Spanish as L2 classes provided by seven different teachers, totaling approximately 12 hours. Ten of the 19 classrooms were from Jamaica, two from Australia and six from Scotland. The teachers were distributed as follows: four from Jamaica who teach in secondary schools and whose first language is English, two Spanish native teachers from Australia who teach in a University, and one Spanish native teacher who teaches in a further education college in Scotland. The use of 7 different teachers from three different parts of the world gives us confidence that our results are based on a balanced corpus, rather than the idiosyncrasies of a single teaching style.

The majority of students have English as their native language. The exceptions are four students from the college in Scotland, where L1 languages are French (2) and Portuguese (2). The classes transcribed include 9 at beginner level, 4 at intermediate, and 6 at advanced level. The beginner level classes were recorded in Jamaica (grades 7 and 8), the intermediate level includes classes from an Australian University (level 1 and 2) and from Jamaican Schools (grade 11). The advanced level classes are from the Scottish College. More details are given in Table 3.1.

In order to collect data, we asked teachers to record and send to us samples of their natural classroom dialogues. We did not instruct the teachers to focus on any particular topic or error type, or suggest the types of feedback they should use in their classes. The classroom recordings fall into two broad categories: those that focus on **forms**, that is, lessons about different grammar topics (e.g., pronominalization, syntactic structures, possessives, passive verbs), and those that focus on **meaning**, that is, lessons about communicative aspects of cultural topics.

3.1.1 Data Analysis

For successful feedback moves in L2 educational dialogues, we assume that it is essential to identify the different types of both student and teacher moves. To this end, two key dimensions can be highlighted: correctness and feedback moves. In order to

Level	Class	Teacher	Place	Focus on	Duration
Beginner	Class 1	Teacher 1	Jamaica	Meaning	40'
Beginner	Class 2	Teacher 1	Jamaica	Forms	20'
Beginner	Class 7	Teacher 2	Jamaica	Forms	40'
Beginner	Class 8	Teacher 2	Jamaica	Meaning	40'
Beginner	Class 9	Teacher 3	Jamaica	Forms	20'
Beginner	Class 10	Teacher 3	Jamaica	Forms	20'
Beginner	Class 11	Teacher 3	Jamaica	Meaning	40'
Beginner	Class 16	Teacher 3	Jamaica	Forms	20'
Beginner	Class 19	Teacher 3	Jamaica	Meaning	45'
Intermediate	Class 3	Teacher 4	Jamaica	Forms	45'
Intermediate	Class 4	Teacher 4	Jamaica	Meaning	50'
Intermediate	Class 5	Teacher 5	Australia	Meaning	50'
Intermediate	Class 6	Teacher 6	Australia	Meaning	45'
Advanced	Class 12	Teacher 7	Scotland	Meaning	45'
Advanced	Class 13	Teacher 7	Scotland	Meaning	30'
Advanced	Class 14	Teacher 7	Scotland	Meaning	45'
Advanced	Class 15	Teacher 7	Scotland	Meaning	45'
Advanced	Class 17	Teacher 7	Scotland	Meaning	30'
Advanced	Class 18	Teacher 7	Scotland	Meaning	30'

Table 3.1: Transcription Data

deal with these moves, we propose an annotation scheme for feedback treatment in L2 dialogues that is based on work by Core el al. (2002). We believe that this annotation scheme allows us to capture useful features of the teacher-student interactions.

Core et al.´s scheme was developed in order to identify the communicative acts that make up dialogue strategies, patterns of interaction, and their frequency. This is being used in several research projects aimed at building computer systems that can participate in effective tutorial dialogues with their users. We used this annotation scheme because it provides a wide range of labels for the treatment of correctness and

so it makes the classification of the different types of students´ responses in educational dialogues easy. Because of this, we only need to incorporate three labels according to typical student´s answers in a L2 teaching context so as to handle correctness moves.

However, we proposed all the necessary labels with respect to feedback moves based on the different types of strategies used in L2 teaching. We developed a feedback classification scheme for teacher utterances so as to determine when and how the language teacher provides feedback to the student. We, therefore, extended Core et al´s annotation in a feedback move dimension.

Our aim is to find out how teachers in the traditional (observational study) and tutorial (case study) classes context give effective feedback and/or acknowledgement to the student. We are interested in when, that is, under what conditions, teachers explicitly acknowledge the student's contribution and when they simply continue with the next question, topic or explanation. In addition, we are interested in how teachers acknowledge the student in different circumstances, and what type of corrective feedback is most frequently and effectively used, in order to inform the design of intelligent computer-aided language learning systems.

Core et al.´s tutorial annotation scheme is composed of two key functions: forward and backward looking functions. Forward looking functions define utterances that can elicit responses. These include questions, such as Diagnostic-query (testing student knowledge) and Information-request (getting information), requests, such as Action-directive (suggestions/request for actions), and statements. Backward looking functions relate to previous utterances in the interaction. These include Accept (accepting a statement, request or answer), Reject (rejecting a statement, request, or answer), Follow-up (a question asking for more details). The annotation also considers hints, question structure and correctness. **Hintings** are statements that do not give away the answer but instead indirectly refer to it. **Question structure** is considered in terms of the point at which a question is answered as well as who answers it. **Correctness** annotations are applied to both student responses to teacher queries, and student questions that indicate misconceptions. The annotation scheme provides a classification of the quality of the student's contributions according to the following labels:

- `Student-does-not-know`: The student has not given any answer and said some-

thing like "I don't know".

- `Correct`: This is an answer to the teacher's query. It should completely answer the query.
- `Correct-irrelevant`: an utterance that cannot be said to be wrong but is irrelevant to the current query.
- `Minor-errors`: an utterance that the tutor needs not correct. It could have spelling/pronunciation errors or slight terminology errors.
- `Partially-correct`: An utterance having some element of truth or is the right answer and having errors other than minor errors.
- `Incorrect`: the utterance is not correct in any way. In the context of a tutor query, the utterance cannot be said to have any element of the correct answer.

For our study, we incorporated three additional labels which we consider necessary for annotating correctness in a second language context: Incomplete, Unintelligible, and AnsL1 which indicates an answer given in the student's first language.

- `Incomplete`: the utterance is not finished or is interrupted because of language problems (pronunciation, vocabulary, grammar or meaning). Example[1]:

[1]In the examples, the information of classroom dialogues is structured into five columns: the annotation tag (e.g., forward and backward looking functions, correctness, hinting, and feedback types), the error types, the **T**urn number, the **S**peaker (e.g., teacher or student) and the utterance itself.

TAG	ERROR	T	S	UTTERANCE
Followup		57	t	a tu marido? Tenías domesticado a tu marido?
Correct		58	s3	sí ..sí ..los últimos años mi marido estaba jubilado..
Akn		59	t	ah..vale...
Incomplete	conjugation	60	s3	**pero antes comp**.. (But before sha..)
PAS		61	t	compartir
Correct		62	s3	compartíamos los trabajos..

(Transcription from Class 18, Question 5)

- `Unintelligible`: an utterance that is hard to understand due to language problems. Example:

TAG	ERROR	T	S	UTTERANCE
Diag-query		72	t	Si..¿tú? (Student13)
Incomplete		73	s13	Uno de los tipos del cremen es el ....
Clarification requests		74	t	¿es el..?
Unintelligible		75	s13	. ...

(Transcription from Class 1, Question 13)

- `AnsL1`: an utterance in L1 (in our case, English). Example:

TAG	ERROR	T	S	UTTERANCE
Action-directive		73	t	....voy a empezar yo y entonces Student1 va a a completar si fuera rica viajaría por todo el mundo..y ahora Student1 dice viajaría por todo el mundo...
Hint		74	t	¨Si ....
AnsL1		75	s1	**If I could....**
Info-request		76	t	If I could ...como se dice en Español....
Correct		77	s1	Si yo pudiera

(Transcription from Class 13, Question 6)

3.1.2 Feedback and Error Tags

In order to determine the types of feedback that are most frequently used by teachers in the classrooms, and the contexts in which they are most effective, we extended Core et al.'s annotation scheme and annotated our dialogues with types of feedback and types of error.

Based on the different types of feedback strategies explained in chapter 2 and on a previous pilot analysis of our data without annotation tags, we established four types of corrective feedback: Giving-Answer Strategies (GAS), Prompting-Answer Strategies (PAS), Explanation, and Clarification, and two types of positive feedback: Repetition and Rephrasing.

The rationale for distinguishing PAS and GAS groups is that we want to make clear the differences that have been noticed between feedback strategies which require the students to attempt to generate or construct the correct form by themselves (PAS) from those in which the teacher resolves the language error either by providing target-form or by correcting the errors (GAS). This is based on the Chi at al´s (2001) notion of constructive learning (2001), which is similar to the current emphasis on fostering more active and self-directed learning on the part of the students. Like Chi et al.

(2001), we are adopting the prevailing notion of the active learner as one that constructs an understanding by interpreting the new, to-be-learned material in the context of prior knowledge. This can be accomplished by making inferences, elaborating the material by adding details, and integrating materials. Being constructive can be manifested by observable behavioral activities such as spontaneously self-explaining (Chi *et al.*, 1989), asking questions, answering the teacher prompting strategies of feedback.

Chi et al. (2001) suggested that an elicited response might be considered constructive and/or interactive, in which the teacher makes a move, such as asking a question, and the student responds to such elicitation. Our prompting strategies of feedback include the elicitation and "asking a question" in the form of clarification request. In consequence, a type of PAS feedback should be both constructive and interactive, in such way that guidance is provided by the teachers, and the student responds to that guidance by repairing his/her errors.

3.1.2.1 Corrective Feedback

In order to deal with corrective feedback after an incorrect answer, we introduced four labels: Giving-answer-strategies (GAS), prompting-answer-strategies (PAS), explanation and clarification:

1. **Giving-Answer Strategies (GAS):** We grouped four corrective feedback moves as GAS with the purpose of capturing the aspects of corrective feedback strategies in which the teacher provides the correct answer or repeats the student's error: Repetition of error, recast, explicit correction and provision of answer.

   For the first two strategies, we based our definitions on Doughty and Varela's study (1998) which involves repetition of the error and recast including the contrastive target form[2].

   In our scheme, the **GAS** consisted of four kinds of utterances as follows:

[2]Unlike Doughty and Varela's study (1998), these strategies did not co-occur together in our corpus, (see chapter 2).

(a) Repetition of the error or part of learner's phrase containing the error (not the whole utterance) in focus by using stress and rising intonation.

TAG	**ERROR**	**T**	**S**	**UTTERANCE**
Diag-query			t	¿cuál es the tense ...? ¿ha revolucionado?
Partially-correct	tense	111	s11	Ha es el present...
Akn		112	t	Aha..
PAS			t	Tiene dos partes
Incorrect	tense	113	s12	Future
GAS		114	t	**¿Future?....? ¿ha revolucionado?**
Reject		115	s13	No

(Transcription from Class 3, Question 5)

(b) Explicit correction of the error, providing the correct answer:

TAG	**ERROR**	**T**	**S**	**UTTERANCE**
Diag-query		66	t	Ustedes ..sí?
Minor-errors	tense	67	s8	Ahmmm Se llama "Amor en la montañas" ..
				y es comedia romńtica..María es de Barcelona..
				España ...ella se encuentra con Pedro un día
				cuando ella **andó..**
GAS		68	t	**Andaba**

(Transcription from Class 5, Question 7)

(c) Recast or reformulation of the student's answer with the provision of the target form:

TAG	ERROR	T	S	UTTERANCE
Followup		27	t	Vale justifica en qué te has basado para llegar a esa conclusión.. Eh ¿qué habéis leído?. Eh romántico. A ver primero lo profundo, ¿dónde está lo profundo?
Minor-errors	tense	28	s4	Este verso demostrar el... (This verse to show the....)
GAS		29	t	**Este verso demuestra .** This verse shows .....

(Transcription from Class 12, Question 3)

(d) Provision of the answer because the student does not know or is not sure about his answer.

TAG	ERROR	T	S	UTTERANCE
Incomplete		91	s12	mejicano ...y la madre ..la señora Henríquez es una profesora
GAS		92	t	**peruana** (Peruvian)
Correct		93	s12	peruana ..a Marta y a José le gusta la casa a Ana no el ...

(Transcription from Class 16, Question 1)

2. **Prompting-answer strategies (PAS):**

Under this category, we consider the types of feedback moves that push the student into noticing some type of language error in his/her response rather than repeating the student's specific error or directly giving the target form corresponding to the error in the student's response. We have grouped together three types of feedback structures with the aim of getting a correct answer from the student : Meta-linguistic cues, elicitation and clarification requests.

These are based on Lyster's (1998a) study which grouped four feedback strategies (elicitation, meta-linguistic cues, clarification requests, and repetition of error) under the rubric of "Negotiation of Form". Lyster (1998a) distinguished "Negotiation of Form" from recast and explicit correction because it provides learners with signals that facilitate peer- and self-repair, in a way that rephrasing or correction of student utterances do not. Unlike Lyster (1998a), we do not include repetition of errors in our definition of prompting-answer strategies, because this type of strategy presents features of recast. Indeed, Lyster (1998b) distinguishes four types of recast and defines the type 2 as "an isolated interrogative recast which seeks confirmation of the learner's message by correctly reformulating all or part of the utterance with rising intonation and no additional meaning". Similarly, Doughty and Varela (1998) consider the repetition of the error as part of corrective recasting so as to draw attention with stress and raising intonation.

In our scheme, the **PAS** consisted of three kinds of utterances as follows:

(a) Providing meta-linguistic cues, information or questions regarding the correctness of the student's utterance without explicitly providing the target form:

TAG	**ERROR**	**T**	**S**	**UTTERANCE**
Action-directive		79	t	entonces Student2 coge la
				segunda parte de la frase... si pudiera ....
PAS			t	**y tiene que poner un condicional**
				(You have to use a conditional)
Correct		80	s2	Comería ... comería caviar

(Transcription from Class 15, Question 3)

(b) Indicating to the student that his/her answer has been misunderstood due to a student error, but without explicitly repeating the error:

TAG	ERROR	T	S	UTTERANCE
Partially-correct	vword	25	s4	la enterraría en el mar
				mediterráneo si sobrase cualquier cosa
PAS		26	t	**¿qué? tiene que tener**
				sentido..What?... (What? the sentence means
				..what?)
Partially-correct	vword	28	s4	tiene sentido. si tiene cualquier
				cosa...

(Transcription from Class 14, Question 4)

(c) Encouraging the student to give the correct form by pausing, asking the student to reformulate the utterance or asking questions to elicit the correct answer:

TAG	ERROR	T	S	UTTERANCE
Diag-query		38	t	Student5 veamos el ejemplo....
Incorrect	pro	39	s5	estoy comiendo la
PAS		40	t	you remember el gender del pronombre ....
Explanation		41	t	she is reading the book..ok...she is reading it..ok..
PAS		42	t	**en libro..entonces el object**
				pronoun es....(in book..so...the object pronoun...)
Correct		43	s5	lo
Repetition		44	t	lo

(Transcription from Class 2, Question 4)

3. **Explanation:** Provides further information or comments in order to indicate reasons or causes why the answer is incorrect.

TAG	ERROR	T	S	UTTERANCE
Followup		8	t	¿Por qué habéis puesto las de sombra?
AnsL1		9	s1	I guess
PAS		10	t	you guess.....
Acc		11	t	vale
Explanation		12	t	**pero la frase supone primera ...**
				que sabéis lo que es una corrida de toros..
				segunda saber que...si vais a estar tres horas ...
				(but the phrase involves knowing what a bullfight is
				and whether you are during three hours) ....
Followup		13	t	¿Sinónimo de entradas?

(Transcription from Class 5, Question 20)

4. **Clarification:** Makes the student's error clear in order to direct correctly to the necessary information to be taken into account in the problem. We noted in our corpus that this type of strategy is a "pay-attention", "be careful"-like feature.

TAG	ERROR	T	S	UTTERANCE
Followup		123	t	¿Cómo se llama el tiempo que dice they have
				watched?
Correct		124	s16	Perfect tense
Repetition		124	t	the perfect tense....
Acc				Sí ...gracias....muy bien..
Rephrasing				es lo mismo en Español...el tiempo perfecto,
				the perfect tense... tiene dos partes..
Clarification		125	t	Ustedes tienen que saber el nombre de
				los tiempos y éste se llama..el tiempo
				perfecto..(You have to know the name of the
				tenses and this is called perfect tense)

(Transcription from Class 3, Question 5)

3.1.2.2 Positive Feedback

As regards positive feedback, we are interested in determining what the teacher does after the student provides a correct answer, apart from providing "positive acknowledgement" or "accept" the correct student's answer. In order to deal with feedback after a correct answer, we introduced two labels:

- `Repetition`: the repetition of the student's utterance, after a correct answer.

Action-directive	14	t	y otra palabra C ..repitan ustedes
			c l u b d e j ó v e n e s
Correct	15	g^3	c l u b d e j ó v e n e s
Repetition	16	t	**c l u b d e j ó v e n e s**
			(youth club)

(Transcription from Class 7, Question 3)

- `Rephrasing`: the teacher accepts the student's answer but aims to expand the student's knowledge, to polish the utterance structure, or to show a new structure which rephrases the answer given by the student using different words, and in some cases, adds new information. For example:

Followup	57	t	¿un sinónimo de cura..?
Correct	58	s11	sacerdote
Rephrasing	59	t	**sacerdote..padre...párroco...ok...son**
			palabras culturales
			(priest, father, parish priest...ok... are cultural words)

(Transcription from Class 5, Question 8)

3.1.2.3 Error Tags

For the purpose of our study and considering previous pilot analysis, we also established some specific types of grammar, lexical and pronunciation errors:

[3] g=group (i.e., all students answer the question)

- **Grammar errors:** we found the following most frequently used types of grammatical errors:

1. *Structure:* errors in the syntactic structure or word order. Example:

TAG	ERROR	T	S	UTTERANCE
Diag-query		34	t	¿Te gusta el salón de baile?
				(Would you like the dance hall)
Minor-errors	**structure**	35	s7	**Sí salón de baile**
				(yes, dance hall)
				Correct Answer: Sí me gusta
				(Yes I like it)
GAS		36	t	**sí me gusta** (yes I like it)

(Transcription from Class 8, Question 5)

2. *Closed classes:* Errors in the use of pronoun (pro), determiner (det), adverb (adv), etc. Example:

TAG	ERROR	T	S	UTTERANCE
Diag-query		34	t	Student4...tienes algo que decir..¿qué piensas de
				la situación del crimen?..y dime una causa...
Minor-errors	**det**	35	s4	**Yo pienso el mejor problema**
				es po..pobreza.
				I think that the best problem is poverty
GAS		36	t	Es **la** pobreza
Acc			t	Ok
Rephrasing			t	un problema es la pobreza..

(Transcription from Class 1, Question 4)

3. *Conjugation:* Errors in the use of the conjugation of the verbs. Example:

TAG	ERROR	T	S	UTTERANCE
Followup		209	t	Ahora nosotros
Incorrect	**conjugation**	210	s20	*[4]**Dijemos** (we told)
PAS		211	t	no es un verbo en "ir"
Correct		212	s20	**dijimos**

(Transcription from Class 3, Question 13)

4. *Agreement:* Errors in the agreement between Subject/verb, determiner/noun, noun/adjective. Example:

TAG	ERROR	T	S	UTTERANCE
Diag-query		17	t	¿ Y alguien más hizo algo más?..
				..¿Qué hizo Student2?
Minor-errors	**Agreement**	18	s2	ah... **trabajo**..
GAS		19	t	**Trabajé** (I worked)
Minor-errors	prep	20	s2	**trabajé** en el sábado..
				en el saturday...

(Transcription from Class 16, Question 2)

5. *Tense:* Errors in the use of the tenses of the verbs. Example:

TAG	ERROR	T	S	UTTERANCE
Diag-query		10	t	Haría .....haria un viaje al extranjero. si...
Incomplete	**Tense**	11	s1	ah..si .si mi madre **muere**
				y mi...
GAS		12	t	**muriera**...

(Transcription from Class 14, Question 2)

[4] *= Incorrect Form

- **Lexical errors:**

1. Unaware of the term:

TAG	ERROR	T	S	UTTERANCE
Incomplete	**vword**	91	s13	bebo..
PAS		92	t	jugo de naranja... agua ..qué?
				(Orange juice...water... what?)
Correct		93	s12	**jugo de uva** (grape juice)

(Transcription from Class 19, Question 1)

2. Inappropriate or inaccurate use of Spanish term:

TAG	ERROR	T	S	UTTERANCE
Diag-query		12	t	Student1...¿qué piensas?....
				¿cuál es tu opinión del crimen en Jamaica?
Minor-errors	**vword**	13	s1	yo pienso.. que no
				tenere bien a mi parecer
PAS		14	t	¿Qué...?
Minor-errors	**vword**	15	s1	yo pienso que no ***tener**
				bien a mi parecer

(Transcription from Class 1, Question 1)

- **Pronunciation errors:**

1. *Accent:* Inappropriate accentuation of the Spanish words:

TAG	ERROR	T	S	UTTERANCE
Minor-errors	**Accent**	63	s7	***mánia...**
GAS		64	t	**manías** dice el nombre... manías...

(Transcription from Class 5, Question 9)

2. *Mispronunciations of the Spanish words:*

TAG	ERROR	T	S	UTTERANCE
Minor-errors	**pword**	45	g	sí tengo ***sueno**
GAS		46	t	**this is not sueno but sueño..**

(Transcription from Class 19, Question 4)

3.1.3 Transcriptions and Data Processing in XML

The classroom recordings were transcribed by a native Spanish speaker, and annotated with the labels defined in the tutorial annotation scheme described above (see example in appendixes A and B). We used an annotation tool that inserts XML tags into the data files, so that they can then be processed using a variety of XML tools, including tools for querying and viewing the data. For this study, we focused on the labels that will shed most light on our research questions. In particular, we were interested in the following:

- Type and frequency of different correctness tags (correct, incorrect, minor-errors, incomplete, ansL1, etc).
- Type and frequency of grammar, vocabulary and pronunciation errors.
- Type and frequency of different types of feedback (GAS, PAS, repetition, rephrasing).
- Type and frequency of feedback after grammar, pronunciation and vocabulary errors.
- Type of student utterance 1, 2 and 3 turns after PAS, GAS and correct answer.

For our research questions, we focused on the utterances labelled with the types of feedback, correctness and errors with the purpose of getting their frequency. We considered the most frequent type of feedback after a student's correct answer by checking the immediate turn after a student's correct answer and also the turn after an acknowledgement move.

For answering our third research question, we investigated the relationship between the types of corrective feedback and learner repairs. By "repair", we mean the correct reformulation of an error as uttered in a single student turn. We analyzed the students' utterances that occurred one, two and three turns following the teacher's corrective feedback.

We defined an XML's DTD (*Document Type Definition*) and wrote programs to perform a variety of simple tasks, such as counting and keeping a record of the types of errors and the types of feedback.

3.2 Analysis and Results

3.2.1 The most frequent positive feedback

With regard to our first research question, we investigated the type of feedback that teachers give to the students when they answer correctly. The results show a total of 471 correct answers. However, only 176 (37%) of them received positive feedback such as rephrasing or repetition. The majority of correct answers with 295 cases (63%) were followed by a simple positive acknowledgement, acceptance, or a diagnostic-query in which the teacher continued with the next question.

Table 3.2 shows the total number of correct answers as well as the total number of rephrasings and repetitions, by learning level. Repetition feedback is more frequent than rephrasing in beginner and intermediate levels whereas rephrasing is slightly more frequent than repetition in advance level. Overall, this suggests that in beginner and intermediate levels there is a tendency for teachers to repeat the student's correct answer in order to confirm its correctness.

3.2.2 The most frequent types of corrective feedback

As for our second research question, we were able to establish a clear distribution of the different types of corrective feedback and errors across the learning levels. Overall, our results (Table 3.3) show a total of 286 errors, of which "grammar errors" are the most frequent type (143 (50%)), followed by pronunciation errors with 83 cases (29%),

Level	Correct	Repetition	Rephrasing	Total Feedback
Beginner	268	50 (19%)	10 (4%)	60 (23%)
Intermediate	101	58 (57%)	16 (16%)	74 (73%)
Advanced	102	19 (19%)	23 (22%)	42 (41%)
All Levels	471	127 (27%)	49 (10%)	176 (37%)

Table 3.2: Rate of Positive-Feedback by Learning Level

and vocabulary errors with 60 cases (21%).

Although these results were obtained from a relatively small corpus, and the amount of material for the three levels is only approximately equal (4.75 lesson hours for beginner level, 3 hours for intermediate and 3.75 hours for advanced level), it is important to note from Table 3.3 that the relative frequencies of the different types of error differ according to the level of the learner. For beginners, the most frequent errors are grammar and pronunciation errors, whereas for intermediate and advanced learners, the most frequent errors are grammar and vocabulary errors. Note also that the proportion of grammar errors increases as we move from basic to intermediate level, but then decreases slightly for the advanced level. The proportion of vocabulary errors increases as the learner level increases. In the pronunciation case, the proportion of errors decreases as we move from basic to intermediate level, but then increases for the advanced level.

Level	Gram	Voc	Pro	Total
Beginner	66 (47%)	9 (6%)	66 (47%)	141
Intermediate	49 (59%)	28 (34%)	6 (7%)	83
Advanced	28 (45%)	23 (37%)	11 (18%)	62
All levels	143(50%)	60 (21%)	83 (29%)	286

Table 3.3: Error Frequency by Learning Level (**Gram**mar, **Voc**abulary, **Pron**unciation)

In relation to corrective feedback, Table 3.4 shows a total of 245 corrective feedback moves distributed as follows: 177 (72%) **GAS**, distributed as 66 (37%) recast, 81

(46%) explicit correction, 22 (12%) given answer, and 8 (5%) repetition of error; and 68 (28%) **PAS**, distributed as 36 (53%) elicitation, 23 (34%) meta-linguistic cues, and 9 (13%) clarification requests. The most frequently used strategy at beginner, intermediate, and advanced levels was GAS (80%, 53% and 77%, respectively).

Clarification and explanation strategies showed a different distribution in our corpus. They were found to co-occur with other types of positive or corrective feedback (e.g., recast, rephrasing). Clarification and Explanation seem to provide a conclusive or summarizing type of corrective feedback. That is, after the teacher has used them, he/she continues to the next question. Hence they have not been included in the current analysis.

Level	**GAS**	**PAS**	Total
Beginner	110 (80%)	27 (20%)	137 (56%)
Intermediate	36 (53%)	32 (47%)	68 (28%)
Advanced	31 (77%)	9 (23%)	40 (16%)
All levels	177 (72%)	68 (28%)	245 (100%)

Table 3.4: Corrective-Feedback Frequency by Learning Level

As can be seen from the results of Tables 3.3 and 3.4, the difference between errors (286) and corrective feedback (245) is 41 (14%). This means that only 14% of student errors do not receive any type of corrective feedback[5]. In such cases, the errors were followed by a reject move, a follow-up, another diagnostic-query or a change of domain move. The important point is that teachers give some type of corrective feedback in response to the majority of student errors (86%). Consequently, we can deduce that irrespective of the type of error, corrective feedback is frequently used by the teachers of Spanish as L2 in our corpus.

According to the rate of corrective feedback per error type presented in contingency Table 3.2.2, the results show that the interaction between feedback type and error type was significant ($\chi^2(2,245)$=46.09, $p < 0.0001$), confirming that the type of

[5]Earlier studies on treatment of learners' errors (Allwright, 1975; Chaudron, 1977; Chaudron, 1986; Chaudron, 1987; Fanselow, 1977; Long, 1977; Nystron, 1983) have shown that teachers do not treat all the errors that occur during the class (Allwright and Kathleen, 1991).

error affected the choice of GAS versus PAS.

Strategy	**Gram**	**Voc**	**Pro**	Total
GAS	74	23	80	177
PAS	49	19	0	68
Total	123	42	80	245

Table 3.5: Contingency Table for Corrective Feedback Frequency by Error Type (**Gram**mar, **Voc**abulary, **Pron**unciation)

The main effect of errors was significant ($\chi^2(2,245) = 40.22$, $p < 0.0001$) as was the main effect of feedback type ($\chi^2(1,245) = 48.49$, $p < 0.0001$). This supports the fact that GAS are the most likely strategies used by teachers (177) when compared with PAS (68). For vocabulary errors, the difference between strategies is not significant. On the contrary, for grammar ($\chi^2(1,123)$=5.08, $p < 0.024$) and pronunciation errors ($\chi^2(1,80)$=80, $p < 0.0001$), the results show that GAS are the most likely strategy used by teachers to correct these types of errors.

A pairwise analysis of the error types showed that the choice of corrective feedback for pronunciation errors (GAS) differed significantly from the vocabulary errors, $\chi^2(1,122) = 42.86$, $p < 0.0001$, and from the grammar errors, ($\chi^2(1,203) = 42.01$, $p < 0.0001$). Therefore, the use of GAS strategies was significant for pronunciation errors whereas for grammar and vocabulary errors, there was not a significant difference between both strategies.

As regards the rate of corrective feedback by learning level presented in contingency Table 3.6, the results show that the interaction between feedback type and learning level was significant ($\chi^2(2,245)$=17.612, $p < 0.0001$), confirming that the level affected the choice of GAS versus PAS.

The main effect of error by learning level was significant ($\chi^2(2,245) = 61.037$, $p < 0.0001$) as was the main effect of feedback type ($\chi^2(1,245) = 48.49$, $p < 0.0001$). This suggests that, in accordance with learning levels, GAS strategies are more likely to be used by teachers than PAS. For beginner level, the difference between strategies is significant ($\chi^2(1,137)$=50.28, $p < 0.0001$), as this is also the case for advanced

Strategy	**Beg**	**Int**	**Adv**	Total
GAS	110	36	31	177
PAS	27	32	9	68
Total	137	68	40	245

Table 3.6: Contingency Table for Corrective Feedback Frequency by Learning Level (**Beg**inner, **Int**ermediate, **Adv**anced)

level, ($\chi^2(1,40)$=12.1, $p < 0.0005$). These results show that GAS are the most likely strategy used by teachers in both learning levels. On the contrary, for intermediate level the difference between strategies was not significant.

Considering the relation between teacher and type of feedback, the Table 3.7 shows the distribution of GAS and PAS by teacher. Teachers 1, 2 and 3 correspond to beginner level, teacher 4, 5 and 6 intermediate, and teacher 7 advanced level. In general, the majority of the teachers used more GAS than PAS, except for teacher 4, who used a high number of PAS (32). Teachers 2, 3 and 7 used the highest number of GAS (53, 47 and 31, respectively).

Despite the fact that nearly half of the frequency of PAS corresponds to teacher 4, the rest of this frequency is distributed across five teachers. The main effect of feedback given by teachers was significant ($\chi^2(1,245) = 48.49$, $p < 0.0001$). This means that GAS are the most likely strategies used by all teachers (177) when compared with PAS (68). The results also show that the interaction between feedback type and teacher was significant ($\chi^2(6,245)$=40.94, $p < 0.0001$), confirming that overall teachers are more likely to use GAS than PAS.

3.2.3 The most effective types of corrective feedback

Thus far, we have observed that GAS are the most frequent type of feedback across the three types of errors (grammar, vocabulary and pronunciation). Next, we are interested in determining whether the more frequent GAS is correlated with student learning gain. First, we discuss the results obtained in analysing the effectiveness of GAS and PAS in the context of grammar errors. Our frequency results indicated that of the 143

	Beginner			Interm.			Adv.	
Strategy	**T1**	**T2**	**T3**	**T4**	**T5**	**T6**	**T7**	Total
GAS	10	53	47	22	2	12	31	177
PAS	7	8	12	32	0	0	9	68
All strategies	17	61	59	54	2	12	40	245

Table 3.7: Frequency of GAS and PAS by **T**eacher

grammar errors, teachers gave GAS in 52% of the cases, PAS in 34% of cases, and no feedback in only 14% of cases. When no feedback was given, the teacher provided acknowledgement, or moved on to the next question or topic.

To assess learning gain, we analysed what happens in the student's next three turns after the teacher draws attention to, corrects, gives information, or elicits completion in response to the student's incorrect answer. For this, we take into account the previously defined "repair of errors" after GAS and PAS. We believe that the relationship between the frequency of repairs and frequency of each type of corrective feedback gives an indication of the immediate effectiveness of the feedback, at least in terms of what the student did or did not try to do with the feedback. In cases where the student's response to the feedback is a correct answer, this may indicate that the student has noticed the error and the correct answer may indicate "a step at least toward acquisition" (Lightbown, 1998)[6]. This awareness of the gap between what the students want to say and what they can say, and what they do not know and what they know, as only partially provided by some corrective strategies, can be a first step towards improvement.

In Table 3.8, we have included the results of the corrective feedback as well as the repairs by learning level. We observed that the students repaired or unrepaired immediately after the feedback turn given by teacher. Note that the percentages highlighted in column G-Repair are relative to GAS, and P-Repair are relative to PAS.

[6]According to Patsy Lightbown (Lightbown, 1998) "The fact that the learner does not make an immediate behavioral change cannot be taken as evidence that there is no effect (of some corrective feedback operationalized as) "focus on form". Nor can a corrected response from the learner be taken as evidence that a more correct or advanced form has been integrated into the learner's inter-language. Nevertheless, a reformulated utterance from the learner gives some reason to believe that the mismatch between learner utterance and target utterance has been noticed, a step at least toward acquisition", pag.193).

Level	Error	GAS	G-Repair	PAS	P-Repair	No Feed
B	66	$\frac{41}{66}(62\%)$	$\frac{22}{41}(53\%)$	$\frac{23}{66}(35\%)$	$\frac{21}{23}(91\%)$	2
I	49	$\frac{22}{49}(45\%)$	$\frac{9}{22}(41\%)$	$\frac{20}{49}(41\%)$	$\frac{12}{20}(60\%)$	7
A	28	$\frac{11}{28}$ (39%)	$\frac{5}{11}(45\%)$	$\frac{6}{28}(21\%)$	$\frac{6}{6}(100\%)$	11
Total	143	$\frac{74}{143}(52\%)$	$\frac{36}{74}(48\%)$	$\frac{49}{143}(34\%)$	$\frac{39}{49}(80\%)$	20 (14%)

Table 3.8: Grammar Errors by Level (**B**eginner, **I**ntermediate, and **A**dvanced)

As can be seen from Table 3.8, the G-Repairs are less effective for each learning level compared with P-Repair for PAS. Of the 74 cases of GAS that the teacher used, just 36 (48%) were effective, i.e., the students produced a correction to the error. On the contrary, of 49 cases of PAS used by the teacher 39 (80%) were effective with the students correctly modifying their answers. Thus, even though the teacher uses GAS more frequently than PAS for the treatment of grammar errors, when we examined the relationships among repair and corrective feedback, PAS are as the most effective strategies for each learning level.

As for vocabulary errors, Table 3.9 shows that of a total of 60 errors, 23 (38%) evoke GAS, 19 (32%) PAS, while the remaining 18 (30%) errors, were followed by a reject move, a follow-up, some other diagnostic-query or a change of domain move.

Level	Error	GAS	G-Repair	PAS	P-Repair	No Feed
B	9	$\frac{5}{9}(56\%)$	$\frac{3}{5}(60\%)$	$\frac{4}{9}(44\%)$	$\frac{4}{4}(100\%)$	0
I	28	$\frac{8}{28}(29\%)$	$\frac{3}{8}(37\%)$	$\frac{12}{28}(43\%)$	$\frac{11}{12}(92\%)$	8
A	23	$\frac{10}{23}(43\%)$	$\frac{3}{10}$ (30%)	$\frac{3}{23}(13\%)$	$\frac{3}{3}(100\%)$	10
Total	60	$\frac{23}{60}(38\%)$	$\frac{9}{23}(39\%)$	$\frac{19}{59}(32\%)$	$\frac{18}{19}(95\%)$	18 (30%)

Table 3.9: Vocabulary Errors by Learning Level (**B**eginner, **I**ntermediate and **A**dvanced)

Table 3.9 presents the distribution by learning levels of the relationships between corrective feedback and its repair. Here we see that PAS with 18 cases (95%) was more effective than GAS with 9 cases (39%) in the treatment of vocabulary errors.

Table 3.10 gives the distribution of corrective feedback and its repair for pronunci-

ation errors across the three learning levels. Of the 83 pronunciation errors: 80 (96%) received GAS by teachers and of these 67 (84%) were repaired by students. The teachers did not use PAS with this type of error. In consequence, GAS are the only type of strategies that teachers use for correcting and for repairing pronunciation errors.

Level	Error	GAS	G-Repair	PAS	P-Repair	No Feed
B	66	$\frac{64}{66}(97\%)$	$\frac{57}{61}(93\%)$	0	0	2
I	6	$\frac{6}{6}(100\%)$	$\frac{3}{6}(50\%)$	0	0	0
A	11	$\frac{10}{11}(91\%)$	$\frac{7}{10}(70\%)$	0	0	1
Total	83	$\frac{80}{83}(96\%)$	$\frac{67}{77}(87\%)$	0	0	3 (4%)

Table 3.10: Pronunciation Errors by Learning Level (**B**eginner, **I**ntermediate, and **A**dvanced)

Error repair v. level

A statistical analysis (see Table 3.11) considering the number of repaired (yes) and non repaired errors (no) following GAS and PAS for each type of error showed that for grammar ($\chi^2(1,123) = 11.86$, $p < 0.0005$) and vocabulary errors ($\chi^2(1,42) = 14.013$, $p < 0.0001$), PAS are the most effective strategy used by teachers to correct these types of errors. On the contrary, for pronunciation errors ($\chi^2(1,80) = 36.45$, $p < 0.0001$), GAS are the only strategies used.

Grammar	Repair		
Feedback	Yes	No	Total
GAS	36	38	74
PAS	39	10	49
Total	75	48	123

Vocabulary	Repair		
Feedback	Yes	No	Total
GAS	9	14	23
PAS	18	1	19
Total	27	15	42

Table 3.11: Contingency Tables for Repaired and No Repaired Errors

As for learning level, Table 3.12 shows the percentages for repaired errors of GAS and PAS by learning level. Notice that PAS got the highest percentages for each level.

The statistical analysis (see Table 3.13) shows that for intermediate ($\chi^2(1,68) = 6.271$, $p < 0.001$) and advanced level ($\chi^2(1,40) = 7.742$, $p < 0.001$) PAS was the most effective strategy. For beginner level, the result was not significant (see Table 3.14).

Level	**Beginner**	**Intermediate**	**Advanced**	Total
G-Repair	82/110 (75%)	15/36 (42%)	15/31 (48%)	112
P-Repair	25/27 (93%)	22/32 (69%)	9/9 (100%)	56
All Strategies	107/137 (78%)	37/68 (54%)	24/40 (60%)	168

Table 3.12: Proportion of Repair of GAS and PAS by Learning Level

Intermediate	Repair		
Feedback	Yes	No	Total
GAS	15	21	36
PAS	22	10	32
Total	37	31	68

Advanced	Repair		
Feedback	Yes	No	Total
GAS	15	16	31
PAS	9	0	9
Total	24	16	40

Table 3.13: Contingency Tables for Repaired and No Repaired Errors for Intermediate and Advanced Levels

Beginner	Repair		
Feedback	Yes	No	Total
GAS	82	28	110
PAS	25	2	27
Total	107	30	137

Table 3.14: Contingency Tables for Repaired and No Repaired Errors for Beginner Level

Teachers v. Error Repair

Considering the relation between each teacher and errors repaired by PAS and GAS, Table 3.15 shows the distribution of repairs by teacher. As can be noted, even though the majority of the teachers used more GAS than PAS, the relation for each teacher between frequency of use and repair of errors shows that PAS evoked more repairs than GAS, by teacher. However, the statistical analysis (see Table 3.16) considering the number of repaired (yes) and non repaired errors (no) following GAS and PAS for each teacher showed that the difference between PAS and GAS was significant only for teacher 1 ($\chi^2(1,17) = 13.38$, $p < 0.002$) and teacher 7 ($\chi^2(1,40) = 7.742$, $p < 0.005$). This may be due to the fact that low numbers of PAS were used by most teachers.

	Beginner			**Interm.**			**Adv.**	
Strategy	**T1**	**T2**	**T3**	**T4**	**T5**	**T6**	**T7**	Total
G-Repair	2/10	44/53	36/47	11/22	0/2	4/12	15/31	$\frac{112}{177}(63\%)$
P-Repair	7/7	8/8	10/12	22/32	0	0	9/9	$\frac{56}{68}(83\%)$
All strategies	9	52	46	33	0	4	24	168

Table 3.15: Proportion of Repair of GAS and PAS by Teachers

Teacher 1	Repair		
Feedback	Yes	No	Total
GAS	1	9	10
PAS	7	0	7
Total	8	9	17

Teacher 7	Repair		
Feedback	Yes	No	Total
GAS	15	16	31
PAS	9	0	9
Total	24	16	40

Table 3.16: Contingency Tables for Repaired and No Repaired Errors by Teachers

Overall, these results show that PAS were more effective (in producing repairs) for the errors they were used for than GAS were for the errors they were used for. To translate this into a useful notion of effectiveness, we are assuming that:

- Repairs are a good measure of learning, at least when they come after immediate corrective feedback.
- All errors are equally appropriate to repair.
- The errors that evoked PAS are different from those that evoked GAS. Teachers typically use GAS for pronunciation, but use GAS or PAS equally for grammar and vocabulary errors.

3.3 Frequency and Effectiveness of Individual Strategies in GAS and PAS

In this section, we present a more detailed analysis about each of the types of corrective-feedback that make up GAS and PAS, in order to gain a better understanding of the distribution, frequency, effectiveness and structure of the individual strategies.

Grammar Errors

We analysed the group of GAS strategies in the context of grammar errors, which is shown in Table 3.17 broken down by the different learner levels. **Recast** (similar to Lyster's study (1998a)) and **correction** were the most frequent strategies. Both types of strategies occurred frequently at the beginner level with a total of 23 (56%) and 9 (22%) cases respectively.

In terms of the repairs associated with each strategy, Table 3.17 shows that the **given** and **correction** strategies were the most effective strategies with 8 cases out of 10 (80%) and 13 out of 20 (59%) repaired errors, respectively. Although **recast** was the most frequent strategy for the GAS group, this strategy only led to 13 repaired errors (36%), leaving 23 (64%) without repair.

Considering the learner level, **recast** was the most frequent strategy at beginner (56%) and intermediate (36%) levels, whereas **correction** was the most frequent strategy at the advanced level (55%). With relation to effectiveness, **given** was the most effective strategy at the beginner level (75%), whereas **correction** was the most effective strategy at intermediate (71%) and advanced levels (50%).

	GAS									
	Repetition		Recast		Given		Correction		TOTAL	
Level	F	R	F	R	F	R	F	R	F	R
Beg.	1	1	23	10	8	6	9	5	41	$\frac{22}{41}$
Inter.	5	1	8	1	2	2	7	5	22	$\frac{9}{22}$
Adv.	0	0	5	2	0	0	6	3	11	$\frac{5}{11}$
TOTAL	$\frac{6}{74}$	$\frac{2}{6}$	$\frac{36}{74}$	$\frac{13}{36}$	$\frac{10}{74}$	$\frac{8}{10}$	$\frac{22}{74}$	$\frac{13}{22}$	74	$\frac{36}{74}$
%	8	33	49	36	13	80	30	59	100	49

Table 3.17: GAS **F**requency and **R**epairs for Grammar Errors

Within the PAS group, Table 3.18 shows that **elicitation** was the most frequent strategy with 31 (63%), many of them corresponding to beginner and intermediate levels (18 and 11, respectively).

	PAS							
	Meta-linguistic		Elicitation		Cla-Requests		TOTAL	
Level	F	R	F	R	F	R	F	R
Beg.	5	5	18	16	0	0	23	$\frac{21}{23}$
Inter.	5	2	11	6	4	4	20	$\frac{12}{20}$
Adv.	3	3	2	2	1	1	6	$\frac{6}{6}$
TOTAL	$\frac{13}{49}$	$\frac{11}{13}$	$\frac{31}{49}$	$\frac{24}{31}$	$\frac{5}{49}$	$\frac{5}{5}$	49	$\frac{40}{49}$
%	26	85	63	77	10	100	100	82

Table 3.18: PAS Frequency and Repairs for Grammar Errors

For repaired errors, Table 3.18 indicates that **clarification request** was the most effective strategy with 5/5 (100%) followed by **meta-linguistic cues** with 11/13 (85%) repaired errors and **elicitation** with 24/31 (77%). These results suggest that the teacher is effectively pushing the self-correction of student grammar errors through all of these strategies.

Meta-linguistic cues (100%), and **elicitation** (89%) were the most effective strate-

gies at the beginner level, whereas **Clarification requests** (100%), and **elicitation** (55%) were the most effective at the intermediate level. At advanced level, all strategies were effective.

Vocabulary Errors

The frequency of strategies involved in the GAS group is presented in Table 3.19 for vocabulary errors (no given strategies were found). The majority of errors were corrected by **recasts** with a total of 15 cases out of 23 (65%), many of them corresponding to intermediate and advance levels (6 and 7, respectively).

	GAS							
	Repetition		Recast		Correction		TOTAL	
Level	F	R	F	R	F	R	F	R
Beg.	0	0	2	0	3	3	5	$\frac{3}{5}$
Inter.	0	0	6	2	2	1	8	$\frac{3}{8}$
Adv.	1	0	7	2	2	1	10	$\frac{3}{10}$
TOTAL	$\frac{1}{23}$	$\frac{0}{1}$	$\frac{15}{23}$	$\frac{4}{15}$	$\frac{7}{23}$	$\frac{5}{7}$	23	$\frac{9}{23}$
%	4	0	65	27	30	71	100	39

Table 3.19: GAS Frequency and Repairs for Vocabulary Errors

With respect to the repair elicited by each strategy, it can be seen that **correction** was the most effective strategy with 5 out of 7 cases (71%). Although **recast** was the most frequent strategy of the GAS group, this only got 4 out of 15 (27%) repaired errors, leaving 11 (73%) without repair.

On the other hand, the results for the PAS group (Table 3.20) indicate that all strategies included in this group present a similar frequency, many of them corresponding to intermediate level. Repair results indicate that in most cases the errors were repaired (meta-linguistic cues 7/8, clarification requests 6/6, and elicitation 5/5).

Pronunciation Errors

For pronunciation errors, we only discuss the frequency and effectiveness of the

	PAS							
	Meta-linguistic		Elicitation		Cla-Requests		TOTAL	
Level	F	R	F	R	F	R	F	R
Beg.	2	2	1	1	1	1	4	$\frac{4}{4}$
Inter.	5	4	3	3	4	4	12	$\frac{11}{12}$
Adv.	1	1	1	1	1	1	3	$\frac{3}{3}$
TOTAL	$\frac{8}{19}$	$\frac{7}{8}$	$\frac{5}{19}$	$\frac{5}{5}$	$\frac{6}{19}$	$\frac{6}{6}$	19	$\frac{18}{19}$
%	42	87	26	100	32	100	100	95

Table 3.20: PAS Frequency and Repairs for Vocabulary Errors

strategies involved in the GAS group due to the large number of these errors corrected by these types of strategies. Table 3.21 suggests that **correction** was the most frequent strategy with a total of 52 cases (68%) whereas **given** was the most effective strategy with 11/12 repaired errors (93%), followed by **correction** with 44 cases out of 52 (85%).

	GAS									
	Repetition		Recast		Given		Correction		TOTAL	
Level	F	R	F	R	F	R	F	R	F	R
Beg.	1	0	8	6	11	10	41	38	61	$\frac{54}{61}$
Inter.	0	0	1	0	0	0	5	1	6	$\frac{1}{6}$
Adv.	0	0	3	1	1	1	6	5	10	$\frac{7}{10}$
TOTAL	$\frac{1}{77}$	$\frac{0}{1}$	$\frac{12}{77}$	$\frac{7}{12}$	$\frac{12}{77}$	$\frac{11}{12}$	$\frac{52}{77}$	$\frac{44}{52}$	77	$\frac{62}{77}$
%	1	0	15	58	15	92	67	85	100	80

Table 3.21: GAS Frequency and Repairs for Pronunciation Errors

The main results of the analyses are summarized in Tables 3.22 and 3.23. The results in Table 3.22 indicate that **correction** and **recast** were the most frequent GAS strategies with 81 (46%) and 63 (36%), respectively, whereas **given** with 19/22 (86%) and **correction** with 62/81 (77%) were the most effective strategies.

GAS	Frequency	Repair
Repetition	8 (4%)	$\frac{2}{8}$(25%)
Recast	63 (36%)	$\frac{24}{63}$(38%)
Given	22 (13%)	$\frac{19}{22}$(86%)
Correction	81 (47%)	$\frac{62}{81}$(77%)
Total	174 (100%)	$\frac{107}{174}$(62%)

Table 3.22: Total of Frequency and Repair in GAS group

For the PAS group, Table 3.23 shows that **elicitation** and **meta-linguistic cues** are the most frequent strategies with 38 (53%) and 23 (32%) cases, respectively. Each strategy elicits a large number of repaired errors which suggests that all of them are very effective.

PAS	Frequency	Repair
Meta-linguistic	23 (32%)	$\frac{19}{23}$(83%)
Elicitation	38 (53%)	$\frac{31}{38}$(82%)
Cla-Requests	11 (15%)	$\frac{11}{11}$(100%)
Total	72 (100%)	$\frac{61}{72}$(84%)

Table 3.23: Total of Frequency and Repairs in PAS group

3.3.1 Combination of Feedback Strategies

In order to determine whether the teacher provides a second feedback move in the situations in which a student either makes the same error for the second time or answers incompletely (the structure of the sentence), we carried a brief descriptive analysis based on the grammar errors.

We found 22 cases in which the teacher provided a second feedback for correcting the students' error or completing the structure of the answer (11 at the beginner level, 10 at the intermediate level and one at the advanced level). In these cases, there were multiple combinations of feedback strategies, such as *elicitation-correction,*

meta-linguistic cues-repetition, elicitation-meta-linguistic cues, correction-elicitation, giving-elicitation, etc. Although it is not possible to establish the systematic nature in the assignment of the second feedback, it is clear that teachers tend to use up to two feedback strategies (only five cases were found to use more than two). The combination may consist of strategies from the same group, from different groups, or from other types of feedback such as clarification or explanation, which can be observed in the examples in Tables 3.24, 3.25, and 3.26.

TAG	**ERROR**	**T**	**S**	**UTTERANCE**
Diag-query		18	t	Mi mamá pago las cuentas
Minor-errors	agreement	19	g	Las cuentas fueron
				pagada por mi mamá
PAS (elicitation)		20	t	fueron..
Minor-errors	agreement	21	s3	Pagada..
Reject		22	t	aha
GAS (correction)		23	t	pagadas
Info-request		24	t	¿Por qué?
Correct		25	s3	Las cuentas
Acc		26	t	bien..muy bien

Table 3.24: Transcription from Class 11, Question 4

In the first example (Table 3.24), the teacher uses a combination of PAS (**elicitation**) and GAS (**correction**) to correct the student's error. The student's answer presents an agreement problem ("la**s** cuenta**s** fueron **pagada**"). The teacher tries eliciting the correct form ("fueron..") but the student answers again incorrectly (" pagada"). The teacher then decides to correct explicitly (pagada**s**) and asks the student for the reason in order to find out whether the student understands the problem ("¿Por qué?"). Next, the student answers correctly ("las cuentas") reflecting that he/she realized the error.

In the second example (Table 3.25), the student (beginner) answers incompletely the sentence ("El tiatro ... y *sol de balón.") so the problem is related to the structure of the sentence. The teacher gives a part of the missed sentence. He uses a "given

TAG	ERROR	T	S	UTTERANCE
Diag-query		16	t	¿Te gusta el teatro?
Imcomplete	structure	17	s4	El tiatro ..
				y *sol de balón..
Reject		18	t	No
GAS (given)		19	t	**sí me gusta .....**
Incomplete	structure	20	s4	Sí me gusta
GAS (given)		21	t	**el teatro ....**
Incomplete	structure	22	s4	el teatro
PAS (elicitation)		23	t	**y..**
Correct		24	s4	y el salón de baile
Acc		25	t	sí ..muy bien.

Table 3.25: Transcription from Class 8, Question 2

strategy" ("`sí me gusta `"), and waits for the student's answer. Then the student just repeats the teacher's feedback. The teacher provides another part of the sentence through another "given answer" ("`el teatro ..`"). The student repeats again only the information involved in the feedback ("`el teatro ..`"). Finally, the teacher elicits the rest of the sentence ("`y..`") and the student completes the rest of the sentence ("`y el salón de baile`"). In this example, we can clearly see the efforts of the teacher to obtain a student's answer with a grammatical structure. For this, the teacher needed to provide the student with parts of this structure twice and elicits the end of the structure involved in the sentence.

In the last example for an intermediate class (Table 3.26), the teacher asks Student7 for information about a paragraph in a Spanish text. The student's answer is incomplete ("Su mamá..") so another student (Student6) tries to add more information and to answer but gives an incomplete answer ("murió.."). Next, the teacher elicits more information ("en..") and Student6 answers incorrectly ("viaje"). The teacher tries prompting the answer with a clarification request (¿Cuándo...?) but Student6 does not understand and replies with a clarification (¿Cuándo...?). The teacher answers in English (when?) and Student6 answers again incompletely ("..su barco"). The teacher accepts

the student's answer and Student7 rephrases the answer more completely ("*Mientras su mamá viajando a barco") with two new errors, one in the verb of the utterance and other in the preposition. The student either "forgets" or does not "know" the structure of the past continuous tense ("estaban viajando") and the appropriate preposition.

The teacher first decides to try the verb problem. He/she corrects this explicitly ("Estaban viajando") without giving any information about the preposition problem. The student answers correctly about the tense but makes a new error in the preposition ("*Estaban viajando **a** barco"). The teacher gives a "recast" ("Estaban viajando en barco") so to contrast the two utterances and the student notices the target form (en). Finally, the student answers correctly ("estaban viajando en barco"), and then the teacher accepts the student's answer and adds more information about the paragraph ("pero su mamá murió").

In this example (Table 3.26), it can be seen how the teacher makes different decisions to deal with the different errors as they appear. In the interaction, the teacher combines different feedback strategies so as to provide suitable support to the students. The teacher first tries a PAS strategy for the students to self-repair their errors. If a PAS feedback move is not enough for prompting or clarifying the students' errors, then a type of strategy such as "explicit correction" might be useful to move forward in the interaction and thus avoid interrupting the communication for a long period.

3.4 Conclusion

The findings of our study revealed the most frequent and effective types of corrective feedback in our Spanish classroom corpus. This aimed at providing guidance for designing feedback strategies in ITS for Spanish as a foreign language. Overall, our results showed some degree of systematicity in the use of certain types of feedback used by teachers for both correct and incorrect students' answers:

- The teachers tend to give positive acknowledgment rather than other strategies in the presence of a correct answer.
- When teachers use other positive feedback, repetition is the most frequent strategy used to confirm the student's answer in beginner and intermediate levels

TAG	ERROR	T	S	UTTERANCE
Diag-query		38	t	His mother died..dame la frase por favor Student7 ...Elián was travelling by ship and his mother died.. ¿cómo se dice en Español?
Incomplete	structure	39	s7	Su mamá..
Akn		40	t	mhm
Incomplete	structure	41	s6	murió...
Akn		42	t	mhm
PAS (elicitation)		42	t	en..
Incomplete	structure	43	S6	viaje
Akn		44	t	mhm
PAS (clarification)		44	t	¿Cuándo...?
Request-clarification		45	s6	¿Cuándo?
Ans		46	t	When?
Incomplete	structure	47	s6	..su barco..
Acc		48	t	Oh!!..ok..Student6
Minor-errors	tense	49	s7	Mientras su mamá viajando a barco
GAS (correction)		50	t	Estaban viajando
Minor-errors	prep	51	s7	Estaban viajando a barco
GAS (recast)		52	t	Estaban viajando en barco
Correct		53	s7	Estaban viajando en barco
Acc		54	t	aha
correct		55	s7	pero su mamá murió
Acc		56	t	Muy bien...muy bien Student7,
Repetition		56	t	su mamá murió

Table 3.26: Transcription from Class 4, Question 3

whereas rephrasing is slightly more frequent than repetition in advance level.

- The teachers tend to correct the vast majority of errors.

- There is a tendency that teachers use more GAS for all types of errors (pronunciation, grammar and vocabulary) even though the students repaired their errors (grammar and vocabulary) at a low rate.

- The PAS are more effective than GAS for repairing grammar and vocabulary errors.

- GAS is the only strategy used for pronunciation errors, and it is effective.

The preference for using GAS could be due to the fact that the teachers seem to be concerned about maintaining the flow of the conversation. They try to facilitate the students' error resolution either by providing them with the target forms or by repeating the errors. However, students do not always notice this type of assistance. They do not recognize it as the teacher correction because they assume that the teacher is responding to the content rather than to the form of their language.This may be due to the fact that the majority of the Spanish classrooms which we analyzed were focused on a communicative approach with emphasis on the meaning.

The low rate of effectiveness of uptakes after GAS in a grammar context can be due to the problems with the perception of recast. With regard to the results of Mackey et al.'s study (Mackey *et al.*, 1990) show that the use of recast to provide morpho-syntactic feedback may have been suboptimal, at least in terms of learners' perceptions about the feedback. Hence the morpho-syntactic feedback as a form of recast provides little opportunity for uptake. This is likely to be due to the fact that morpho-syntactic feedback was generally not perceived as being morpho-syntactic, which may also explain the lower rate of repair. In the same way, the complexity of the cognitive processes involved in accessing and applying grammar or vocabulary knowledge for self-repaired errors seems to be the reason to use more simple feedback strategies or to definitely resolve the gaps arising during the interaction by providing the target form.

The lack of opportunities for students answering after GAS is another issue that has to be taken into account. After these strategies, the teacher usually goes on with the next question, topic or another type of feedback (i.e., clarification, explanation) and does not wait for the confirmation or production of the student's answer. We believe

that the concept of "wait-time"[7] (i.e., the necessary length of time that a teacher will wait after asking a question before prompting, rephrasing or redirecting the question), is not only relevant for this situation but also for the student's uptake. It is possible that if the teacher waits after the corrective feedback provision, the student will notice the error and self-repair. We carried out an experimental study with a web-based tutorial interface aimed at getting more details about these issues in chapter 5.

Our results also show some similarities with Lyster's results (Lyster, 1998a) as regards the effectiveness of the feedback strategies on different types of errors. In our case, the majority of grammatical and vocabulary repairs were self-repaired following a PAS. In Lyster´s study, "the negotiation of form" (which included the repetition of error strategy) proved also to be more effective than recast at leading to immediate repair in the lexical and grammatical cases, whereas for pronunciation errors, the recast in Lyster's study was more effective than negotiation of form. Similarly, in our case, GAS was found to be the most frequent and effective strategy for dealing with this type of errors. These similarities make this type of empirical evidence more robust in terms of the effectiveness of some corrective feedback strategies in "prompting" grammar and vocabulary repairs and "giving" the target form in pronunciation errors.

Following Lyster's work (Lyster, 1998a), negotiation of form provides learners with timely opportunities to make important form-function links in the target language without interrupting the flow of communication. Accordingly, we believe that the strategies which are prompting the student's answer seem to be more suitable than GAS to encourage the students' answers. In addition, these types of strategies might be even more effective in a "focus on form" teaching context thus facilitating the dual treatment as proposed in this approach.

We have provided empirical evidence for providing corrective feedback in the context of the Spanish language. The results of our observational results suggest that for grammar and vocabulary errors an ITS for a foreign language should implement ways

[7]Rowe (Rowe, 1969) studied the "wait-time" with native English-speaking children studying science. She found that as teachers increased their wait-time, the quality and quantity of the students' answers increased. In the same way, Holley and King (Holley and King, 1974) asked teachers of German as L2 to wait five to ten seconds if a learner erred or hesitated in answering a question. They reported that in over 50 per cent of the cases no corrective efforts from the teacher were needed. The students themselves were able to respond correctly, given this brief additional pause (Allwright and Kathleen, 1991; Rowe, 1969; Holley and King, 1974; Fanselow, 1977).

to prompt students' answers using meta-linguistic cues, clarification-requests and elicitation. In general, the PAS strategies seem to promote more constructive student learning because it prompts the student to respond more constructively (Chi *et al.*, 2001). However, for pronunciation errors, the results suggest the use of GAS strategies with the purpose of providing to the student the target form, according to his/her error.

Chapter 4

Exploratory Case Study: Feedback Strategies in Tutorial Mode

As a result of our observational study of feedback strategies in Spanish classrooms, two interesting findings emerged. First, in their classrooms, the teachers use more GAS (Given-Answer Strategies) than PAS (Prompting-Answer Strategies) for correcting grammar, vocabulary and pronunciation errors. Second, PAS are more effective than GAS for repairing grammar and vocabulary errors, whereas GAS are more effective than PAS for repairing pronunciation errors. So, despite the fact that PAS is more effective than GAS for 2 of the 3 types of errors, teachers in classroom contexts use significantly more GAS than PAS for all errors types. In order to determine if this tendency is caused by the pressure of the classroom, we performed a second study, this time to assess frequency and effectiveness of GAS and PAS in tutorial mode.

In this chapter, we study feedback strategies in tutorial interaction by comparing tutoring sessions with classroom interactions. Our approach considers the use of empirical data on student-teacher interactions to guide the design of feedback strategies in the context of ITS for learning Spanish as L2. This study is further fuelled by the need for developers of ITS to know which tutoring heuristics and strategies to implement for treatment of feedback in L2 Spanish teaching. Thus, our general goal is to understand the similarities and differences among the strategies that teachers use in classroom interaction and in a tutorial mode. Indeed, this case study can enable us to understand

how our results about feedback and our studies (observational and experimental) can fit together.

In order to observe whether students have a greater opportunity to have their errors repaired in a tutoring situation, we compare the results from a corpus of tutorial interactions with the results obtained from our study of classroom interaction in terms of type, structure, frequency and effectiveness of feedback strategies.

Many previous empirical studies in ITS have used student-tutor interactions as models, especially in procedural domains. One-to-one human tutoring has been shown to be a very effective teaching mode, but there have been few attempts to examine the features of normal tutoring that might explain its advantage. Many researchers have argued that the tutorial mode facilitates better learning due to the presence of collaborative dialogue. Through this, the teacher can intervene both to detect errors and give feedback to students (Merrill *et al.*, 1992). Recently, Chi and colleagues (Chi *et al.*, 2001) have suggested that students have greater opportunities to be constructive in tutoring than in a traditional classrooms. It is possible that tutoring is effective because it affords opportunities for students to be more generative, that is to engage more actively in constructive learning, whereas in traditional classrooms in which there are 20 students, the learners have fewer opportunities to interact. Hence, tutoring may be effective precisely because its interactive nature affords greater opportunities for students to engage in more constructive activities, as compared to a classroom. In this regard, it is worth investigating whether it is possible to establish some underlying differences in the tutorial mode in terms of GAS and PAS, which can lead to improvement in the repair of the errors.

4.1 Method

The results of the observational study established that in the treatment of feedback in classroom interaction the teacher shows a degree of systematicity in the use of some types of feedback for correct and incorrect student answers:

- The teachers tend to give positive acknowledgment or acceptance rather than using other strategies in the correct answer context.

- When teachers use positive feedback, repetition is the most frequent used strategy to confirm the student's answer.
- The teachers tend to correct the vast majority of errors.
- There are more grammar errors at all learning levels (especially in beginner and intermediate) than pronunciation or vocabulary errors.
- There is a teacher tendency to use more giving-answer strategies (GAS) for all types of errors (pronunciation, grammar and vocabulary) even though the students repaired their errors (grammar and vocabulary) at a low rate.
- GAS are more effective than PAS for correcting pronunciation errors, whereas PAS are more effective than GAS for grammar and vocabulary errors.

Our general aim is to establish whether the teacher in a tutorial interaction uses the same types of feedback strategies as in classroom mode. We believe that in order to deal with feedback in ITS systems for foreign languages, it is crucial to gain more knowledge about the type, frequency and effectiveness of different corrective-feedback and positive feedback strategies in tutorial mode. For this end, we investigate feedback strategies in tutorial dialogues and compare them with classroom interaction, all of them provided by the same teacher. We address the following research questions based on the classroom and tutorial interaction database:

1. *Is "Repetition" the most frequent type of positive feedback used in tutorial mode as in classroom mode?*
2. *Have the distribution and frequency of GAS and PAS used in tutorial mode similar trends as in classroom interactions?*
3. *Has the effectiveness of PAS in tutorial mode similar trends as in the classroom for grammar and vocabulary errors?*
4. *Has the effectiveness of GAS in tutorial mode similar trends as in the classroom for pronunciation errors?*

For the purposes of our study, we collected a corpus of classroom and tutorial interactions. The corpus includes 5 transcriptions for Spanish as L2 in tutorial mode (private classes) and 5 transcriptions in classroom mode, the latter from the observational study. Both types of classrooms were provided by a Jamaican teacher, totalling approximately 3 hours (1:40 for tutorial, and 1:35 for classroom). Both groups of classes were from a Jamaican school at beginning level (grades 7 and 8). The students and the teacher have English as their native language.

Class	**Mode**	**Focus on**	**Duration**
Class 9	Classroom	Forms	20'
Class 10	Classroom	Meaning	15'
Class 11	Classroom	Meaning	20'
Class 16	Classroom	Forms	20'
Class 19	Classroom	Meaning	20'
Class 2	Tutorial	Forms	20'
Class 3	Tutorial	Meaning	20'
Class 4	Tutorial	Meaning	20'
Class 5	Tutorial	Forms	25'
Class 6	Tutorial	Meaning	15'

Table 4.1: Transcription Data

As in the observational study, we asked the teacher to record and send to us samples of their natural tutorial dialogues. We did not instruct the teacher to focus on any particular topic or error type, or suggest the types of feedback they should use in their classes. The classroom recordings fall into two broad categories: those that focus on **forms**, that is, lessons about different grammar topics (e.g., pronominalization, syntactic structures, possessives, passive verbs), and those that focus on **meaning**, that is, lessons about communicative aspects of cultural topics.

In order to determine when and how the language teacher provided feedback to the student, we used the same classification scheme as in the observational study for both student and teacher utterances.

4.2 Transcriptions and Data Processing in XML

The classroom recordings were transcribed by a native Spanish speaker, and annotated with the labels defined in the tutorial annotation scheme described above. We also used the annotation tool that inserts XML tags into the data files, so that they can then be processed using a variety of XML tools, including tools for querying and viewing the data. For this study, we focused on the labels in the observational study that shed most light on our research questions. In particular, we were interested in the following:

- Type and frequency of different correctness tags (correct, incorrect, minor-errors, incomplete, ansL1, etc).
- Type and frequency of grammar, vocabulary and pronunciation errors.
- Type and frequency of different types of feedback, (i.e., giving-answer strategies, prompting-answer strategies, repetition, rephrasing)
- Type and frequency of feedback after grammar, pronunciation and vocabulary errors.
- Type of student utterance 1, 2 and 3 turns after PAS, GAS and correct answer.

4.3 Analysis and Results

4.3.1 Positive feedback in tutorial mode

Using a similar approach as in the observational study for the treatment of positive feedback, we analyzed the type of feedback that teachers gave to students when they answered correctly. Here, we are interested in determining what the L2 teacher does after the student provides a correct answer, apart from providing positive acknowledgement or acceptance. The results in Table 4.2 show a total of 147 correct answers for tutorial mode. However, only 49 (33%) of them received a use of the repetition strategy, and 12 (8%) the rephrasing strategy. The rest of the correct answers received a simple positive acknowledgement 10 (7%), acceptance 34 (23%), no feedback (i.e.,

a change of topic, or a diagnostic-query in which the teacher continued with the next question) 42 (29%).

Feedback	**Tutorial**	**Classroom**
# Correct	147	141
Akn	10 (7%)	12 (8%)
Acc	34 (23%)	28 (20%)
Repetition	49 (33%)	19 (13%)
Rephrasing	12 (8%)	4 (3%)
Total	105 (71%)	63 (45%)

Table 4.2: Positive-Feedback distributed by Teaching Mode

Thus, we see that there are some differences between classroom and tutorial mode for positive feedback. The results for classroom mode show that, of a total of 141 correct answers only 19 (13%) of them received a **repetition** strategy and 4 (3%) a **rephrasing** strategy. The rest of the correct answers got a simple positive acknowledgement 12 (8%), acceptance 28 (20%) or not feedback 78 (55%) . In consequence, in classroom mode, the majority of correct answers (78 out of 141) were not followed by a positive feedback strategies.

Table 4.2 shows the total number of correct answers and the total of positive feedback by teaching mode. In tutorial mode, the results show that overall **repetition** is the most frequently used positive feedback strategy with 49 cases (33%), followed by **accept** with 34 cases (23%), and **Rephrasing** with 12 cases (8%). These findings suggest that, as in the observational study, there is a clear tendency for the teacher to repeat the student's correct answer in order to confirm the correctness of their answers in tutorial mode. In contrast, in classroom mode, the most frequent positive feedback strategy is **acceptance** with 28 cases (20%), followed by **repetition** with 19 cases (13%). **Rephrasing** is only used in 4 of the cases (6%).

4.3.2 Frequency of Corrective-Feedback in Tutorial Mode

With reference to the second research question, it is possible to establish a clear distribution and representation of the different types of corrective-feedback and errors for both teaching modes.

The results of tutorial mode data processing (Table 4.3) show a total of 137 errors, of which "pronunciation errors" are the most frequent type (69 (50%)), followed by 48 grammar errors (35%), and 20 vocabulary errors (15%). The results of classroom mode show a total of 60 errors, of which "grammar errors" are the most frequent type with 31 cases (52%), followed by pronunciation errors with 25 cases (42%), and vocabulary errors with 4 cases (6%).

Error	**Tutorial**	**Classroom**
Grammar	48 (35%)	31 (52%)
Vocabulary	20 (15%)	4 (6%)
Pronunciation	69 (50%)	25 (42%)
Total	137	60

Table 4.3: Errors Frequency by Teaching Mode

These results demonstrate two interesting differences in the total errors of the two teaching modes:

1. Tutorial mode presents a larger number of total errors than classroom mode (137 and 60, respectively). The reason why this may be the case is that, in tutorial mode (see Table 4.4), the student has more opportunity to interact with the teacher than in classroom mode (see Table 4.5 in which **# S** represents the number of students by class, $\overline{S-Moves}$ denotes the average number of moves by student ($\frac{S-moves}{\#S}$), and $\frac{T-moves}{(S-moves)}$ represents the relation between the teacher moves and the average student moves). The Tables 4.4 and 4.5 also show the average number of teacher moves (T-moves) over the student´s moves (S-moves). For tutorial mode, there was nearly a one-to-one relation between T-moves and S-moves (0.19%), meaning that the student and the teacher had the same opportunities to interact (i.e., one answer and one question on average). For classroom

mode, students had individually much less opportunities to respond, meaning that the teacher had more question turns on average (2.69%) with a larger classroom size (13 students on average).

Class	**Mode**	**T-Moves**	**S-Moves**	$\frac{T-moves}{S-moves}$
Class 2	Tutorial	99	91	1.09
Class 3	Tutorial	65	54	1.2
Class 4	Tutorial	80	71	1.13
Class 5	Tutorial	90	61	1.48
Class 6	Tutorial	67	34	1.97
Total		80.2	62	1.37 (0.19%)

Table 4.4: Tutorial Interaction

Class	**Mode**	**T-Moves**	**S-Moves**	**# S**	$\overline{S-Moves}$	$\frac{T-moves}{(S-moves)}$
Class 9	Classroom	77	62	15	4.13	18.63
Class 10	Classroom	30	43	12	3.58	8.37
Class 11	Classroom	54	42	13	3	16.71
Class 16	Classroom	64	48	13	3.69	17.33
Class 19	Classroom	63	62	12	5.17	12.19
Total		57.6	51	13	3.96	14.64 (2.69%)

Table 4.5: Classroom Interaction

2. Note from Table 4.3 that the relative frequencies of the different types of error in the two modes are similar. That is, for beginners, the most frequent errors are grammar and pronunciation errors. However, it is interesting to take into account that in tutorial mode the most frequent type of error is pronunciation with 69 cases (50%) whereas in classroom mode, grammar errors with 31 cases (52%) are the most frequent. One reason for this difference may be that students in tutorial mode interact more than the students in classroom mode and the teacher may have more time to devote attention to the student's pronunciation.

Now, turning our attention to corrective-feedback for tutorial mode, Table 4.6 shows a total of 128 corrective-feedback moves distributed as follows: 101 (78%) **GAS** and 27 (18%) **PAS**. As can be seen from the results of Tables 4.3 and 4.6, the difference between errors (137) and corrective-feedback (128) is 9 errors out of 137 (6%). This means that only 6% of student errors did not receive any type of corrective-feedback. In such cases, the errors were followed by a reject move, a follow-up, some other diagnostic-query, or a change of topic move. The most important point is that teachers, as in the observational study of classroom mode, gave some type of corrective feedback in response to the majority of student errors (94%). Consequently, in tutorial mode, irrespective of the type of error, corrective-feedback is frequently used by the teacher in our corpus.

Feedback	**Tutorial**	**Classroom**
GAS	101 (78%)	44 (80%)
PAS	27 (18%)	11 (20%)
Total	128	55

Table 4.6: Corrective-feedback Frequency by Teaching Mode

For classroom mode, Table 4.6 shows a total of 55 corrective-feedback moves distributed as follows: 44 **GAS** (80%) and 11 **PAS** (20%). In this case only 5 errors out of 60 (8%) student errors did not receive any type of corrective-feedback. Thus, as in tutorial mode, the vast majority of errors received some type of corrective-feedback. In consequence, these results indicate that corrective-feedback is a frequent move used by L2 teachers in order to correct errors in both classroom and tutorial interactions.

Tables 4.7 and 4.8 exhibit the distribution of each type of corrective-feedback according to the different types of errors. In both tutorial and classroom modes, the vast of majority of pronunciation errors received some type of GAS (93%) and (96%) respectively. The grammar and vocabulary errors received (50%) and (58%) of GAS, and (65%) and (50%), respectively.

An interesting aspect related to tutorial mode regards grammar errors. From Tables 4.7 and 4.8, we see that the teacher used a similar percentages of GAS and PAS

	GAS	
Error	**Tutorial**	**Classroom**
Gram	24/48 (50%)	18/31 (58%)
Voc	13/20 (65%)	2/4 (50%)
Pro	64/69 (93%)	24/25 (96%)
Total	101/137 (74%)	44/60 (73%)

Table 4.7: Rate of GAS per Error type (**Gram**mar, **Voc**abulary, **Pron**unciation)

for repairing these types of errors, 24 and 21 respectively. Thus, this teacher is indiscriminately using these strategies for dealing with grammar errors[1]. However, the results in Tables 4.7 and 4.8 indicate that in tutorial mode, the teacher is using more PAS to try to correct grammar errors than in classroom mode (and than in the observational study). So, there seems to be a tendency to use more PAS in tutorial mode for dealing with grammar errors. Although the results of the statistical analysis (see contingency Tables 4.9 and 4.10) show that in grammar errors the difference between the frequency of use of strategies, GAS and PAS, was not significant for either tutorial or classroom modes.

	PAS	
Error	**Tutorial**	**Classroom**
Gram	21/48 (44%)	9/31 (30%)
Voc	5/20 (25%)	2/4 (50%)
Pro	1/69(1%)	0/25 (0%)
Total	27/137 (18%)	11/60 (18%)

Table 4.8: Rate of PAS per Error type (**Gram**mar, **Voc**abulary, **Pron**unciation)

For vocabulary, the situation is different between the two teaching modes because of the relatively few errors found in classroom mode. Hence we were unable to compare the modes for this type of error. However, in tutorial mode, these errors re-

[1] We cannot currently tell what factors (if any) cause the teacher to pick one strategy over the other.

ceived more GAS (65%) than PAS (25%). The difference in frequency was significant ($\chi^2(1,18) = 3.55$, $p < 0.005$) for tutorial mode, but not significant for classroom mode.

Concerning pronunciation errors, the situation is similar for both teaching modes: the teacher used GAS in response to a vast majority of the errors (93% and 96%, respectively). It is worth observing (see Table 4.7) that there is only a slight difference between the total percentages of use of GAS in the two teaching modes (74% vs.73%). Similarly, in the PAS case (see Table 4.8), the results show the same frequency of use in the two teaching modes (18%). The frequency of use of GAS strategies was significant for both tutorial ($\chi^2(1,65) = 61.06$, $p < 0.0001$) and classroom modes ($\chi^2(1,24) = 24$, $p < 0.0001$). That means, GAS is definitely the most frequent strategy that teachers use to correct these types of errors.

According to the rate of corrective feedback per error type presented in contingency Tables 4.9 and 4.10, the results show that the interaction between feedback type and error type was significant for tutorial mode ($\chi^2(2,128) = 33.09$, $p < 0.0001$) and for classroom mode ($\chi^2(2,55) = 11.25$, $p < 0.003$), confirming that the type of error affected the choice of GAS vs. PAS.

The main effect of corrective-feedback was significant for both tutorial ($\chi^2(1,128) = 42.78$, $p < 0.0001$) and classroom modes ($\chi^2(1,55) = 19.8$, $p < 0.0001$), signalling that the teacher uses significatively more GAS than PAS in both teaching modes. The main effect of error types was also significant ($\chi^2(2,128) = 26.078$, $p < 0.0001$ and $\chi^2(2,55) = 17.055$, $p < 0.0001$, respectively), confirming the different distribution of the types of errors.

Strategy	**Gram**	**Voc**	**Pro**	Total
GAS	24	13	64	101
PAS	21	5	1	27
Total	45	18	65	128

Table 4.9: Contingency Table for Corrective Feedback Frequency by Error Type (**Gram**mar, **Voc**abulary, **Pron**unciation) in Tutorial Mode.

Strategy	**Gram**	**Voc**	**Pro**	Total
GAS	18	2	24	44
PAS	9	2	0	11
Total	27	4	24	55

Table 4.10: Contingency Table for Corrective Feedback Frequency by Error Type (**Gram**mar, **Voc**abulary, **Pron**unciation) in Classroom Mode.

4.3.3 Effective feedback strategies in tutorial mode

To determine the effectiveness of corrective feedback strategies in tutorial mode, we carried out an analysis similar to the one carried out in our observational study of classroom interactions. First, we are interested in establishing (as in the observational study) whether PAS is the most effective strategy for grammar and vocabulary errors. Secondly, we wanted to know whether the use of GAS is correlated with student learning gain in pronunciation errors.

In accordance with the methodological definition[2], to assess learning gain, we analyzed what happened in the student's next three turns after the teacher used a GAS or PAS. For this, we take into account the previously defined "repair of errors"[3] after GAS and PAS.

In Table 4.13, we show the number of each type of corrective feedback strategy and the number of repairs for each type broken down by type of error in Tutorial mode. Note that the percentages highlighted in column G-Repair are relative to GAS, and P-Repair are relative to PAS.

As one can see from Table 4.11, there were a total of 101 errors for which the teacher used GAS, of which 72 cases were repaired (72%). In contrast, there were a total of only 27 errors for which the teacher used PAS, of which 20 cases were repaired

[2]The relationship between the frequency of repairs and frequency of each type of corrective-feedback gives an indication of the immediate effectiveness of the feedback, at least in terms of what the student did or did not try to do with the feedback. In cases where the student's response to the feedback is a correct answer, this may indicate that the student has noticed the error and the correct answer may indicate "a step at least toward acquisition".

[3]By "repair of errors", we mean the correct reformulation of an error as uttered in a single student turn.

Error	GAS	G-Repair	PAS	P-Repair
Gram	24	13/24 (54%)	21	16/21 (76%)
Voc	13	3/13 (23%)	5	4/5 (80%)
Pro	64	56/64 (87%)	1	0/1 (0%)
Total	101	72/101 (72%)	27	20/27 (74%)

Table 4.11: Rate of GAS and PAS Repair in Tutorial Mode

(74%). These results show a similar effectiveness of GAS and PAS in tutorial mode. However, it is necessary to consider that the vast majority of GAS repaired errors are from pronunciation.

Note from Table 4.11 that vocabulary errors were most effectively repaired after PAS (80%) with grammar errors a close second (76%). For pronunciation errors, GAS got the total of repaired errors (87%). Consequently, two important findings emerge from this tutorial data. First, PAS are most effective than GAS for repairing vocabulary and grammar errors, and secondly GAS is almost the only strategy used for pronunciation errors (there is just 1 case of PAS), and it is effective.

For classroom mode, Table 4.12 illustrates the distribution of GAS and PAS for each type of error. In this case, grammar errors 12 cases (67%) were least likely to be repaired of this group of GAS strategies, and vocabulary got the highest repaired errors (100%) followed by pronunciation (83%).

Error	GAS	G-Repair	PAS	P-Repair
Gram	18	12/18 (67%)	9	8/9 (89%)
Voc	2	2/2 (100%)	2	2/2 (100%)
Pro	24	20/24 (83%)	0	0
Total	44	34/44 (77%)	11	10/11 (91%)

Table 4.12: Rate of GAS and PAS Repair in Classroom Mode

For PAS, it can be seen that a significant number of grammar errors were repaired by these strategies (89%). PAS are more effective than GAS when we consider the

total of the repaired errors in classroom mode (91% v.77%).

Next, we will compare, in more detail, the results between GAS and PAS for each type of error and teaching mode.

Grammar Errors and Corrective-Feedback

As can be seen from Table 4.13, regardless of teaching mode, the G-Repair is less effective than P-Repair. In tutorial mode, of the 24 GAS that the teacher used, 13 cases were effective (54%), with the students producing a correction of the error. In contrast, of 21 PAS given by the teacher, 16 cases were effective (76%) and the students correctly modified their answers.

Mode	Error	GAS	G-Repair	PAS	P-Repair
Tutorial	48	24 (50%)	13/24 (54%)	21 (43%)	16/21 (76%)
Classroom	31	18 (58%)	12/18 (67%)	9 (29%)	8/9 (89%)

Table 4.13: Grammar Errors Repaired by GAS and PAS in both Teaching Modes

In tutorial mode, the results about the frequency of corrective-feedback strategies indicated that of the 48 grammar errors, teachers used GAS in 24 of the cases (50%), PAS in 21 of the cases (44%), and no feedback in only 3 of cases (6%). When no feedback was given, the teacher provided acknowledgement or moved on to the next question or topic.

On the other hand, in classroom mode, of the 18 GAS that the teacher used 12 cases were effective (67%), leading the students to produce a correction of the error. Of 9 PAS given by the teacher 8 cases were effective (89%). Thus, the results suggest the tendency that, in both teaching modes, even though the teacher uses GAS more frequently than PAS for the treatment of grammar errors, when we examine the relationships among repair and corrective-feedback, it seem to be that PAS is more effective for the treatment of grammar errors.

Vocabulary Errors and Corrective-Feedback

As for vocabulary errors, Table 4.14 indicates that for tutorial mode of a total of 20 errors, 13 (65%) evoke GAS, 5 (25%) PAS. Of the 13 GAS that the teacher used just 3 (23%) were effective in getting the student to produce a correction of the error. On the other hand, of 5 PAS given by the teacher for pushing students to correct the errors, 4 (80%) were effective, and the students correctly modified their answers. These results suggest that PAS are more effective than GAS for repairing vocabulary errors.

In classroom mode, the situation for treatment of vocabulary errors is less clear. Out of a total of 4 errors, 2 evoke GAS, 2 PAS. The total number in each group is not representative, and we do not consider it appropriate to compare the effectiveness of these strategies.

Level	Error	GAS	GAS-Repair	PAS	PAS-Repair
Tutorial	20	13/20(65%)	3/13 (23%)	5/20 (25%)	4/5(80%)
Classroom	4	2/4 (50%)	2/2 (100%)	2 (50%)	2/2 (100%)

Table 4.14: Vocabulary Errors Repaired by GAS and PAS in both Teaching Modes

Pronunciation Errors and Corrective-Feedback

Table 4.15 gives the distribution of corrective-feedback and its repair for pronunciation errors in the two teaching modes. We can see that in tutorial mode of the 69 pronunciation errors: 64 (93%) received GAS by the teacher and of these 56 (87%) were repaired by the student; only 1 received PAS by the teacher and it was not repaired by the student.

Mode	Error	GAS	G-Repair	PAS	P-Repair
Tutorial	69	64/69 (93%)	56/64 (87%)	1 (1%)	0/1
Classroom	25	24/25 (96%)	20/24 (83%)	0	0

Table 4.15: Pronunciation Errors Repaired by GAS and PAS in both Teaching Modes

In classroom mode, the majority of pronunciation errors 24/25 (96%) were corrected and repaired 20/24 (83%) by GAS strategies. It seems to be clear that for both

teaching modes the most frequent strategies of feedback are GAS. In fact, PAS strategies are so infrequent that we cannot gauge the effectiveness of PAS vs. GAS.

Overall Analysis of Repairs

A statistical analysis considering the number of repaired errors (repair="yes") and not repaired (repair="no") of GAS and PAS for each type of modes showed that the repaired errors were not significant in both teaching modes (Table 4.16).

Tutorial	Repair		
Feedback	Yes	No	Total
GAS	72	29	101
PAS	20	7	27
Total	92	36	128

Classroom	Repair		
Feedback	Yes	No	Total
GAS	34	10	44
PAS	10	1	11
Total	44	11	55

Table 4.16: Contingency Tables for Repaired and Not-Repaired Errors in Teaching Modes

In tutorial mode, Table 4.17 shows the repair of vocabulary errors was significant ($\chi^2(1,18) = 4.923$, $p < 0.02$), that is, PAS was more effective than GAS (23%) for dealing with vocabulary errors. For pronunciation errors ($\chi^2(1,65) = 6.319$, $p < 0.01$) GAS was the most used and effective strategy. In the grammar case, the results were not significant (Table 4.18).

Vocabulary	Repair		
Feedback	Yes	No	Total
GAS	3	10	13
PAS	4	1	5
Total	7	11	18

Pronunciation	Repair		
Feedback	Yes	No	Total
GAS	56	8	64
PAS	0	1	1
Total	56	9	65

Table 4.17: Contingency Tables for Repaired and Not-Repaired Errors in Vocabulary and Pronunciation Errors

Grammar	Repair		
Feedback	Yes	No	Total
GAS	13	11	24
PAS	16	5	21
Total	29	16	45

Table 4.18: Contingency Tables for Repaired and Not-Repaired Errors in Grammar Errors

In classroom mode, the repair of grammar and vocabulary was not significant (see Table 4.19). In contrast, for pronunciation, the errors were significantly repaired by GAS ($\chi^2(1,24) = 10.667$, $p < 0.0001$)(see Table 4.20).

Grammar	Repair		
Feedback	Yes	No	Total
GAS	12	6	18
PAS	8	1	9
Total	20	7	27

Vocabulary	Repair		
Feedback	Yes	No	Total
GAS	2	0	2
PAS	2	0	2
Total	4	0	4

Table 4.19: Contingency Tables for Repaired and Not-Repaired Errors in Grammar and Vocabulary Errors

Pronunciation	Repair		
Feedback	Yes	No	Total
GAS	20	4	24
PAS	0	0	0
Total	20	4	24

Table 4.20: Contingency Table for Repaired and Not-Repaired Errors in Pronunciation Errors

Overall, these results show that PAS were more effective than GAS (in producing

repairs) for vocabulary, whereas GAS was used exclusively for pronunciation errors.

To translate this into a useful notion of effectiveness, as in the observational study, we are assuming that:

- Repairs are a good measure of learning, at least when they come after immediate corrective feedback.
- All errors are equally appropriate to repair.
- The errors that evoked PAS are different from those that evoked GAS. Teachers typically use GAS for pronunciation errors, but use GAS or PAS equally for grammar and vocabulary errors.

The main results of this section considering the previous analyzes can be summarized in Table 4.21.

	Gram.		**Vocab.**		**Pronun.**	
Strategy	Tut	Cla	Tut	Cla	Tut	Cla
GAS	24	18	13	2	64	24
G-Repair	13	12	3	2	56	20
PAS	21	9	5	2	1	0
P-Repair	16	8	4	2	0	0

Table 4.21: Frequency and Repair of GAS and PAS in both teaching modes (**Tut**orial, **Cla**ssroom) for Grammar, Vocabulary and Pronunciation Errors

4.4 Frequency and Repair of Individual Strategies in GAS and PAS

In this section, we present a more detailed analysis about each of the types of corrective-feedback that make up GAS and PAS. Our idea is to find out about the distribution, frequency, effectiveness and structure of the individual strategies. Overall, due to the

small number of data, we only suggest some tendencies from our analysis. Note also that these tendencies will be based in the analysis of the most effective strategies only considering frequencies bigger than 2.

Grammar Errors in Tutorial and Classroom Modes

We will start our analysis with the group of GAS in the context of grammar errors. Table 4.22 shows the distribution of each type of strategy by teaching mode. According to the total results of **tutorial mode**, the most frequent strategies of GAS are **correction** and **recast** with a total of 10 (43%) in each one. Thus, it seems to be that in tutorial mode the teacher used them equally for correcting grammar errors. On the other hand, in classroom mode, the most frequent strategy is **recast** with a total of 10 (55%) followed by **correction** with a total of 6 (33%).

	Tutorial		**Classroom**	
Strategy	Freq	Repair	Freq	Repair
Repetition	0	0	1 (6%)	1 (100%)
Recast	10 (42%)	3 (30%)	10 (55%)	6 (60%)
Given	4 (16%)	3 (75%)	1 (6%)	1 (100%)
Correction	10 (42%)	7 (70%)	6 (33%)	4 (67%)
Total	24	13 (54%)	18	12 (67%)

Table 4.22: GAS **Freq**uency and Repair by Teaching Modes (Grammar Errors)

Regarding the repair of each strategy, Table 4.22 shows that in tutorial mode, **correction** led to more grammar error repair than **recast** (total of 70% vs.30%). The most effective strategy for this teaching mode is **given** with a total of 75% grammar errors repaired. In classroom mode, **correction** got 4/6 (67%) repaired grammars errors followed by **recast** 6/10 (60%).

As one can see from Table 4.22 for grammar errors, the tendency is that the least effective GAS strategy is **recast** in both teaching modes. This only got 3/10 (30%) and 6/10 (60%) of repaired errors leaving 6 (70%) and 4 (40%) without repair. This result is similar to Lyster's (1998a) study where the recast strategy is also the least effective strategy for the treatment of grammar errors. This may be due to students not noticing

the target form provided by the teacher's feedback.

With respect to the PAS group, Table 4.23 demonstrates that for tutorial mode the most frequently used strategy is **elicitation** with 11 (52%), followed by **meta-linguistic cues** with 6 (28%). These results suggest that the teacher is pushing the correction of language errors by the student through elicitation and meta-linguistic cues. As for classroom mode, **meta-linguistic cues** and **elicitation** are the most frequent strategies with a total of 4 (44%) in each case.

	Tutorial		**Classroom**	
Strategy	Freq	Repair	Freq	Repair
Metalinguistic	6 (28%)	3 (43%)	4 (44%)	4 (100%)
Elicitation	11 (48%)	8 (73%)	4 (44%)	3 (75%)
Cla-requests	4 (19%)	4 (100%)	1 (11%)	1 (100%)
Total	21	16 (69%)	9	8 (89%)

Table 4.23: PAS **Freq**uency and Repair by Teaching Modes (Grammar Errors)

Concerning repair, the most effective strategies in tutorial mode are **clarification requests** (100%) and **elicitation** (73%). Whereas, in classroom mode, the most effective strategies are **meta-linguistic cues** (100%) and **elicitation** (75%).

In brief, it can be concluded that a majority of the use of strategies in the PAS group led to repairs where the students corrected their grammar errors.

Vocabulary Errors in Tutorial and Classroom modes

Concerning vocabulary errors, the distribution of strategies involved in the GAS group for each type of teaching mode is presented in Table 4.24. In tutorial mode, the majority of this type of error received GAS 13 (72%). The most frequent strategy was **correction** with a total of 7 (54%), from which 3 (43%) were repaired. In classroom mode, of a total 4 vocabulary errors, 2 were corrected by the **correction** strategy.

Strategy	Tutorial		Classroom	
	Freq	Repair	Freq	Repair
Repetition	0	0	0	0
Recast	3 (23%)	0	0	0
Given	3 (23%)	0	0	0
Correction	7 (54%)	3 (43%)	2 (100%)	2 (100%)
Total	13	3 (23%)	2	2 (100%)

Table 4.24: GAS **Freq**uency and Repair by Teaching Modes (Vocabulary Errors)

Strategy	Tutorial		Classroom	
	Freq	Repair	Freq	Repair
Meta-linguistic	2 (40%)	2 (100%)	0	0
Elicitation	2 (40%)	1 (50%)	1 (50%)	1 (100%)
Cla-requests	1 (20%)	1 (100%)	1 (50%)	1 (100%)
Total	5	4 (80%)	2	2 (100%)

Table 4.25: PAS **Freq**uency and Repair by Teaching Mode (Vocabulary Errors)

With respect to the PAS group, Table 4.25 shows that in both teaching modes the strategies are distributed in a similar proportion. Nevertheless, the sample size is too small to make any claims.

Pronunciation Errors in Tutorial and Classroom modes

With regard to pronunciation errors, we only discuss the distribution, frequency and effectiveness of the strategies involved with the GAS group for the two teaching modes. This is due to the large number of pronunciation errors which received these types of strategies. Table 4.26 demonstrates that, in both teaching modes, the most frequently used strategy was **correction** with a total of 48/64 (75%) and 19/24 (79%), respectively.

The strategies led to repairs in the majority of cases in both teaching modes: 56/64

	Tutorial		Classroom	
Strategy	Freq	Repair	Freq	Repair
Repetition	0	0	0	0
Recast	1 (1%)	1 (100%)	3 (12%)	3 (100%)
Given	15 (23%)	14 (93%)	2 (8%)	2 (100%)
Correction	48 (75%)	41 (85%)	19 (79%)	15 (79%)
Total	64	56 (87%)	24	20 (83%)

Table 4.26: GAS **Freq**uency and Repair by Teaching Modes (Pronunciation Errors)

(87%) in tutorial mode and 20/24 (83%) classroom mode. Table 4.26 illustrates that for tutorial mode, **correction** obtained 41/48 (85%) errors repaired and **given** yielded 14/15 (93%). Likewise, in classroom mode, **correction** yielded 15/19 (79%) pronunciation errors repaired. This means, the vast majority of pronunciation errors were repaired by **correction** and **given** strategies.

4.5 Ineffectiveness in GAS and PAS

The relationship between the frequency of repairs and frequency of each type of corrective-feedback gives an indication of the immediate effectiveness of the feedback, at least in terms of what the student did or did not try to do with the feedback. In cases where the student's response to the feedback is a correct answer, this may indicate that the student has noticed the error and the correct answer may indicate "a step at least toward acquisition" (Lightbown, 1998). However, some of the evidence found in our studies (case study and observational) shows that the student either did not always notice the target form provided by the teacher's feedback, in the case of the GAS group, or did not have the knowledge that the teacher was pushing for, in the PAS group.

Indeed, as previously discussed (see chapter 2), the effectiveness of corrective feedback depends on the particular aspects of language being corrected as well as the conditions relating to the provision of teacher correction. Some important conditions which we investigated in our corpus were:

- The lack of opportunities for students'answering after giving-answers strategies. After using these strategies, the teacher goes on to the next question, topic or another type of feedback (clarification, explanation) and does not wait for confirmation or production of the student's answer. Here the concept of "wait-time" (Rowe, 1969) is relevant, that is, the necessary length of time that a teacher will wait after asking a question of a learner, before prompting, rephrasing or redirecting the question. We believe that this concept is important not only for that situation but also for the student's repair. We believe that it is possible that if the teacher waits after providing corrective feedback, the student may reply and provide self-repair.

- The ability of learners to notice a gap between what they want to say and what they can say, leading them to differentiate what they do not know from what they know only partially–the noticing function (Schmidt and Frota, 1986; Swain, 1985). However, GAS or PAS assistance does not always trigger the students to notice their error. Students may not recognize the teacher correction, because they assume that the teacher is responding to the content rather than to the form of their language. This may be due to the fact that the majority of interactions in our corpus were focused on a communicative approach, with emphasis on meaning.

4.5.1 Lack of opportunity for students' answering after feedback

In order to get a clear idea about what happened with the ineffective GAS and PAS feedback, we investigated all GAS and PAS turns which did not lead to repairs in our corpus. One explanation of the failures can be drawn from (Chi *et al.*, 2001) interaction hypothesis (I-hypothesis). The I-hypothesis essentially states that the effectiveness of tutoring arises from the close interaction of the student and tutor. We define "interactive" (`Int`) feedback to be those types of feedback that obtained a response from the student, and "Non-interactive" (`Non-Int`) feedback as cases in which the tutor gives feedback followed immediately by another question, or topic or another feedback (explanation, clarification) without interjecting a comprehension-gauging guidance move.

This teacher's behavior can be explained in some cases due to the fact that she/he priories the flow of conversation and he/she do not want to interrupt the communication.

Tutorial	GAS	Int	Non-Int	PAS	Int	Non-int
Gram	24	16 (67%)	8 (33%)	21	21 (100%)	0
Voc	13	3 (23%)	10 (77%)	5	5 (100%)	0
Pro	64	62 (97%)	2 (3%)	1	1 (100%)	0
Total	101	81 (80%)	20 (20%)	27	27 (100%)	0

Table 4.27: Interaction in Tutorial Mode

Table 4.27 shows the percentages and total of the feedback moves in which the teacher did not give the students the opportunity to repair his/her error (Non-Int). We can see that of a total of 27 PAS all were interactive, that means, all PAS got a student answer.

On the other hand, of a total of 101 GAS, 20 (20%) were followed by a non-interactive turn. In other words, in 20 out of 101 GAS, the student did not produce any type of response. In these cases, after the GAS, the teacher usually follows immediately with either the next question, an accept turn, a domain turn, an explanation, or a clarification about the error (we checked it with the tape recorder). This can be observed in the examples in tables 4.28, 4.29, 4.31, and 4.32.

The first example (table 4.28) shows that after the GAS (recast), the teacher follows immediately with another question (followup), which is answered by the student (`ans`) correctly.

The example in table 4.29 shows that the student answers incorrectly (Te), the teacher gives a correction strategy (se), and then the teacher follows with accept and domain moves. This means that the teacher does not give the student the opportunity to repair the error. He/she continues with a long explanation about the Spanish reflexive pronoun (domain).

Table 4.30 shows that in classroom mode, in only two cases of GAS (5%) did the teacher does not give the student the opportunity to answer. As a consequence, for this type of problem associated with non-interactive feedback, for the GAS group,

TAG	ERROR	T	S	UTTERANCE
Followup		34	t	¿Dónde?
Minor-errors	prep	35	s	**a** su oficina
GAS (recast)		36	t	**en** su oficina
Followup		37	t	¿en un negocio?
Ans		38	s	Sí, señorita..
Followup		39	t	¿Qué tipo de negocio?

Table 4.28: Transcription from Class 6, Question 9

TAG	ERROR	T	S	UTTERANCE
Diag-query		39	t	Which reflexive pronoun goes with "usted"..?
Incorrect	pro	40	s	Te
GAS (Correction)		41	t	Se..
Acc		42	t	right..
Domain		42	t	the reflexive pronoun in a ...

Table 4.29: Transcription from Class 2, Question 5

classroom mode yielded better results than for tutorial mode. As for PAS, the situation is similar to tutorial mode. That is, there are no cases in which PAS is non-interactive.

Classroom	GAS	Int	Non-Int	PAS	Int	Non-Int
Gram	18	17 (95%)	1 (5%)	9	9 (100%)	0
Voc	2	2 (100%)	0	2	2 (100%)	0
Pro	24	23 (96%)	1 (4%)	0	0	0
Total	44	42 (95%)	2 (5%)	11	11 (100%)	0

Table 4.30: Interaction in Classroom Mode

The examples concerning non-interactive GAS are described as follows: For the first example (table 4.31), the student answers incorrectly because it is necessary to use the conjunction "o" (or) between the two utterances ("la pulsera es mía" .... "es mía"). The teacher gives a recast with the target form "o" between the two utterances.

However, immediately after the recast, the teacher gives an acceptance and goes on with the next question (How do you say guitar...) without giving the student time to modify his/her answer.

TAG	ERROR	T	S	UTTERANCE
Diag-query		119	t	How do you say the bracelet belongs to me or it is mine.. How do you say that?
Minor-errors	structure	120	s	la pulsera es mía ..es mía
GAS (recast)		121	t	la pulsera es mía **O** es mía
Acc		122	t	good
Diag-query		123	t	How do you say the guitar belongs to me....

Table 4.31: Transcription from Class 9, Question 14

In the second example (4.32), the GAS is a correction of the student's pronunciation error ("barro"). In this case, the correction (el baño) is followed by a diagnostic-query (Who does not like the home?):

TAG	ERROR	T	S	UTTERANCE
Diag-query		103	t	Which room is small?
Incorrect	pword	104	s	barro
GAS		105	t	el baño
Diag-query		106	t	Who does not like the home?

Table 4.32: Transcription from Class 16, Question 17

In brief, our analysis concerning interactive vs. non-interactive corrective feedback provided two interesting findings:

1. The PAS group is more interactive than the GAS group in both teaching modes.

2. The GAS group was more interactive in classroom mode than in tutorial mode (95% vs. 80%).

4.5.2 Problems with the Student Answering Correctly after a Feedback Strategy

We also investigated what happened with the rest of ineffective GAS and PAS strategies. For this, we paid attention to all the turns of GAS and PAS in our corpus, which did not elicit repairs even though they were interactive. From the perspective of the students, Chi and colleagues (2001) proposed that the interactive nature of students' responses need to be differentiated from students' constructive responses in order to tease apart the independent contributions of being constructive from being interactive. They differentiated between responses that make a substantive contribution with respect to the content versus those that do not.

In general, we can note that in both modes, there were a number of cases in which the student did not answer correctly after a feedback strategy and their answer did not constitute a substantive contribution with respect to the given feedback. This may be due either to the fact that they did not know how to correct the error (PAS), or they did not always notice the teacher's assistance (GAS). We considered both of these as an interactive but non-constructive type of exchange. That is, a student can be responsive in the sense of giving an answer and yet be non-constructive in terms of the correctness of the answer.

Tutorial	GAS	G-Repair	No G-Repair	PAS	P-Repair	No P-Repair
Gram	24	13	3/24 (13%)	21	16	5/16 (24%)
Voc	13	3	0	5	4	1/5 (20%)
Pro	64	56	6/64 (9%)	1	0	1 (100%)
Total	101	72	9 (9%)	27	20	7 (26%)

Table 4.33: Unrepaired Errors in Tutorial Mode

As can be seen from Table 4.33, in tutorial mode, of a total of 101 GAS, 9 (9%) were not repaired by the student either because he/she did not notice the target form provided by the teacher through GAS or because he/she could not reply correctly. In the example from table 4.34, it is possible that the student can not answer with the appropriate conjugation of the verb "desayunarse". First, the teacher gives the

student the correct answer ("desayúnese") but the student can not reply correctly due to problems with accentuation. The teacher again provides the student with the target form ("desayúnense") so as to correct the student's answer but the student does not seem to notice that he/she can not repeat the word properly ("desayunénse"). Finally, the teacher gives a new correction by clearly showing the student the location of the accent problem ("desa...yú.. nate...desayúnate"). As this happens, the student seems to realize the problem and therefore he/she replies correctly ("desayúnate").

TAG	ERROR	T	S	UTTERANCE
Diag-query		66	t	Desayunarse
Minor-errors	conjugation	67	s	Desayunarse
Minor-errors	conjugation	68	s	Desayunarse
GAS		69	t	Desayúnese
Minor-errors	accent	70	s	Desa..yunénse
Acc		71	t	Mmhm...
Action-directive		71	t	continúe..
GAS		72	t	Desayúnense
Minor-errors	accent	73	s	Desayunénse
GAS		74	t	Desa...yú.. nate...desayúnate
Correct		75	s	Desayúnate
Acc		76	t	Good..

Table 4.34: Transcription from Class 2, Question 9

With respect to the PAS group, Table 4.33 shows that 7 out of 27 (13%) PAS were not repaired by the student. In this case, the problem seems to arise because the student does not know the answer to the question. This situation can be observed in the example from table 4.35: the student answers incorrectly (es), the teacher rejects his/her answer and gives meta-linguistic cues to prompt the correct answer. However, the student does not seem to know the past tense and so makes the same error (es). Finally, the teacher uses a correction strategy and continues with the next question.

For classroom mode, Table 4.27 shows that in 8 instances following GAS (18%), the students were unable to repair their errors. This can be due to the fact that they did

TAG	ERROR	T	S	UTTERANCE
Diag-query		81	t	¿Qué día de la semana fue el cinco de marzo?
Incomplete	tense	82	s	Es..
Reject		83	t	mm..
PAS		83	t	this is a past tense..
Incorrect	tense	84	s	Es..
Reject		85	t	mm ....
GAS		85	t	**fue** ...mira el ejercicio.. **fue** el cinco de marzo
Diag-query		8	t	what day of the week?

Table 4.35: Transcription from Class 4, Question 1

not notice the target form provided by the teacher through GAS or that they could not reply correctly.

Classroom	GAS	G-Repair	No Repair	PAS	P-Repair	No Repair
Gram	18	12	5/18 (28%)	9	8	0
Voc	2	2	0	2	2	0
Pro	24	20	3/24 (12%)	0	0	0
Total	44	34	8/44 (18%)	11	10	0

Table 4.36: Unrepaired Errors in Classroom Mode

An example of "not-noticing" of GAS in classroom mode is shown in table 4.37.

In this example, the student makes an error in relation to a determiner ("¿de quién es **la** fotografía?"). The teacher gives a recast in which the target form ("¿de quién es **esa** fotografía?") is provided. However, the student does not notice it and makes the same error in the next answer ("¿de quién es la fotografía?"). Furthermore, the teacher not only gives a recast ("o ¿de quién es esta fotografía?"), but also repeats it ("¿de quién es esta fotografía?") and asks the student to reply with the correct form. Next, the student seems to note the determiner (*esta*) but he/she makes another error

TAG	ERROR	T	S	UTTERANCE
Diag-query		9	t	Suppose..If something belong somebody what do you say in Spanish?
Incomplete	structure	10	s2	De quién
Action-directive		11	t	De nuevo
Incomplete	structure	12	s2	De quién es
GAS		13	t	Esa cosa
GAS		14	t	Esa fotografía
GAS		15	t	O ¿de quién es esta fotografía?
Action-directive		16	t	Repita, por favor,
Minor-errors	det	17	s2	¿De quién es la fotografía?
GAS		18	t	¿de quién es esa fotografía?
Minor-errors	det	19	s1	¿De quién es la fotografía?
GAS		20	t	O ¿de quién es esta fotografía?
Akn		21	t	Right
GAS		22	t	¿De quién es esta fotografía?
Action-directive		23	t	Repite, por favor,
Minor-errors	det	24	s1	¿De quién es esta la fotografía?
GAS		25	t	Esta fotografía ...
Clarification		26	t	you do not use esta and la together.. esta fotografía
Correct		26	s2	¿De quién es esta fotografía?
Acc		27	t	Good

Table 4.37: Transcription from Class 9, Question 1

by putting together two determiners ("esta" and "la"). Finally, the teacher provides a correction strategy ("esta fotografía") and then a clarification ("you do not use esta and la together"). As a result, the student understands the problem and repairs the error by producing the correct form ("¿de quién es esta fotografía?"). This example clearly reflects the GAS problem regarding the noticing function. The student was able to recognize the error in his/her utterance and reply correctly, only after several GAS and

one clarification.

As before, we can conclude that problems associated with the noticing of target form or with the students' inability to respond correctly after GAS feedback are more likely in classroom mode (18%) than in tutorial mode (9%). As regards PAS, there were 7 cases of unrepaired errors (26%) in tutorial mode. It can be due to the use of meta-linguistic cues which included grammatical information unknown by the student (as in example 4.35). In contrast, there are no cases in which errors go unrepaired in classroom mode (Table 4.36).

4.6 Conclusions

Our study was aimed at determining whether tutorial mode yielded the same frequency, distribution and effectiveness of feedback strategies as classroom mode (and the observational study). Our overall goal is to take these results into account as guidance for dealing with feedback in the design of ITS for Spanish as foreign language. Our results (as in the observational study) showed some degree of systematicity in the use of some types of feedback in response to both correct and incorrect student answers:

- Regarding repetition and rephrasing strategies in positive feedback, the results show that in both teaching modes repetition feedback is more frequently used than rephrasing in both teaching modes. This finding suggests that there is a clear tendency of teachers to repeat the student's correct answer so as to confirm the correctness of students' answers.

- With reference to total errors, the results showed two interesting differences in tutorial mode. First, this mode presented a larger number of total errors than classroom mode. This reflects the fact that the student has more opportunity for interaction than in classroom mode (in which the average number of students for each class is about 15 students). Secondly, the most frequent type of error in tutorial mode is pronunciation, whereas in classroom mode it is grammar. This may be explained by the fact that the student in tutorial mode interacts more than the student in classroom mode, and thus the teacher seems to have more time to pay attention to the student's pronunciation.

- Related to the total number of corrective-feedback moves, in both teaching modes (as well as the observational study) irrespective of the type of error, corrective-feedback is frequently used by the teacher in our corpus. In consequence, the vast majority of errors received some type of corrective-feedback by the teacher.

- With respect to grammar errors, it is interesting to note that in tutorial mode the teacher used a similar proportion of GAS and PAS to help students correct their errors. In consequence, there seems to be a greater tendency to use more PAS in tutorial than classroom mode for dealing with grammar errors.

- There are no differences between the total frequency of use of GAS in the two teaching modes. In general, this result indicates that these types of strategies are the most frequently used by teachers to repair language errors. However this does not mean, as seen before in the observational study, that they are the most effective.

- For the treatment of grammar errors, there seems to be a tendency that PAS strategies are more effective than GAS in tutorial mode (69% vs. 56%), and in classroom mode (76% vs. 54%). Although, it not appears supported statistically due to small corpora size.

- For vocabulary errors, the results indicate that in tutorial mode, GAS are more frequent than PAS. However, PAS seem to be more effective than GAS for repairing these errors.

- The vast majority of pronunciation errors are corrected by the teacher and repaired by the student through GAS strategies. This means that for both teaching modes, GAS are the most frequent and effective strategies for this type of error.

- The analysis concerning interactive vs. non-interactive feedback strategies provides an interesting findings: the PAS group is more interactive than the GAS group in both teaching modes.

- Regarding the type of problems associated with the noticing of target form or with the impossibility of the student to reply correctly, classroom mode (18%)

showed a larger number of GAS cases than tutorial mode (9%). However, as regards PAS, there were 26% of unrepaired errors in tutorial mode. It can be due to the use of meta-linguistic cues which included grammatical information unknown by the student. In contrast, there are no cases in which errors go unrepaired in classroom mode.

In summary, with regard to our general claim about the similarities and differences of the strategies used by the teacher in tutorial interaction, we did not observe differences in the frequency or effectiveness of GAS and PAS used in tutorial mode as compared to classroom mode. However, we observed that the students had greater opportunities to have their errors corrected and repaired in a tutoring situation.

Chapter 5

Experimental Study

The results of our observational and tutorial studies suggest that for grammar and vocabulary errors, an ITS for a foreign language should implement ways to prompt students' answers using meta-linguistic cues, elicitation and clarification-requests. There is a tendency for PAS feedback to be more effective than GAS for dealing with grammar errors. Indeed, the prompting strategies seem to promote more constructive student learning in a tutorial context (Chi *et al.*, 2001) because they encourage the student to respond more constructively than when the teacher gives a simple repetition of the answer or a correction of the error.

In order to determine whether this tendency can be experimentally demonstrated, we carried out a longitudinal experiment on grammar teaching. We operationalized feedback strategies in the context of Focus on Form teaching approach so as to observe the results in learning gain after a treatment process. We used an approach for gathering empirical data on students interactions with a web-based interface, in order to guide the design of feedback strategies in the context of ITS for learning Spanish as a Foreign Language (FL).

To design the materials and procedures for this experimental study, we carried out a review of typical pedagogical books used for intermediate and advanced levels, and also looked at several webpages related to teaching Spanish as a FL. Furthermore, we participated in and observed several classes at an advanced level Spanish, and we talked with the teachers who instructed the participants in our experiment, so as to gain a clearer understanding of the general characteristics of their teaching approach. We

realized that the advanced course was focused on a communicative approach with emphasis on meaning. Teachers did not usually instruct directly about grammar aspects such as the subjunctive mood. In contrast, the high-intermediate course involved a curriculum that included a balance of form- and meaning-focused instructional techniques and activities.

In accordance to Focus on Form teaching approach, we asked the teachers to suggest a grammar topic suitable to their students' grammar needs. They suggested the subjunctive mood and hence we selected some aspects of the subjunctive mood of Spanish as features to be learned or improved through the treatment process. Research from the SLA literature suggests that the majority of students could potentially benefit from a push to target accuracy and the development of a task in the context of a "focus on form" approach by being provided with a natural context for the use of the form (Doughty and Varela, 1998).

We developed a teaching component concerning aspects of the subjunctive mood that would help learners to improve their grammatical skills in various ways. This component considered PAS (elicitation and meta-linguistic cues) and GAS (repetition of error and correction) for corrective feedback. For correct answers, positive acknowledgments were considered.

The present study addresses the research question: *Are PAS or GAS feedback strategies more effective for teaching the Spanish subjunctive mood for foreign language learners?* by addressing the following hypotheses:

- *Hypothesis 1:* Learners who receive PAS after their subjunctive errors will show greater ability to produce this mood correctly, as measured by pre-test post-test gain scores, than learners not exposed to this feedback.

- *Hypothesis 2:* Learners who receive GAS after their subjunctive errors will show greater ability to produce this mood correctly, as measured by pre-test post-test gain scores, than learners not exposed to this feedback.

- *Hypothesis 3:* Learners who receive PAS after their subjunctive errors will show greater ability to produce this mood correctly, as measured by pre-test post-test gain scores, than learners who receive GAS after their errors with this mood.

5.1 Methodology

5.1.1 Participants

Two groups of students participated in the experimental study. The first group was composed of 6 adult students from a Scottish College. They were all enrolled in the first term of an advanced Spanish course. There was 1 male and 5 females, ranging in ages from 25 to 50 years old (average=34.8).

Participants in the second group were 18 young Jamaican university students. All were enrolled in the second year of a high-intermediate Spanish as a FL course. There were 4 males and 14 females, ranging in age from 18 to 21 years old (average=19.5).

The vast majority of the participants reported English as their first language. The exceptions were two students from the Scottish College, whose L1 languages were French and Portuguese. It is important to note that students were not paid for their participation in the study.

5.1.2 Target Structures

The target structures were the present and imperfect forms of the Spanish subjunctive mood. The Spanish subjunctive mood is a complex structure and occurs mainly in subordinate clauses and within certain syntactic frames. There are different subjunctive forms for regular and irregular verbs: there must be agreement in person and number between the subject and verb as with all Spanish verbs. Because of its complexity, it is not surprising that the subjunctive mood is considered by Spanish teachers and learners alike to be a difficult structure to acquire (Lubbers, 1998; Collentine, 1995; Pereira, 1996; Collentine, 2000). Learners need to associate the subjunctive with a variety of modality notions, such as volition, doubt, denial, and emotion (Collentine, 1993).

According to Collentine (2000), the Spanish FL curriculum has dedicated a significant amount of curricular efforts to promote learners' knowledge of the subjunctive (Terrell *et al.*, 1987; Collentine, 1993). Collentine (1995) attempts to assess the efficacy of such efforts, by examining the abilities of FL students of Spanish to generate the subjunctive at the completion of the intermediate level. The experimental results

suggest that, in speech, these learners exhibit few benefit from these efforts. Noting that the subjunctive's distribution is largely limited to subordinate clauses, (Collentine, 1995) as well as (Pereira, 1996) observing that learners completing the intermediate-level of the instruction possess poor syntactic abilities, propose that subjunctive instruction might be more effective if it were complemented with instructional efforts aimed at fostering learners' abilities to process complex syntax (Collentine, 2000).

Lubbers (1997) investigates the variability in the use of the Spanish subjunctive mood and other morphological forms by English-speaking adults learning Spanish. The results reveal a great deal of variation in the use of the subjunctive mood and alternative forms, but a variation which is systematic and constrained by linguistic features. This suggests that the use of the subjunctive is limited to specific linguistic environments and is accompanied by great morphological confusion on the part of the learner. As acquisition progresses, variability diminishes as the learner refines and limits the morphological choices available.

Syntactic and morphological features of the subjunctive were studied by Collentine (1995). The participants were university students at the end of their second year Spanish course and distributed into two groups. The first group participated in ten-minute conversations with the researcher, who attempted to prompt the students to reply in the subjunctive mood. These learners produced the subjunctive only 13% of the time in the contexts where it was required. The second group completed highly controlled oral-production tasks in which the subjects were required to answer questions related to drawings shown to them. These subjects produced the subjunctive 34% of the time for the required context. This study concluded that both group neither produced the complex syntax in which the subjunctive appears. Learners were not ready to produce complex syntax nor to make the subtle morphological distinctions required to use the subjunctive correctly.

Studies on the acquisition of the Spanish subjunctive mood by adult L2 learners are scarce but show a similar trend. The majority of these studies have reached the general conclusion that adult learners do not use or recognize the subjunctive mood in Spanish (Lubbers, 1998). Stokes (1988; 1990) studied language-learning settings to determine their effect on the acquisition of the Spanish subjunctive. After having

spent sixteen months to two years in the target language culture, the adult subjects were able to develop considerable fluency in Spanish but failed to gain control over the subjunctive. Terrel and colleagues (1987) studied the strategies that learners use in the acquisition of the Spanish subjunctive. Students at the end of their first-year Spanish course were found to produce the subjunctive correctly in spontaneous speech only ten percent of the time.

From an analysis of the speech of adult L2 learners of Spanish on the target language and culture, Lubbers (1998) reported on the use and non-use of the present subjunctive mood. The study showed how morphological and syntactic linguistic forms interact with semantic and pragmatic features to constrain the use of the subjunctive mood in these learners' speech. It was concluded that SLA of the Spanish subjunctive mood may a matter of learners adjusting a limited morpho-syntactic prototype scheme to the more complex semantic-pragmatic one of the native speaker.

To summarize: SLA research on the subjunctive mood suggests that the teaching of this mood only at the highest levels of learning is mainly due to the syntactic complexity involved in its acquisition process. The studies also propose that subjunctive instruction might be more effective if it were complemented with instructional efforts aimed at fostering learners' abilities to process complex syntax (Collentine, 1995; Pereira, 1996). Considering both important findings, we selected complex syntactic features according to the learning levels of our participants. Indeed, no research to date has studied the effect of corrective feedback, PAS or GAS on the improvement of FL learners' abilities to process aspects involved in complex syntactic frames, such as the sequence of tenses and the types of clauses required for correct usage of the subjunctive mood. Our investigation addresses this for advanced and high-intermediate learners of Spanish as FL.

5.1.3 Aspects of the Subjunctive

1. **Use of the subjunctive:** the subjunctive mood is widely used in Spanish. It expresses doubt, uncertainty, subjectivity, etc, and is required after emotion verbs, verbs expressing desire or doubt, possibility or impossibility, and verbs giving commands or advice. In learning the subjunctive, it is useful to be able to recog-

nize such types of clauses:

```
Yo dudo que llueva en el norte de Chile.
(I doubt that it rains in northern Chile).
```

As the above statement expresses uncertainty, the subjunctive (`llueva`) is required in the second clause. In contrast, the indicative mood is used to express factual information, certainty, and objectivity:

```
En invierno, llueve mucho en el sur de Chile.
(In winter, it rains a lot in southern Chile)
```

The sentence above merely reports the fact that "in winter, it rains in southern Chile", so the indicative mood is used.

The difference between indicative and subjunctive represents the difference between certainty/objectivity (indicative) and possibility/subjectivity (subjunctive):

```
Yo sé que en el Norte de Chile hace mucho calor.
(I know that the weather is hot in northern Chile)
```

The clause "I know" means that the speaker feels that it is a certain, objective fact that the weather is hot in northern Chile.

```
Me gustaría que Jill visitara estos hermosos lugares de
la región de Atacama.
(I would like Jill to visit these beautiful places
of the Atacama region)
```

The clause "I would like" means that the speaker feels that there is uncertainty about whether "Jill" will visit the Atacama region:

```
Yo espero que estos datos sean muy útiles para Jill.
(I hope that this information is useful for Jill)
```

The clause "I hope" indicates that the speaker feels that there is uncertainty as to whether the information is useful for Jill.

```
Es posible que Jill encuentre muchos extranjeros recorriendo
los salares y lagunas donde habitan los flamencos.
(It is possible for Jill to meet a lot of foreign people and
to get to lakes where flamingos live).
```

The clause "it is possible" means that the speaker feels uncertain whether Jill will meet foreign people.

In order to investigate the effect of PAS and GAS in specific contexts of the subjunctive mood, the following list of types of clauses involving the use of subjunctive was selected:

- Clauses expressing an aspect of desire. For example: "esperar que", "ojalá que", ("to wish that ...")
- Clauses expressing personal preferences, likes, dislikes. For example: "me gusta que", "odio que" ("I like that..", "I hate that..").
- Clauses expressing an aspect of doubt or ignorance. For example: "es posible", "es probable", "es improbable" ("It is possible that..")
- Clauses expressing advice, suggestions. For example: "te aconsejo que", "te sugiero que.." ("I advise you to ..")

2. **Sequence of Tenses in the Subjunctive Mood:** When using the subjunctive in subordinate clauses, it is usual for verbs to follow a "sequence" of tenses. Thus a present, future or perfect tense, or an imperative, is followed by either a present or a perfect subjunctive in the subordinate clause:

```
Es probable que los turistas observen violentos chorros de
agua y vapor irrumpiendo desde las profundidades del desierto.
(It is likely for the tourists to observe violent water drops
and vapor coming out from deep desert)
```

In this example, "Es probable" corresponds to a present and therefore the verb "observar" must be used in a present subjunctive mood.

Similarly, an imperfect, preterite, conditional or pluperfect tense in the main clause is followed by an imperfect or pluperfect subjunctive in the subordinate clause as follows:

```
Me gustaría que Jill visitara estos hermosos lugares de la
región de Atacama.
(I would like Jill to visit these beautiful places in the
Atacama region)
```

In this example, "Me gustaría" is a conditional and therefore the verb "visitar" must be used in imperfect tense of subjunctive.

5.1.4 Design of the Experiment for Spanish Subjunctives

In order to determine the effectiveness of feedback strategies in the context of Spanish as a FL, it was necessary to employ a pre-test post-test control group design (see figure 5.1). Participants were randomly assigned to form three groups, each one containing eight students:

- **The PAS group**: After the pre-test, the participants received PAS feedback for dealing with the incorrect answers and positive acknowledgements for correct answers during the three treatment sessions, and then the post-test.

- **The GAS group**: After the pre-test, the participants received GAS feedback for dealing with the incorrect answers and positive acknowledgements for correct answers during the three treatment sessions, and then the post-test.

- **Control group**: After the pre-test, the participants received only positive and negative acknowledgements after their answers during the three treatment sessions, and then the post-test.

Week	Target	Topic
1	Contact and motivation	Personal informative emails about the content of the materials and the benefits of working with them.
2	Pre-test	Jill's email to ask her friend Maria for tourist information about Chile.
3	Activity 1	A treatment session. Jill advises her friend Maria to travel to Chile for the holidays.
4	Activity 2	A treatment session. Maria replies by email with information about "Valle de la Luna" and places around "San Pedro de Atacama".
5	Activity 3	A treatment session. Maria replies by email with information about the "Geysers del Tatio".
6	Post-test	Jill's email to thank Maria for the information about northern Chile.

Table 5.1: Plan for the Experiment

The students did not receive instruction on the subjunctive mood immediately before the experiment. All students did same sessions and worked with the same material, the only difference was about feedback strategies that they received (PAS, GAS or acknowledgment). The aim of our treatment sessions was to activate the learners so as to get them engaged with the material to be practiced. According to Ur (1988), two essential characteristics of a good language-practice task should be present: clear objectives, and the necessity for active language use. In the most successful grammar exercises two kinds of objectives are combined: *non-linguistic*, which is the main motivating focus, and the *linguistic* aspects of grammar in revision. The *non-linguistic* objective maybe, for example, to get someone to do something, to create some kind of pleasing composition, to get useful information about tourism and/or culture, and so on.

The instructional tasks were designed to elicit planned writing production and the recognition of two aspects of the subjunctive mood. The students were invited by email

to participate in a series of activities to practise their Spanish and get useful tourist information about Chile. In the starting page of the experiment, we also indicated the context of the task (i.e., practicing) and the topic (i.e., culture) according to the Focus on Form teaching approach:

> *We kindly invite you to practice your Spanish with us.*
> *You will participate in a series of five activities in which two girlfriends chat about some tourist attractions in Chile to visit during their next holidays.*
> *You will be informed about the most attractive places in northern Chile :-)*
> *During these activities, we ask that you neither work with grammar texts nor ask anyone else for assistance on grammar questions arising from this activity. This is NOT an assessment, so don't worry :-)*
> *You must carry out ONE activity per week. You will be able to practice for five weeks and so will get to know more about Chile.*
> *There is an on-line contextual dictionary available to help you clarify your vocabulary doubts by allowing you to click on the words.*
> *Let's go!!*

5.1.4.1 General Structure for Tests and Activities

The different tests and activities were organized with two characteristics in mind: the selected clauses of the subjunctive mood (to express "hope or desire", "personal preferences", "doubt or possibility", and "advice or suggestion") and the sequence of tenses (present and imperfect).

Each test and activity was constituted by ten exercises, eight about subjunctive and two about indicative mood (see appendix C). These last were included in order to keep the participants on their toes. All exercises of the experiment were different (not repeated) in accordance with the topic of each session. The activities and tests involved in the experiment were implemented in a simple web interface as discussed later.

The general organization of the exercises, whose details are shown in Table 5.2, was as follows:

1. Two exercises involved the use of the subjunctive to express hope and desires: one in the present and one in the imperfect.

2. Two exercises involved the use of the subjunctive to express personal preferences: one in the present and one in the imperfect.

3. Two exercises involved the use of subjunctive to express doubt or possibility: one in the present and one in the imperfect.

4. Two exercises involved the use of subjunctive to express advice or suggestion: one in the present and one in the imperfect.

5. Two exercises involved the indicative mood: one in the present and one in the imperfect.

   As for the subjunctive, expressions that trigger the use of the indicative mood were included as they introduce a quality of certainty or objectivity. For example: "creer que ..." ("to believe that ..."), "estar seguro que"... ("to be sure that ...").

- **Types of Questions:**

  The pre-test, post-test and the activities involved two tasks: a production task and a recognition task. **The production task** contained five fill-in-the-blank questions in which the participants completed a sentence that gave information about tourism in Chile (content). **The recognition task** contained five "Multiple Choice" questions in which, unlike the previous type, the participants needed to identify which of four possible verbs is most suitable for the syntactic context.

- **Types of PAS:**

  Because of the type of question and learning level (high-intermediate and advanced), we considered it appropriate to elicit the student's correct answer with meta-linguistic prompts. Three types of different prompts were prepared according to the possible types of errors. For this, four possible error situations were expected:

Subjunctive	Pre-test	Act1	Act2	Act3	Post-test	Total
Espero	E1-pre	E1-pre	E3-pre	E5-pre	E3-pre	5
Deseo	E8-pre	E3-imp	E2-pre	E10-pre	E9-pre	5
Duda	E3-pre	E7-pre	E7-pre	E2-pre	E4-pre	5
Posibilidad	E10-pre	E9-pre	E9-pre	E8-pre	E10-pre	5
Consejo	E2-imp	E2-imp	E5-imp	E1-imp	E5-imp	5
Sugerencia	E6-imp	E6-imp	E8-imp	E9-imp	E8-imp	5
Preferencia	E4-imp	E4-pre	E1-imp	E4-imp	E1-imp	5
gustos	E9-imp	E10-imp	E10-imp	E6-imp	E6-imp	5
Indicativo	E5-pre	E5-fut	E4-pre	E3-pre	E2-pre	5
Indicativo	E7-pre	E8-pre	E6-pre	E7-pre	E7-pre	5
Present	4	4	4	4	4	20
Imperfect	4	4	4	4	4	20

Table 5.2: Aspects of Subjunctive (The abbreviations indicate an **E**xercise (1-10), **Pre**sent tense, **Imp**erfect tense, and an **Act**ivity, respectively)

1. When the student answers in the present tense of the subjunctive and the correct form is an imperfect preterite. In this case, the program selects a prompt about "the sequence of the tenses". For example:

   ```
   Tienes que considerar la sequencia de los tiempos.
   "Es posible" es un presente...
   (Trans.  You have to consider the sequence of the tenses...
   "Es posible" is in the present...)
   ```

2. When the student answers in the imperfect preterite of subjunctive and the correct form is a present subjunctive. In this case, the program selects a prompt about the "sequence of the tenses". For example:

   ```
   Recuerda la sequencia de los tiempos.
   Debes conjugar "visitar" en imperfecto.
   (Trans.  Remember the sequence of the tenses.
   You must conjugate "visitar" in the imperfect.)
   ```

3. When the student first answers in some other tense or mood. In this case, the program selects a prompt about "the clauses of the subjunctive". For example:

```
Despues de verbos que expresan consejo o
sugerencia como "Aconsejaría", tienes
que usar subjuntivo.
(Trans.After verbs which advise or suggest
(e.g., "Aconsejaría") you have to use the
subjunctive mood.)
```

4. When the student answers again in some other tense or mood. In this case, the program selects other prompt about "the clauses of the subjunctive". For example:

```
"Aconsejaría" es un verbo de consejo entonces..
(Trans.  "Aconsejaría" is an advice verb so...  )
```

Based on these error situations, the program will present up to two prompts for each question. This means that the student has only two opportunities to answer. After the second chance and prompt, the program simply goes onto the next question:

1. Example: (Exercise 5 , Activity 2)

```
Específicamente, te aconsejaría que  tú .....(visitar)
El Valle de la Luna, un lugar inhóspito de impactante
belleza.
(Trans: Specifically, I advise you to ..(visit) "Valle de
la Luna", an inhospitable but stunning place)
```

In this example, the correct answer is an imperfect subjunctive, "visitara or visitase" (situation 1). If the student answers with present tense "visites", then the associated prompt is:

```
Recuerda la secuencia de los tiempos. "Aconsejaría" es
```

```
condicional ...
(Trans: Remember the sequence of tenses. "Aconsejaría" is
a conditional ....)
```

If the student answers using a different tense and mood (situation 3), the possible associated prompt is related to the need to use the subjunctive mood in the context of the question, such as:

```
Después de verbos que dan consejos y sugerencias como
"Aconsejaría" debes usar subjuntivo.
(Trans: After verbs which advise or suggest
(i.e., "Aconsejaría") you have to use the subjunctive mood)
```

2. Example: (Exercise 2, Activity 3)

```
En este lugar, es posible que los turistas ...(observar)
violentos chorros de agua y vapor que irrumpen en el
amanecer desde las profundidades del desierto.
(Trans.: In this place, it is possible for the tourists...
(observe) violent water drops and vapour ..)
```

In this example, the correct answer "observen" is in present tense (situation 2). If the student chooses an imperfect tense "observara" or "observase", then the associated prompt is:

```
Tienes que considerar la secuencia de los tiempos.
"Es posible" corresponde a presente...
(Trans: you have to consider the tense.  "Es posible" is a
present tense...)
```

If the student answers with a different tense and mood (situation 3). The possible associated prompt is related to the need to use the subjunctive mood in the context of the question such as:

```
Recuerda que debes usar subjuntivo cuando se expresa la
idea de posibilidad o duda.
(Trans: Remember that you must use the subjunctive when
an idea of possibility or doubt is expressed.)
```

3. Example: (Exercise 9, Activity 1)

```
Dudo mucho que ... (llover) en el norte de Chile,
porque es desierto.
(Trans: I doubt it rained in northern Chile because
it is desert)
```

In the example above, the correct answer "llueva" is in present tense. If the student selects another tense or mood (situation 4), such as the imperfect tense of the indicative mood "llovía", the associate prompt is:

```
Con las expresiones o verbos que expresan la idea de
duda es adecuado usar el modo subjuntivo.
(Trans: With verbs expressing the idea of doubt, the
subjunctive mood should be used)
```

If the student selects again another tense and mood (situation 4), such as the present of the indicative mood `"llueve"`, then the associated prompt is:

```
Fíjate que con los verbos que expresan duda es adecuado
usar el modo subjuntivo.
(Trans: note that with verbs expressing doubt,
it is appropiate to use the subjunctive mode)
```

- **Types of GAS:**

Based on our empirical studies (observational and case study) and on the types of questions (fill-in-the-blank and multiple choice), we selected two types of GAS feedback:

  - Type 1: "Repetition to draw attention", followed by

- Type 2: "Explicit correction to provide the contrastive L2 forms".

For this, the student has two chances to give the correct answer for the same question. With the first error, the program repeats the incorrect form with interrogative stress (question mark) to help the student notice the non target-like form. With the second error, a correction is given by the system and then the correct answer is shown, as seen in the following examples:

1. Example (Exercise 5, Activity 1)

```
Estoy segura de que nosotros "*mejorase" (mejorar) nuestro
Español durante nuestra estadía.
(Trans: I'm sure that we "*mejorase" our Spanish
during our stay)
```

In this fill-in-the-blank question, the student incorrectly answers "mejorase", so the program repeats the error with interrogative stress (type 1) and waits for the student's next answer:

```
mejorase?  (waits for the student's answer)
```

```
Estoy segura de que nosotros "*mejoraba" (mejorar) nuestro
Español durante nuestra estadía.
(Trans: I'm sure that we "*mejoraba" our Spanish
during our stay)
```

If the student again answers incorrectly "mejoraba", then the program corrects and shows the correct answer (type 2):

```
mejoraremos (correction)
```

5.2 Web-based Computer Tutor Interface

In order to carry out the experiment for the different activities, a simple web interface was designed to allow students to do the tests asynchronously, that is, it is available to the student anytime, anywhere.

The interaction begins with a starting page giving instructions about the experiment as a whole and a personal data entry form as seen in the snapshot of figure 5.1.

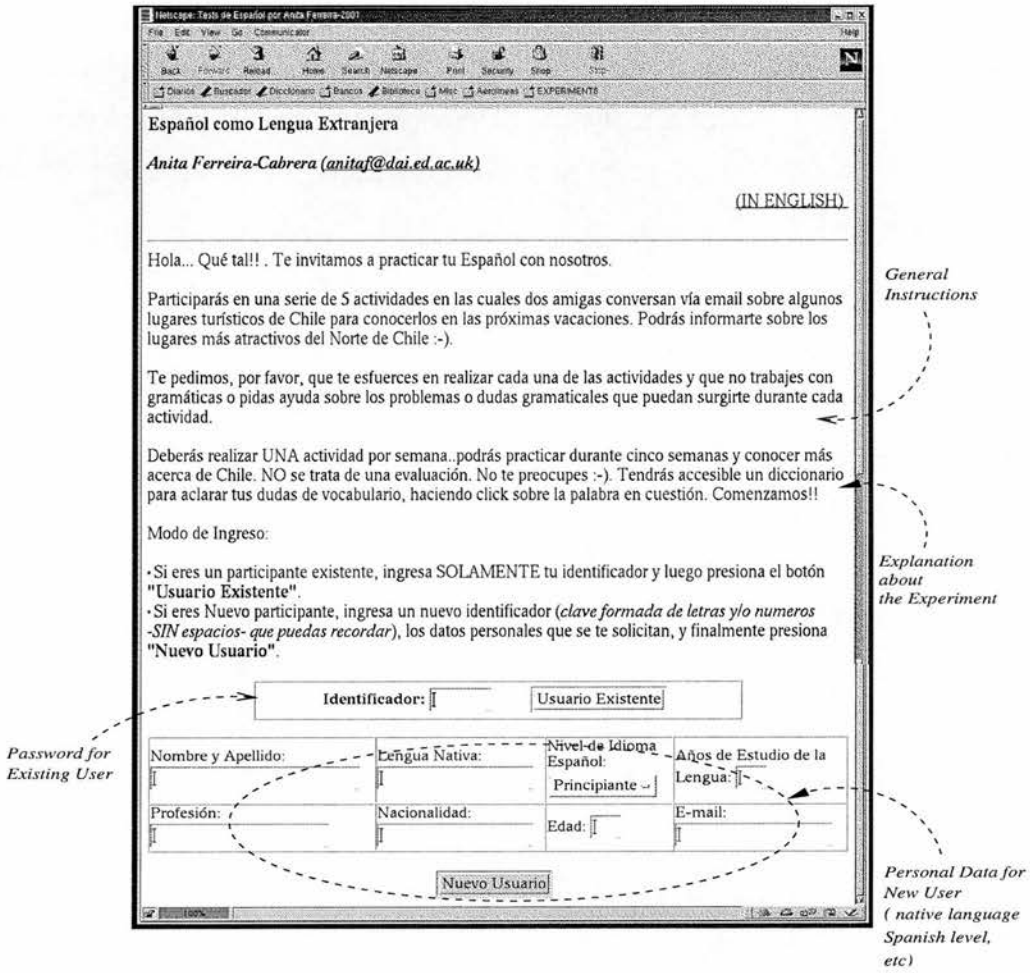

Figure 5.1: Experiment's Starting Page

As a student first enters his/her personal details, these are registered and the student is automatically assigned to one of the three experimental groups: GAS, PAS or Control. In order to keep a balanced sample as much as possible, students are assigned to groups in the following way. The first one receives PAS, the second one receives GAS, the third receives Control feedback, the fourth one receives PAS, and so on. A typical student's entry in the database that saves these details looks like:

```
XX:control:4:XX:Inglés:21:IT Consultant:Avanzado:XX..
```

```
..
XX:gas:4:XX:Inglés:5:student:Intermediate:XX ...
```

where the different fields (separated by ":") represent the student's username, the assigned strategy, his/her current activity, and his/her personal details (name, native language, Spanish language level, years of study, profession, nationality, age, contact email), respectively.

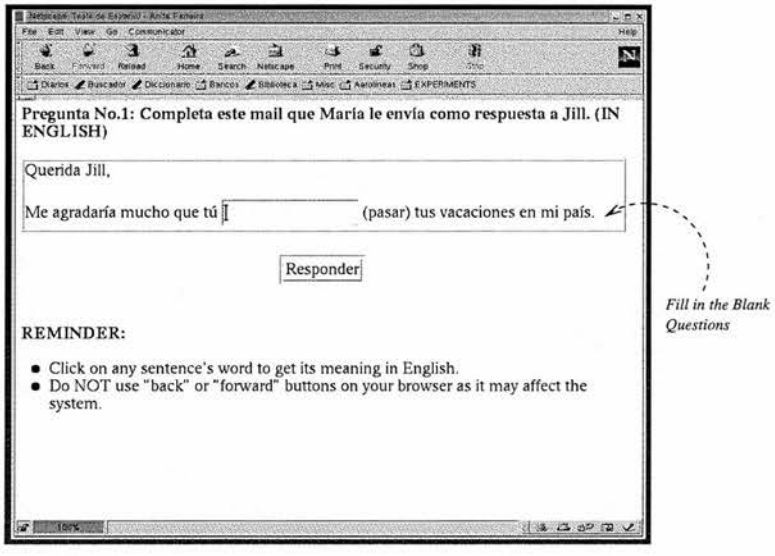

Figure 5.2: A typical fill-in-the-blank question

Next, the student starts answering the 10-question pre-test in which the first 5 are fill-in-the-blank questions (see figure 5.2), and the rest are multiple-choice questions (see figure 5.3).

In case a student interrupts his/her current activity/test, the state is kept so the next time he/she accesses the experiment, it will be started from the point where he/she left off last time (but we did not consider these aborted cases). Since the students finish the activities at different rates, an internal state register is enabled to allow the students to move on at their own rhythm.

There are no time restrictions in which the students must respond, so they are allowed to spend all the time they need. For this, separate registers of each student's

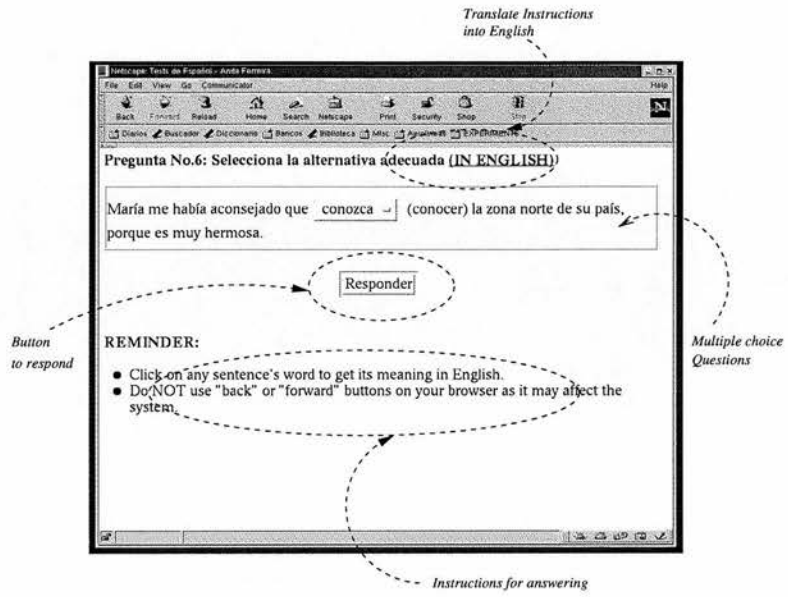

Figure 5.3: A typical "multiple-choice" question

responses are kept to detect early individual difficulties. A typical student's register of answers (log) looks as follows:

```
2:4:0:ofrezca:108:Incorrect
2:4:1:ofrece:67:Correct
..
```

where the fields represent the activity (i.e., 2), the question within this activity, the feedback's status (0="no feedback given", 1="first feedback given", etc), the actual answer, the time spent on the question (seconds), and the status of the answer (Correct/Incorrect), respectively.

In order to isolate issues beyond the scope of the experiment (i.e., vocabulary), the interface also provides hyperlink facilities to help the students when necessary. For example, if the student clicks on a word of a question's text, a help window showing the corresponding meaning will be displayed.

Once a student starts answering a question, the feedback is provided depending on the type of error that occurred (section 5.1.4.1). For a PAS strategy, the handling of the feedback can be seen in figure 5.4. The student uses a different tense and mood so the

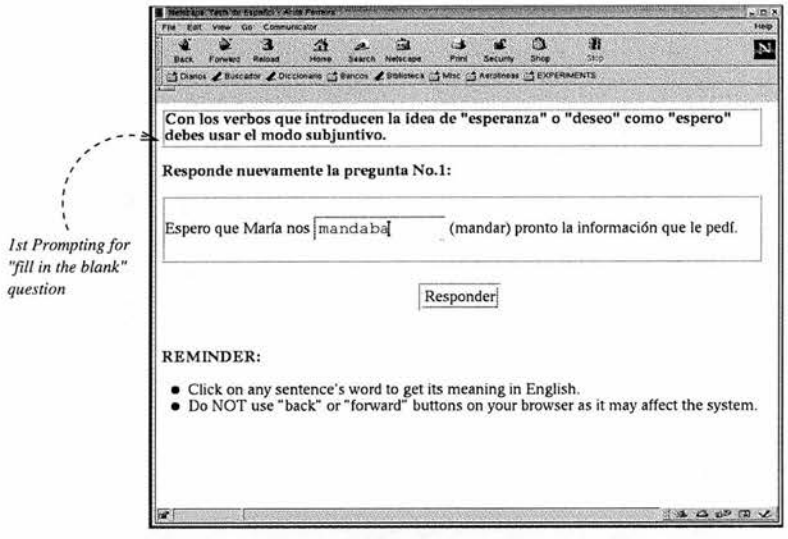

Figure 5.4: Provision of PAS feedback for first error

first PAS message is displayed to remind the student how to use the subjunctive mood. After answering, the student makes an error again (`mandara`) as shown in figure 5.5. The student wrote an imperfect tense so a PAS message is displayed to instruct him/her to use the verb in the present subjunctive.

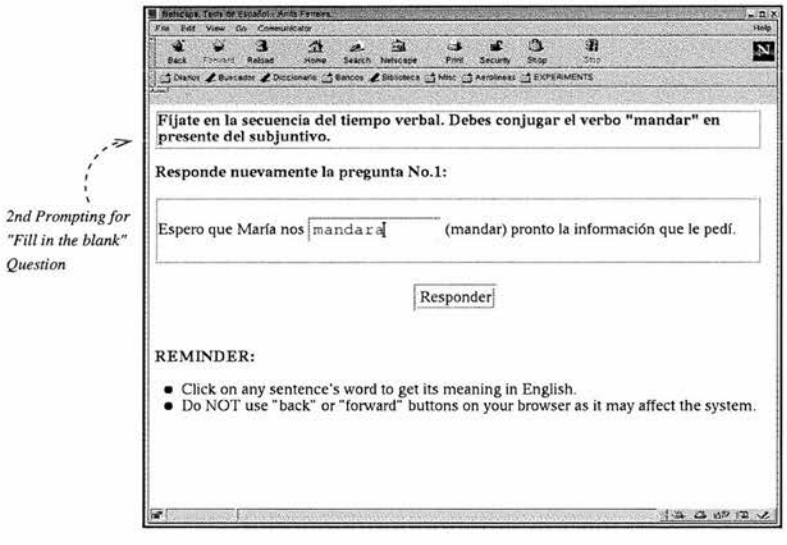

Figure 5.5: Provision of PAS feedback for second error

Likewise, the treatment of GAS strategies can be seen in figure 5.6. The student makes an error (`mandaba`) and the first GAS feedback is displayed by repeating the wrong answer. The student makes an error again (`mandara`), and the tutor gives a correction so the student can continue as shown in figure 5.7.

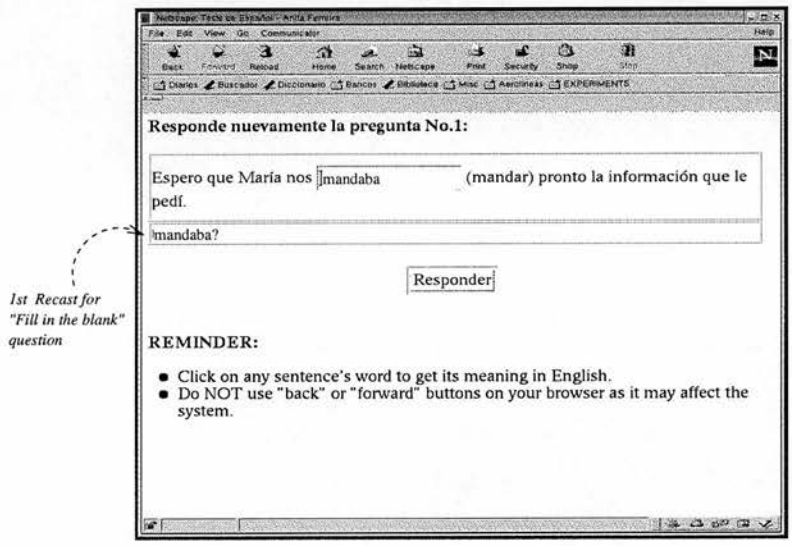

Figure 5.6: Provision of GAS feedback for first error

The strategy used by the system to produce the next state (i.e., next question, incorrect answer, feedback, etc) is as follows:

```
Let FeedbackType be the feedback strategy assigned
    to the current student (PAS, GAS, control)
Obtain the student's response to the current exercise.
IF (the answer to the exercise is correct) THEN
     Display "Correct Answer"  and continue to next question
ELSE  (Incorrect)
 IF (there are no more feedback messages to be displayed) THEN
          Display "Incorrect Answer" and continue to next question
 ELSE
  END-IF
  There are more feedback messages
            (for PAS or GAS) and answer is incorrect:
         DISPLAY feedback message according to the error
END
```

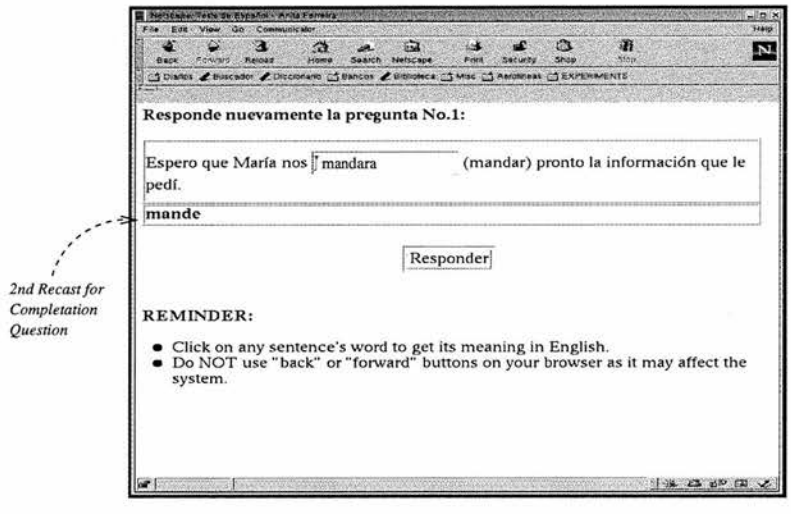

Figure 5.7: Provision of GAS feedback (correction) for second error

5.3 Analysis and Results

The experiment entailed an independent variable and a dependent variable. The independent variable was the group: (1) the PAS group; (2) the GAS group; (3) the control group. The dependent variable was the difference scores that participants earned between their pre-test and post-test scores.

5.3.1 Effectiveness of GAS and PAS

5.3.1.1 Hypothesis 1

With regard to our first hypothesis *"Learners who receive PAS after their subjunctive errors will show a greater ability to produce this mood correctly, as measured by pre-test post-test gain scores, than learners not exposed to this feedback"*, Tables 5.3 and 5.4 show the different scores between the pre-test and post-test for the PAS and control groups. As can be seen, the progress made by the PAS group was much more substantial. This suggests that the participants showed steady improvement in accuracy on the subjunctive mood in the syntactic frames involved.

At the individual level, all participants of the PAS group improved in the use of the subjunctive mood. It seems that advanced students (S1, S2) improved more than high-intermediate students (the rest). However, because of the small number of advanced students, we did not consider it appropriate to carry out any comparison between the groups.

	Advanced		High-intermediate							
Test	S1	S2	S3	S4	S5	S6	S7	S8	Total	$\bar{Sc}$
Pre-test	1	2	3	3	5	5	7	4	$\frac{30}{80}(38\%)$	3.8
Post-test	9	8	5	7	6	8	8	7	$\frac{58}{80}(73\%)$	7.3
Difference	8	6	2	4	1	3	1	3	28	3.5

Table 5.3: Pre-test and Post-test Results of the PAS Group

In the control group, three students showed no improvement (S18, S19, S20), whereas the rest of the students improved only slightly. As a result, no significant

differences were observed between advanced and high-intermediate levels. It is important to note that subjects in the control group did not make any important progress on their own during the five weeks, indicating that the implementation of PAS strategies were more effective than leaving students on their own to develop a target-like ability with the subjunctive mood.

	Adv.		High-intermediate							
Test	S17	S18	S19	S20	S21	S22	S23	S24	Total	$\bar{Sc}$
Pre-test	1	5	7	3	3	5	5	4	$\frac{33}{80}(41\%)$	4.1
Post-test	2	5	7	3	4	7	6	5	$\frac{39}{80}(49\%)$	4.9
Difference	1	0	0	0	1	2	1	1	6	0.6

Table 5.4: Pre-test and Post-test Results of the Control Group

For the purpose of statistically measuring gain in learning, we calculated the differences between the average scores of the post-test and that of the pre-test for each group (Tables 5.3 and 5.4), which indicates either an actual gain (if the difference is positive), or a loss (if the difference is negative). The analysis shows that gain scores between the pre-test and post-test for the participants who received PAS feedback were statistically more reliable (average score ($\bar{Sc}$)=3.5; $t-test = 4.04, df = 7, p < 0.005$) than those of control group participants ($\bar{Sc}$=0.7; $t-test = 3, df = 7, p < 0.02$) as predicted by hypothesis 1. In addition, the differences between PAS-gain and control-gain ($t-test = 3.422, df = 7, p < 0.02$) were slightly significant.

5.3.1.2 Hypothesis 2

Concerning our second hypothesis, *"Learners who receive GAS after their subjunctive errors will show a greater ability to produce this mood correctly, as measured by pre-test-post-test gain scores, than learners not exposed to this feedback"*, the results in Table 5.4 and 5.5 suggest that the progress made by the GAS group was better than the control group. However, gain scores between the pre-test and post-test for the participants who received GAS feedback were significantly less reliable ($\bar{Sc}$=1.9; $t-test = 2.53, df = 7, p < 0.04$) than those of the control group ($\bar{Sc}$=0.7;

$t-test = 3, df = 7, p < 0.02$). In addition, the differences between GAS-gain and control-gain scores were weakly significant ($t-test = 2.312, df = 7, p < 0.06$).

At the individual level, two participants (S10, S11) did not improve their ability on the subjunctive mood, and three (S12, S13, S15) improved only slightly. The results at the advanced level show that S9 improved significantly and S10 maintained his/her scores. At the high-intermediate level, four students (S12, S13, S15, S16) did not get high gain scores in the post-test and one maintained his/her score (S11).

	Adv.		High-intermediate							
Test	S9	S10	S11	S12	S13	S14	S15	S16	Total	$\bar{Sc}$
Pre-test	2	5	7	3	6	5	6	3	$\frac{37}{80}(46\%)$	4.6
Post-test	8	5	7	4	7	9	7	5	$\frac{52}{80}(65\%)$	6.5
Difference	6	0	0	1	1	4	1	2	15	1.9

Table 5.5: Pre-test and Post-test Results of the GAS Group

5.3.1.3 Hypothesis 3

In accordance with hypothesis 3, *"Learners who receive PAS after their subjunctive errors will show greater ability to produce this mood correctly, as measured by pre-test-post-test gain scores, than learners who receive GAS after their errors with this mood"*, Tables 5.3 and 5.5 show the difference scores between pre-test and post-test for the PAS and GAS groups. As can be seen, the progress made by the PAS group was better than the GAS group. This suggests that participants who received PAS after their subjunctive errors showed an improvement in accuracy with this mood.

The GAS group had pre-test scores higher than PAS and control groups. This may suggest that if the GAS group started better then this has less opportunity to improve. However, the three groups earned scores below 50% in the pre-test. For this, we believe that the three groups have similar chances to improve their learning.

Gain scores between the pre-test and post-test for the participants who received PAS feedback were statistically more reliable ($\bar{Sc}$=3.5; $t-test = 4.04, df = 7, p <$ 0.005) than those who received GAS feedback ($\bar{Sc}$=1.9; $t-test = 2.53, df = 7, p <$

0.04) as predicted by hypothesis 3. In addition, considering the small numbers of data, the differences of PAS-gain with GAS-gain were suggested to be somewhat significant ($t-test = 2.56, df = 7, p < 0.04$).

5.3.2 Results by Activity

In order to get a clear idea about how the participants were improving during the treatment process, we looked at the total number of correct answers for each participant and activity in the different groups.

Table 5.6 shows a marked increase of scores during activities 1 (49%), 2 (67%) and 3 (69%) in the PAS group, with average score ($\bar{Sc}$) 4.9, 6.7, and 6.9, respectively. That is, the participants improve during the treatment process.

	Adv.		High-intermediate							
Activity	S1	S2	S3	S4	S5	S6	S7	S8	Total	$\bar{Sc}$
Act. 1	6	4	3	5	5	7	6	3	39/80 (49%)	4.9
Act. 2	8	5	7	7	7	7	7	6	54/80 (67%)	6.7
Act. 3	9	3	5	7	6	9	8	8	55/80 (69%)	6.9
Total	23	12	15	19	18	23	21	17	148/240 (62%)	

Table 5.6: Activities Results of the PAS Group

Pre-test results in Table 5.3 (30/80 (38%)) indicate that there was a marked increase in the scores for activity 1 (39/80 (49%)) by 10%. This seems to indicate that the prompting strategies rapidly activate the knowledge involved in the subjunctive mood.

From Table 5.7, we can see that there is a gradual increase in the scores during activities 1 (50%), 2 (69%) and 3 (70%) for the GAS group with average scores $\bar{Sc}$ 5.0, 6.9, and 7.0, respectively. On the other hand, pre-test results in Table 5.5 (46%) indicate a small increase in activity 1, by 4% (50%).

It is worth noting that during the treatment process both experimental groups seem to show similar improvement in their production and recognition skills with the subjunctive mood. However, in the post-test results, there is a large difference in gain

	Adv.		High-intermediate							
Activity	S9	S10	S11	S12	S13	S14	S15	S16	Total	$\bar{Sc}$
Act. 1	5	2	6	3	5	6	8	5	40/80 (50%)	5.0
Act. 2	8	4	7	5	7	9	7	8	55/80 (69%)	6.9
Act. 3	6	4	8	6	6	10	8	8	56/80 (70%)	7.0
Total	19	14	21	14	18	25	23	21	151/240 (63%)	

Table 5.7: Activities Results of the GAS Group

scores between PAS and GAS groups. When the participants are helped by either GAS or PAS, the method of learning seems to be similar; they try to make a good use of this guidance. However, the difference between the characteristics of the strategies shows that PAS are more effective when the participants work afterwards without assistance. This means that when the program repeats the error (GAS type 1) or gives the correct answer (GAS type 2) this only helps students temporarily as the students did not transfer the improvement to the post-test. In contrast, with PAS feedback, the program elicits the correct answer by activating or teaching the associated knowledge that the students need to learn in order to apply the subjunctive mood in its new context of use.

In the control group, Table 5.8 shows a gradual increase in the gain between activities 1 and 2 with average scores ($\bar{Sc}$) 4.6, 5.0, and 5.4, respectively. The difference in scores between pre-test (5.4) and activity 1 is similar to the GAS group (around 5%).

	Adv.		High-intermediate							
Activity	S17	S18	S19	S20	S21	S22	S23	S24	Total	$\bar{Sc}$
Act. 1	1	5	7	4	6	5	5	4	37/80 (46%)	4.6
Act. 2	3	4	7	4	6	6	5	5	40/80 (50%)	5.0
Act. 3	4	5	7	3	5	7	7	5	43/80 (54%)	5.4
Total	23	12	15	19	18	23	21	17	120/240 (50%)	

Table 5.8: Activities Results of the Control Group

5.3.3 Results by Strategies

We carried out an analysis similar to that in our observational and tutorial studies. This aimed at determining the effectiveness of corrective feedback strategies during the treatment process, with two key issues in mind. First, we are interested in establishing (as in the observational study) whether the PAS used in the experiment were more effective strategies for teaching subjunctive abilities than GAS. Secondly, we wish to establish the relationship (if any) between the gain scores in the post-test and the use of these strategies. Tables 5.9 and 5.10 show the total frequency of all PAS and GAS received by the students in the different activities.

	Adv.		High-intermediate						
Activity	S1	S2	S3	S4	S5	S6	S7	S8	Total
Activity 1	6	10	12	7	7	3	6	10	61 (48%)
Activity 2	3	6	4	5	4	2	3	6	33 (26%)
Activity 3	2	9	8	4	7	0	2	2	34 (27%)
Total	11	25	24	16	18	5	11	18	128
Percentage	9	19	19	12	14	4	9	14	100

Table 5.9: Frequency of Prompts received by Students

Effectiveness of PAS

A closer look reveals that, overall, students were exposed to a few more GAS (140) than PAS (128). However, the learning gain (section 5.3.1.3) indicates that students who received PAS improved more than those who received GAS. Indeed, even though the proportion of used strategies by the GAS group is slightly higher than that used by the PAS group, the effectiveness of "prompting strategies" in terms of gain score in the post-test was higher than of "giving strategies".

The distribution in the use of PAS and GAS by students (Tables 5.9 and 5.10) was balanced in the experimental groups. Student 6 in the PAS group and student 14 in the GAS group required fewer of these strategies because they showed good competence

with the subjunctive mood and answered the majority of the questions correctly.

	Adv.		High-intermediate						
Activity	S9	S10	S11	S12	S13	S14	S15	S16	Total
Activity 1	7	13	6	12	8	6	4	10	66 (47%)
Activity 2	2	11	4	9	5	1	5	3	40 (29%)
Activity 3	5	9	2	7	7	0	2	2	34 (24%)
Total	14	33	12	28	20	7	11	15	140
Percentage	10%	24%	9%	20%	14%	5%	8%	11%	100%

Table 5.10: Frequency of GAS received by Students

As regards the types of prompts used by participants in each activity, we carried out an in depth analysis with the aim of determining the frequency, proportion of the use, and effectiveness of each feature selected for our study of the subjunctive mood (see Table 5.2). The frequency of prompting used for each clause that demands the use of the subjunctive is shown in Table 5.11, that is, "Espero" (I hope); "Es posible" (It is possible); "Te aconsejo" (I suggest); "Me gustaría" (I would like). We also investigated the prompts related to the sequence of tenses in the subjunctive.

Interestingly, an examination of Table 5.11 indicates that the prompts referring to the different cases were given 108 times of which 60 were effective (55%). This means that the students changed their answers to the correct form immediately. It is important to note that PAS was more successful in prompting the feature of "sequence of the tenses" than for "types of clauses". They were prompted 26 times of which 22 were effective (84%).

In general, obtaining a correct answer in the activities and tests means that students must know both features to be considered in the design of the tests: clauses of the subjunctive and the sequences of the tenses for the subjunctive. However, in some cases, the students just needed some help to prompt the sequence of tenses because they knew how to use the subjunctive in some particular syntactic frames. Indeed, some students answered with the present or imperfect tense of the subjunctive mood, showing a certain competence about the topic, but the tense was inappropriate for the

	Espero		Es posible		Te aconsejo		Me gustaría		Total	
Act.	Clau	Seq	Clau	Seq	Clau	Seq	Clau	Seq	Clau	Seq
1	5/12	2/3	3/3	-	3/12	3/3	7/10	3/5	18/37	8/11
2	1/2	1/1	2/2	6/6	2/6	1/1	2/11	1/2	7/21	9/10
3	2/3	1/1	3/3	0	4/9	2/2	4/9	2/2	13/24	5/5
Σ	$\frac{8}{17}$	$\frac{4}{5}$	$\frac{8}{8}$	$\frac{6}{6}$	$\frac{9}{27}$	$\frac{6}{6}$	$\frac{13}{30}$	$\frac{6}{9}$	$\frac{38}{82}$	$\frac{22}{26}$
%	47	80	100	100	33	100	43	66	46	84

	Espero	Es posible	Te aconsejo	Me gustaría	Total
Total	$\frac{12}{22}(54\%)$	$\frac{14}{14}(100\%)$	$\frac{15}{33}(45\%)$	$\frac{19}{39}(49\%)$	$\frac{60}{108}(55\%)$

Table 5.11: Features of Subjunctive involved by the PAS group (**Clau**se and **Seq**uence of tenses for each **Act**ivity's feature)

sequence of the question. In these cases, the students needed to improve this aspect.

Test	**Espero**	**Es posible**	**Te aconsejo**	**Me gustaría**	**Total**	$\bar{Sc}$
Pre-test	7	8	4	5	$\frac{24}{80}(30\%)$	6.0
Post-test	15	13	11	8	$\frac{47}{80}(59\%)$	11.75
Difference	8	5	7	3	23	5.7

Table 5.12: Subjunctive Clauses Results in Pre-test and Post-test of the PAS Group

The improvement for the subjunctive clauses in the post-test (Table 5.12) was weakly correlated with the proportion of use and effectiveness of the given prompts (Pearson's $r = 0.36, n = 4, p < 0.03$). However, the gain scores between the pre-test and post-test of PAS and the pre-test and post-test of GAS were statistically reliable. In addition, considering the small numbers of data, the differences of PAS-gain with GAS-gain were also significantly reliable. That means that generally the use of prompts were taken up effectively during the process ("Es posible" (100%); "Espero" (54%); "Me gustaría (49%) and "Te aconsejo" (45%)) and at the end of this.

The clauses that required more use of prompts were found to be "Me gustaría (39) and "Te aconsejo" (33), and prompts were more effective in the clauses "Es posible"

(100%) and "Espero" (54%).

	Espero		**Es posible**		**Te acon.**		**Me gustar.**		**Subtotal**		**Total**
S	Clau	Seq	Clau	Seq	Clau	Seq	Clau	Seq	Clau	Seq	
1	0/1	1/2	-	-	1/4	1/1	1/3	-	2/8	2/3	$\frac{4}{11}(36\%)$
2	2/3	-	2/2	1/1	3/6	-	6/9	0/2	13/20	1/3	$\frac{14}{23}(61\%)$
3	1/3	2/2	1/1	1/1	2/5	1/1	1/7	2/2	5/16	6/6	$\frac{11}{22}(50\%)$
4	1/2	-	2/2	1/1	0/4	2/2	1/4	-	4/12	3/3	$\frac{7}{15}(47\%)$
5	3/5	-	-	1/1	1/2	-	1/2	2/3	5/9	3/4	$\frac{8}{13}(61\%)$
6	1/1	1/1	1/1	-	-	-	-	-	2/2	1/1	$\frac{3}{3}(100\%)$
7	-	-	1/1	1/1	1/2	1/1	1/1	1/1	3/4	3/3	$\frac{6}{7}(86\%)$
8	0/2	-	1/1	1/1	1/4	1/1	2/4	1/1	4/11	3/3	$\frac{7}{14}(50\%)$
Σ	$\frac{8}{17}$	$\frac{4}{5}$	$\frac{8}{8}$	$\frac{6}{6}$	$\frac{9}{27}$	$\frac{6}{6}$	$\frac{13}{30}$	$\frac{6}{9}$	$\frac{38}{82}$	$\frac{22}{26}$	$\frac{60}{108}$
%	47	80	100	100	33	100	43	67	46	85	55

Table 5.13: Involved Features of Subjunctive (**Clau**se of subjunctive and **Seq**uence of the tense) for PAS used by each Student

The frequency and effectiveness of the PAS concerning the features of subjunctive for all students are shown in Table 5.13. There seems to be an interesting relation between the prompts used effectively by the students and the gain scores in the post-test (see Table 5.3), especially for students S2 (61%), S3 (50%), S4 (47%), S6 (100%) and S8 (50%). Students 1 and 2 (advanced level) showed poor scores in their pre-tests (1) but an important improvement in the post-test (8 and 6, respectively). This situation shows that in the advanced level and with adult students, the prompts were useful for activating the knowledge appropriate for solving the task.

Students S5 and S7 got high scores in the pre-test (5 and 7 respectively) and they only improved 1 point in their post-test. During the treatment process they effectively took up the prompts (61% and 86%, respectively). Indeed, they may need other types of meta-linguistic prompts which could maybe be specific and targeted at their competence on the subjunctive. These results of frequency and effectiveness of prompting show some evidence that supports the improvement in the abilities of the PAS group

in the subjunctive.

Interestingly, students S5, S6 and S7, who showed high pre-test scores (5.3), more effectively took up the prompts given by the program (61%, 100% and 87%). This suggests that the nature of prompting (meta-linguistic cues) may be better used according to the linguistic competence of the students. This PAS analysis also indicates that the students are still in the process of acquiring the subjunctive mood. Because the participants required 82 prompts for clause aspects compared with 26 for tense sequences, it seems that they need more improvement on the features of the subjunctive related to the different types of clauses which require the use of this mood, than the sequence of the tenses between clauses.

Effectiveness of GAS

In order to determine the effectiveness of the GAS used by the students, we looked into the data and two types of GAS used as feedback for the GAS group. Table 5.14 shows the total number of GAS for each subjunctive clause across the three activities. As can be seen, type 1 "repetition, to draw attention" was more frequent 70 (61%) than type 2 "explicit corrections" 44 (39%). However, type 2 was more effective (59%) than type 1 (39%) leading students to modify their incorrect answers. These results are similar to those of our observational and tutorial studies, in which Correction was the most effective strategy in the GAS group.

With regards to the subjunctive clauses in the different activities, the majority of the GAS was used in "Te aconsejo" (42) and "Me gustaría" (39) clauses, with an effectiveness of 58% and 69%, respectively. Interestingly, Table 5.15 shows that in the post-test, more improvement was obtained for these clauses.

The frequency and effectiveness of GAS used by students of the GAS group can be seen in Table 5.16, from which two important aspects are worth noting:

1. There is a relation between the results of students S9 and S14, who got the best improvement in the Post-test (see Table 5.5) and the effectiveness of GAS during the activities (64% and 75%, respectively).

2. Even though the majority of students (S10, S11, S12, S13, S15) used the GAS

	Espero		Es posible		Te aconsejo		Me gustaría		Total	
Act	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
1	1/7	2/6	5/5	-	0/10	8/11	3/9	2/6	9/31	12/23
2	2/3	0/1	5/6	1/1	1/5	2/4	1/8	6/7	9/22	9/13
3	1/2	1/1	1/1	0	4/8	1/4	3/6	3/3	9/17	5/8
Σ	$\frac{4}{12}$	$\frac{3}{8}$	$\frac{11}{12}$	$\frac{1}{1}$	$\frac{5}{23}$	$\frac{11}{19}$	$\frac{7}{23}$	$\frac{11}{16}$	$\frac{27}{70}$	$\frac{26}{44}$
%	33	37	92	100	22	58	30	69	39	54

	Espero	Es posible	Te aconsejo	Me gustaría	Total
Total	$\frac{7}{20}(35\%)$	$\frac{12}{13}(92\%)$	$\frac{16}{42}(38\%)$	$\frac{18}{39}(46\%)$	$\frac{53}{114}(46\%)$

Table 5.14: **T**ypes of GAS used by each **Act**ivity

Test	**Espero**	**Es posible**	**Te aconsejo**	**Me gustaría**	**Total**	$\bar{Sc}$
Pre-test	10	12	4	4	$\frac{30}{80}(37\%)$	7.5
Post-test	10	13	10	8	$\frac{41}{80}(51\%)$	10.2
Difference	0	1	6	4	11	2.7

Table 5.15: Subjunctive Clauses Results in Pre-test and Post-test of the GAS Group

strategies more or less effectively (26%, 67%, 44%, 58%, and 62%), their post-test results showed only minor improvement (Table 5.5).

This suggests that the effectiveness of GAS leads to improvement on aspects of subjunctive grammar while the activity is ongoing and the students are receiving the help (Pearson's $r = 0.8, n = 4, p < 0.05$). However, difference between the pretest and post-test results show that GAS strategies lead to minor learning when compared with the PAS group.

5.4 Conclusion

This chapter addressed the research question of whether feedback strategies (PAS or GAS) are more effective for teaching of the Spanish subjunctive mood for foreign

	Espero		Es pos.		Te acon.		Me gustar.		Subtotal		Total
Stu	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
9	-	-	4/4	-	2/5	1/3	2/2	-	8/11	1/3	$\frac{9}{14}$ (64%)
10	0/2	0/2	3/3	-	1/6	0/5	1/5	2/4	5/16	$\frac{2}{11}$	7/27 (26%)
11	2/2	-	0/1	1/1	0/1	2/2	0/1	1/1	2/5	4/4	$\frac{6}{9}$ (67%)
12	0/1	0/1	2/2	-	0/5	4/5	1/6	4/5	3/14	8/11	$\frac{11}{25}$ (44%)
13	1/3	2/2	-	-	0/1	1/1	1/3	2/2	2/7	5/5	$\frac{7}{12}$ (58%)
14	-	-	-	-	0/1	1/1	2/2	-	2/3	1/1	$\frac{3}{4}$ (75%)
15	0/1	1/1	1/1	-	1/2	1/1	0/1	1/1	2/5	3/3	$\frac{5}{8}$ (62%)
16	1/3	0/2	1/1	-	1/2	1/1	0/3	1/3	3/9	2/6	$\frac{5}{15}$ (33%)
Tot.	$\frac{4}{12}$	$\frac{3}{8}$	$\frac{11}{12}$	$\frac{1}{1}$	$\frac{5}{23}$	$\frac{11}{19}$	$\frac{7}{23}$	$\frac{11}{16}$	$\frac{27}{70}$	$\frac{26}{44}$	$\frac{53}{144}$
%	33	37	92	100	22	58	30	69	39	54	46

Table 5.16: **T**ypes of GAS used by each **Stu**dent

language learners. Overall, the PAS gain was found better than the GAS gain for supporting the process of practicing/learning some aspects of the subjunctive. After three weeks of the treatment process, learners who received prompting strategies about the sequence of tense and clauses of the subjunctive were significantly more capable of producing the correct forms and of identifying contexts in which the use of subjunctive was appropriate. Thus, the association of the subjunctive with a variety of modality notions (i.e., volition, doubt, denial, and emotion) through prompting strategies, provided a steady improvement in the learning. Indeed, the improvement in the use of the subjunctive clauses in the post-test was weakly correlated with the proportion of use and effectiveness of the prompts given in all clauses.

In the GAS group, the "type 1" strategy (repetition) was more often used than "type 2" (correction). However, type 2 was more effective than "type 1", allowing students to modify their incorrect answers. These results are similar to those of our observational and tutorial studies in which "correction" was the most effective strategy for the GAS group.

The differences between the characteristics of the GAS and PAS groups seem to

indicate that PAS are more effective for transferring the learning to a new context of use. This mean that when the program repeats the error (GAS type 1) or gives the correct answer (GAS type 2), this helps students only temporarily as students did not transfer the improvement to the post-test. In contrast, the PAS feedback produced by the program elicits the correct answer by activating or by teaching the associated knowledge that the students need to learn or to clarify so as to be transferred to new contexts.

The results of advanced students and those of high-intermediate students showed that the high-intermediate students earned better scores on the pre-test than the advanced students. This may be due to the fact that the advanced course is focused on **meaning**, that is, the lessons are about communicative aspects of cultural topics and the students are less exposed to teaching about grammar aspects than students at the high-intermediate level. Indeed, the high-intermediate participants are learning Spanish in the university with a curriculum that includes a balance of form- and meaning-focused instructional techniques and activities. However, the interesting point is that advanced students achieve higher scores on the post-test than the high-intermediate students. This is consistent with the acquisition process of the subjunctive, that is, advanced students should be in a better position to improve their learning for this complex mood.

SLA research predicts that, at least in the context of native English speakers learning Spanish, learners completing the intermediate level of instruction possess poor syntactic abilities, proposing that subjunctive instruction might be more effective if it were complemented with instructional efforts aimed at fostering learners' abilities to process complex syntax (Collentine, 1995; Pereira, 1996). Our experimental study showed that the high-intermediate, and advanced-levels students presented low scores in their pre-test (between 40% and 50%). However, the group supported by PAS strategies improved significantly more than the GAS group and the control group after the treatment process. This suggests that subjunctive instruction might be more effective if it were complemented with instructional efforts aimed at prompting learners' abilities to process some of the features involved in complex syntax, such as the types of clauses that require the subjunctive and the sequence of the tenses.

As the treatment period was relatively brief (3 weeks) and the number of subjects

relatively small, further studies will have to be performed to confirm the trends we have observed here. Despite these limitations, our study suggests that learners at the high-intermediate and advanced levels made good use of the meta-linguistic cues strategies to improve their subjunctive mood performance. Here, learnability[1] is an important issue with regards to the subjunctive in the Spanish curriculum, that is, a certain degree of syntactic maturity is necessary for a student to benefit fully from subjunctive instruction (Collentine, 2000). However, we believe it is also important to select appropriate corrective feedback in order to adequately support the students with effective strategies which collaborate to activate, construct and learn the different types of features involves in grammar subjects.

[1]Pienemann (1984) discusses the concept of "learnability" suggesting that learners at any stage will find "learnable" only those things that are at just the next stage of natural development. It may be possible to accelerate their progress through the stages, but not to jump stages altogether.

Chapter 6

Implications for the Design of ITS

So far, we have explored empirical evidence about the type, frequency and effectiveness of feedback strategies used by Spanish teachers in three different learning contexts: an observational study of face-to-face classroom interactions, a case study of one-to-one tutorial interactions, and an experimental study in which students interacted with a web-based tutoring program.

This chapter summarizes the general results of our three empirical studies so as to determine the most important tendencies which may be useful in the design of a feedback component of ITS for FL. This led to the proposition of a model for feedback moves in ITS and a simple working prototype.

6.1 Findings of Empirical Studies

The findings discussed in our empirical studies identify several critical issues for exploration in the development of future ITS. We close with some remarks about the implications of the results of these studies for the development of an ITS. The general findings of our observational and case studies (chapters 3 and 4) show that:

- The vast majority of correct answers get a simple positive acknowledgment or an accept. Positive feedback, such as repetition or rephrasing was not frequently used by the teacher.

- When teachers use other positive feedback, repetition is the most frequent strategy used to confirm the student's answer in beginner and intermediate levels whereas rephrasing is slightly more frequent than repetition in advance level.
- The types of errors differ according to the level of the learner. For beginners level, grammar and pronunciation are the most frequent errors, whereas for intermediate and advanced learners, grammar and vocabulary are the most frequent errors.
- Corrective feedback moves are used frequently by teachers in our corpus.
- The teachers tend to correct a significant number of errors. Irrespective of the type of error, the majority of the students' errors received some type of corrective-feedback by the teacher.
- The teachers frequently correct one error at a time.
- The majority of the students react immediately to the feedback given by the teacher, either by modifying their answers, by making the error again or by making a new error.

From the results of our studies, it is possible to establish three types of interaction situations involved in the treatment of errors in the domain of foreign language teaching:

- Situation 1:
  - The student's answer presents a language error.
  - The teacher notices the error and decides to treat it with some feedback strategy.
  - The student modifies his/her answer correctly. This indicates that the student has noticed the error and the given assistance. The correct answer may indicate a first step towards improvement.
- Situation 2:

  - The student makes an error for the second time. This may be due to the fact that either the student is not noticing the target form provided by the teacher's feedback or the student does not know how to correct the error.
  - The teacher either tries a second feedback strategy or follows with the next question, an accept turn, or a domain turn.

- Situation 3:

  - The student responds to the feedback with another error. That is, the student repairs the first error but his/her answer contains another error.
  - The teacher treats the new error with some feedback strategy.

In other cases, the teacher does not give the student the opportunity to reply to the feedback. The teacher goes on to the next question, topic or another type of feedback and does not wait for confirmation or production of the student's answer. We believe that this situation can be improved by giving the students the necessary time to reply.

6.1.1 Using GAS and/or PAS based on Error Types

The results of SLA empirical investigations have shown that the relative merits of different types of feedback are still an unresolved matter (Long, 1977; Doughty and Varela, 1998; Seedhouse, 1997; Lyster, 1998b; Lyster, 1998a). The effectiveness of feedback strategies depends on multiple variables, including the particular aspects of the language being corrected, the conditions relating to the provision of teacher correction, the characteristics of the students (e.g., learning level), the complexity of the target structures, and the kind of task assigned to the students. Establishing which strategy should be the most appropriate and effective, according to these aspects is therefore a complex task.

To analyze the relationship between the types of corrective feedback and learner repairs, we looked at the student's next three turns after the teacher draws attention to the error with moves such as "give cues", "elicit completion in response to the student's incorrect answer", "repeat the error", etc. We also took into account the repair of errors after GAS and PAS. We believe that the relationship between the frequency of repairs

and frequency of each type of corrective feedback gives an indication of the immediate effectiveness of the used strategy, at least in terms of what the student did or did not try to do with it.

The results in our observational and case studies (chapters 3 and 4) show a systematic nature in the teachers' use of some types of corrective feedback:

- There is a tendency for the teachers to use more GAS for all types of errors (pronunciation, grammar and vocabulary) even though the students repaired their errors (grammar and vocabulary) at a low rate. This indicates that these types of strategies are the most frequently used by teachers to repair language errors.

- For the treatment of **grammar errors** in the classroom mode (observational study), PAS strategies are more effective than GAS. Even though the teacher uses GAS more frequently than PAS, by examining the relationships among repair and corrective-feedback, the PAS are more effective strategies than GAS for the treatment of grammar errors. In tutorial mode, there seems to be a tendency that PAS strategies are more effective than GAS. Although, it does not appear supported statistically due to small corpora size.

- For **vocabulary errors** in the two teaching modes, GAS are used more frequently than PAS, but PAS seem to be more effective than GAS for repairing vocabulary errors. Nevertheless, vocabulary errors presented a low frequency in our corpus, so further empirical investigation is still necessary.

- The vast majority of **pronunciation errors** are corrected by the teacher and repaired through GAS strategies. This means that for both teaching modes, GAS is the most frequent and effective strategy.

- The GAS group tended to produce other-initiated other-repairs in which the teacher corrects the students' errors. The PAS group generates a type of other-initiated self-repair, where the teacher prompts the student for a correct answer and the student self-repairs.

- There are no cases in which PAS is a non-interactive move (chapter 4, section

4.5.1). Indeed, the PAS group is more interactive than the GAS group in the two teaching modes.

With regard to repairs, there seems to be agreement in the pedagogical research that a learner's self-repair (i.e., of their own linguistic errors) is better than teacher-repair. It is important to distinguish other-initiated self-repair (teacher notices student's error and prompts repair but student corrects him/herself) from other-initiated other-repair (teacher notices student's error and corrects her/his error).

Self-repair is more conducive to acquisition that other-repair, as it is less likely to result in a negative affective response (Van Lier, 1988). However, the students do not want to repair their own errors. Instead, they want either the teacher to conduct other-initiated other-repair (Nunan, 1988; Seedhouse, 1997) or to be corrected as they make oral errors (Cathcart and Olsen, 1976; Chun and Day, 1982; Chenoweth *et al.*, 1983). According to Seedhouse (1997), while learners prefer teachers to conduct other-initiated other-repair on their linguistic errors, teachers tend to avoid doing so and prefer other-initiated self-repair instead. However, our empirical results indicate that teachers use more GAS than PAS, that is, other-initiated other-repair is used more frequently than other-initiated self-repair.

PAS strategies turned out to effectively support the learning process for grammar and vocabulary aspects, suggesting that an ITS should implement ways to prompt and to activate students' responses. The findings of our experimental study (chapter 5) provide further verification that this tendency can be experimentally demonstrated. Indeed, FL learners' abilities on the Spanish subjunctive mood improve more when they are presented with PAS after their errors than when they are presented with GAS. Overall, PAS strategies were found to be more effective than GAS for supporting the process of practising/learning aspects of the subjunctive mood. The learners receiving prompting strategies about the sequence of the tenses and clauses of the subjunctive were significantly better able to produce and identify the context in which the use of the subjunctive was appropriate than the other groups (GAS and control).

6.1.2 Effectiveness of GAS and PAS on Learner Level

In terms of the effectiveness of the PAS and GAS according to learner level, in both observational and case studies (chapters 3, 4, and 5) the results show a systematic nature in the types of strategies used by teachers when they correct errors:

- For beginners,[1] grammar and pronunciation are the most frequent errors, so we suggest that priority should be given to the treatment of these types of errors through a corrective feedback component in an ITS. In contrast, for intermediate and advanced learners, grammar and vocabulary errors must be favored.

- For beginners, the most effective PAS strategies to treat grammar errors were "metalinguistic cues","elicitation" (observational study) and "clarification requests" (case study). For intermediate level, they were "clarification-requests" and "elicitation", and for advanced level, all strategies were effective. The results of our studies suggest that meta-linguistic prompts were very effective for improving aspects of grammars (i.e., the subjunctive mood) in high-intermediate and advanced levels.

- For beginners, the most effective GAS strategies to treat grammar errors were "given" and "correction". For intermediate and advanced levels, "correction" was the most effective strategy. Our study also revealed that in high-intermediate and advanced levels, "correction" was the most effective GAS strategy for improving aspects of grammars.

- For vocabulary errors, the situation is less clear, due to the small number of this kind of error in our corpus. However, the results obtained suggest that the most effective PAS strategy for treating vocabulary errors in the beginner and advanced levels was "meta-linguistic cues". In intermediate level, the most effective types were "clarification-requests" and "elicitation".

- At beginner and advanced levels, "given" and "correction" were the most effective GAS strategies for treating pronunciation errors. Whereas for intermediate

[1] Data from the observational and case studies are considered at the beginner level.

level, "correction" was the most effective. Note that a "given" strategy is used by teachers when the student does not answer or his/her answer is incomplete, whereas "correction" corrects the student's error. These different characteristics involved in the use of the strategies should be considered in an ITS decision-making process.

6.1.3 The GAS and PAS groups and Teaching Modes

One observation that arose from our studies is that tutoring effectiveness derives from the correct and appropriate application of pedagogical skills that are specific to tutoring. Our case study (chapter 4) highlighted the similarities and differences among the corrective feedback that teachers use in the two teaching modes. There are several findings from this study that are worth considering in designing ITS for Foreign Language teaching:

- The tutorial mode presented a larger total number of errors than the classroom mode.
- Students have more opportunities to interact in the tutoring mode than in classroom mode. The corrective feedback in a tutoring mode may be more effective because its interactive nature affords greater opportunities for students to more actively engage in the interaction.
- In general, no significant differences were observed in the types, frequency and effectiveness of GAS and PAS between the two teaching modes.
- Pronunciation is the most frequent type of error in tutorial mode, whereas for classroom mode, grammatical errors are more frequent. This may indicate that the teacher seems to have more time in a tutorial to pay attention and correct the student's pronunciation.
- There is a tendency to use more PAS in the tutorial mode than in the classroom mode when dealing with grammar errors. This means that the student might have more opportunities to repair his/her grammar errors.

6.1.4 Combining Strategies

From our observational study, it was observed that, in some situations, when the student responds incorrectly again, the teacher tries a second feedback strategy. We observed that, at least for grammar errors, there are frequent combinations of strategies, such as elicitation-correction; meta-linguistic cues-repetition; elicitation- meta-linguistic cues; correction-elicitation; giving-elicitation, etc. As previously mentioned, it is not possible to establish a systematic nature in the assignment of the second feedback, a combination can consist of strategies from the same group, from different groups, or from other types of feedback such as clarification or explanation.

Based on these results, we suggest that the first feedback given should be based on the type of error. That is, PAS feedback must be provided for grammar and vocabulary errors, whereas GAS feedback must be provided for pronunciation errors. For the second feedback, we suggest studying the effectiveness of selecting GAS or PAS. Hence we recommend the following possible sequences of strategies:

- For grammar and vocabulary errors, we suggest two possible combinations of feedback strategies:
    1. First feedback: PAS; Second feedback: GAS
    2. First feedback: PAS; Second feedback: PAS
- For pronunciation errors:
    1. First and second feedback: GAS

6.2 Implications for the Design of ITS

As we discussed earlier, ICALL systems have incorporated NLP techniques (e.g., analyzing learners' language production or modelling their knowledge of a second language) to provide the learners with more flexible feedback and guidance in their learning process. These systems use specific parsing techniques to analyze the student's response and identify errors or missing items. This use of NLP techniques has allowed

these systems to handle more sophisticated types of feedback strategies such as meta-linguistic explanations, and "error reports" based on error analysis to correct particular student errors.

However, these types of feedback used by ICALL systems have usually taken the form of "unnatural corrections" which tend to disrupt the natural flow of conversation that typifies the current teaching approaches that SLA researchers advocate (Criswell *et al.*, 1991; Sams, 1995; Levin and Evans, 1995; Nagata, 1995; Nagata, 1997b). Although meta-linguistic feedback is a suitable strategy for intermediate and advances students (Sorace, 1985), and is a very frequent type of strategy in the PAS group, we observed that in the majority of the cases in our analysis, this feedback presents a simpler structure than other feedback strategies included in some ICALL systems (Nagata, 1995; Nagata, 1997b) (see examples in chapter 2).

Therefore, we believe it is crucial to design ITS systems for L2 that make use of the results of this thesis, in order to evaluate their effectiveness and to compare them to current ICALL systems. Advances in dialogue systems research make the more interactive techniques we propose more feasible than they were at the time many ICALL systems were designed.

Indeed, the implementation of prompting strategies involves an appropriate interaction with the students. For this, it is necessary to understand of what the student uttered-whether it was a grammar, vocabulary or pronunciation error. Such an understanding may be all that is needed to determine what kind of PAS to give and when to give them. Obviously, natural language understanding and an understanding of the content domain are crucial for appropriate prompting. Another important aspect worth exploring is the student's profile. In this regard, further information should be included about the learner level, and the learner attitude to corrections (e.g., some students like to be corrected by the teacher, whereas others prefer self-correction).

6.3 A Decision-making Model for Feedback Moves in ITS

We have defined a general model for the design of a feedback component in an ITS for Spanish as a foreign language (figure 6.1). The model is simplified, omitting the details about the analysis and processing of errors and the definition of the learner level. The sequence starts with a student's answer containing at least one error. In the case of more than one error, it is necessary to make a decision about which error should be treated first according to the learner level.

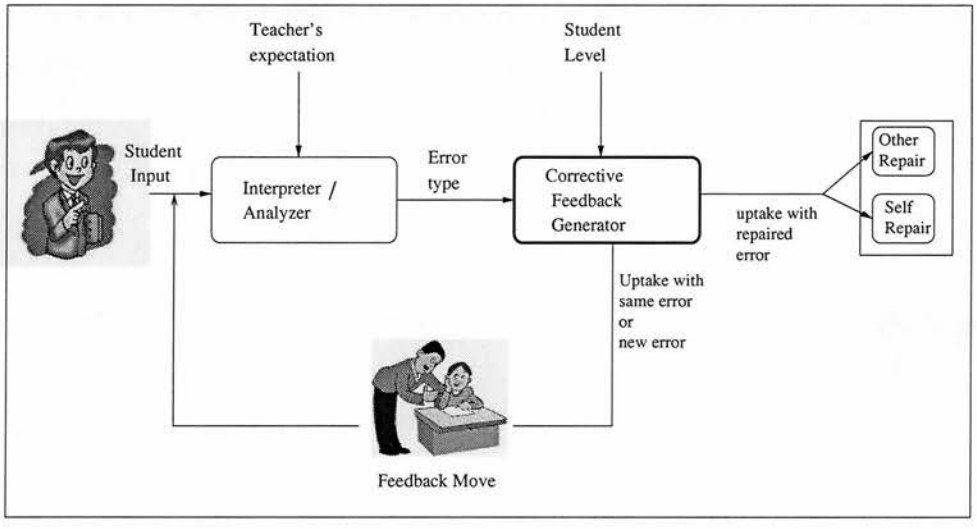

Figure 6.1: The Process of Error Treatment and Feedback Generation for an ITS in a Second Language Teaching Domain

The error is followed by corrective feedback which is treated in the model for feedback generation shown in figure 6.2. The selection of a GAS or a PAS type of feedback after the first error is performed using the following general principles as graphically highlighted in the decision tree of figure 6.3:

- For the first grammar error (beginner level), the tutor chooses a strategy from part of the PAS group (elicitation or clarification-requests).

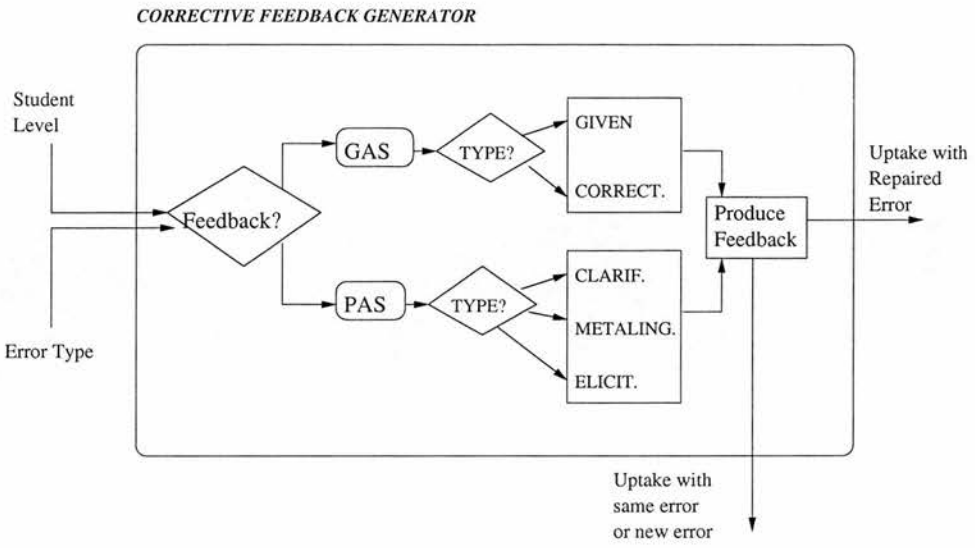

Figure 6.2: Model of Corrective Feedback Generation from 6.1

- For the first grammar error (intermediate level), the tutor chooses a strategy from the PAS group (clarification-requests or elicitation).
- For the first grammar error (advanced level), the tutor chooses a strategy from part of the PAS group (meta-linguistic cues or elicitation).
- For the first vocabulary error (beginner and advanced levels), the tutor chooses a strategy from part of the PAS group (meta-linguistic cues).
- For the first vocabulary (intermediate level), the tutor chooses a strategy from part of the PAS group (clarification-requests or elicitation).
- For the second grammar or vocabulary errors, the tutor can choose between PAS (i.e., the remaining of the most effective strategies) or the most effective GAS strategies (given or correction strategies).
- For a first or second pronunciation error (irrespective of the learner level), the tutors chooses a strategy from part of the GAS group (given or correction).

The feedback generated can be followed by different types of students' answers (uptakes):

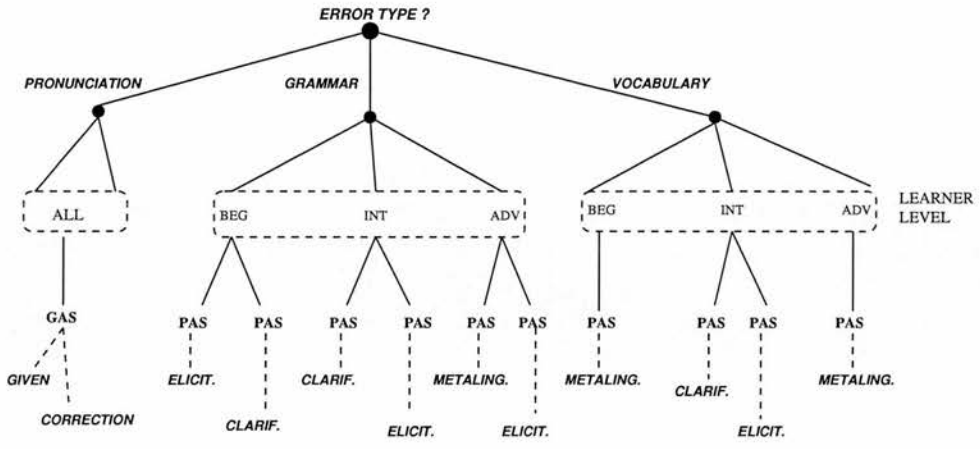

Figure 6.3: Decision Tree for Feedback Generation after the first error.

1. An immediate uptake containing the repaired error either by self-repair (if PAS was generated) or by other-repair (if GAS was generated).

2. An uptake which still contains the error. A second stage of feedback is selected according to our combinatory feedback principles.

3. An uptake which contains another error. A feedback strategy is selected according to the general principles.

Based on the given feedback strategy, two types of repairs can be produced: other-initiated **other-repair** or other-initiated **self-repair** (Van Lier, 1988; Seedhouse, 1997). In general, the GAS group produces a type of other-initiated other-repair, whereas the PAS group produces a type of other-initiated self-repair. The provision of PAS feedback helps students to alter their output in a constructive way.

We propose putting this model into practice in the context of a "Focus on Form" teaching approach in which the different types of feedback strategies can be realized so as to pay attention to the problems of linguistic accuracy. Indeed, the treatment of errors based on the proposed model can be strengthened in the context of the "Focus on Form" teaching approach because it integrates both form and meaning, and because it provides a more suitable approach for integrating and using corrective feedback strategies in a more beneficial learning context (Long, 1991; Ellis, 1997; Seedhouse, 1995;

Doughty and Varela, 1998; Doughty and Williams, 1998). In order for these feedback strategies to be effective as a component of an ITS system for a foreign language, some key issues should be kept in mind, especially those concerning the tutor model and the student model.

Treating this kind of corrective feedback effectively within this teaching approach requires the ITS's **Tutor Model** to deal with multiple aspects, including:

- Incorporating feedback strategies into the usual content-teaching style, in a natural way.
- Defining the degree of explicitness of the feedback strategies. It is necessary to choose between feedback strategies that draw the learner's attention to form unobtrusively (PAS) and those that direct the learner attention to the problem area more explicitly (GAS).
- Taking account of the degree of effectiveness of the feedback strategies according to types of error, learning level, and type of strategy.
- Determining the form among the language forms that are potentially good candidates for focus-for attention at any particular time (e.g., tenses, agreement, etc)
- Requiring to notice and to handle various learning difficulties as they arise.

As for the **student model**, the effective treatment of errors within this teaching approach requires the model to deal with the following aspects:

- Knowledge of the learner errors, that is, the records and control of errors in the different interactions where the student is involved.
- The appropriateness of the student's stage in his/her language learning process to benefit from the correction (timing of the process).
- The learner's perception about feedback: the learners must be capable of noticing the target form provided by the tutor through the feedback strategy.
- The learner's attitude to feedback (other-repair or self-repair).

6.3.1 Example of a working prototype of feedback

In order to produce feedback based on the students' errors in an ITS context, we propose a simple semi-deterministic mechanism which uses the resulting data concerning effectiveness from our studies. The input to our procedure is basically summarized by two tables whose values are extracted from our results in observational and case studies:

1. Table of effectiveness of strategy versus learning level (*ES*) per error type (table 6.1), where $ES_{(e,l,s)}$ represents the effectiveness value (between 0 and 100%) for the error type (e), for the level (l), and using a given strategy (s).

Error Type e	Strategy	
Level	PAS	GAS
beginner	$ES_{(e,b,pas)}$	$ES_{(e,b,gas)}$
intermediate	$ES_{(e,i,pas)}$	$ES_{(e,i,gas)}$
advanced	$ES_{(e,a,pas)}$	$ES_{(e,a,gas)}$

Table 6.1: Effectiveness Table for Strategy per Learning Level (ES)

2. Table of effectiveness of individual strategies versus learning level (*ET*) per error type (table 6.2), where $ET_{(e,l,t)}$ represents the effectiveness value for the error type (e), for the level (l), and using an individual strategy (t).

Error type e	Individual Strategy (i.e., PAS)		
Level	PAS_1	PAS_2	..
beginner	$ET_{(e,b,pas_1)}$	$ET_{(e,b,pas_2)}$	..
intermediate	$ET_{(e,i,pas_1)}$	$ET_{(e,i,pas_2)}$	..
advanced	$ET_{(e,a,pas_1)}$	$ET_{(e,a,pas_2)}$	..

Table 6.2: Effectiveness Table for Type of Strategy per Learning Level (ET)

From this input data, assume that the procedure is embedded in an ITS as a tutorial interface which contains the following steps:

```
   Let L be the student's learning level
   Let Sq be the set of questions

   FOR  each question Q in Sq DO
   Generate Question Q
   Get Answer Aq
   IF Aq is correct THEN
       DISPLAY repaired
   ELSE
       Eq = Detect type of error
       Produce_feedback_for_Answer(Aq,Eq,L)
   END-IF
END-for
```

Here, `Produce_feedback_for_Answer(Aq,Eq,L)` is the process that produces the feedback given the current answer Aq and handles any subsequent error for this question, the detected error Eq and the student's level L. This first determines whether a PAS strategy must be given (GAS otherwise) and then produces the corresponding type of strategy:

```
PROCEDURE    Produce_feedback_for_Answer(Aq,Eq,L)

OUTPUT: Type of Strategy (T)

  Let AllowedErrors be the fixed number of allowed errors (2)
  Current_Error = 0
  WHILE (Current_Error < AllowedErrors) AND  (Aq is not repaired) DO
       IF    give_PAS(L,Eq)    THEN
          T = select_feedback_type(PAS,Eq,L)
       ELSE
          T = select_feedback_type(GAS,Eq,L)
       END-IF
       DISPLAY feedback according to  type T
```

```
        Determine Effect (uptake): Get new Answer Aq
        IF (Aq is repaired) THEN
          student's effect is self_repair if strategy is PAS
          or other_repair if strategy is  GAS.
        END-IF
        ELSE student's effect is unrepaired
        Current_Error = Current_Error + 1
  END-while
END-Procedure
```

When the first error is detected, the feedback is given based on the strategy with the highest effectiveness value in input table ES. Next, the type of feedback is generated in decreasing order of effectiveness of table ET providing that the generated type is not repeated for the same question.

When an error is made for the second time, the strategy with the highest effectiveness value is produced if the current error is the same as the previous one. If there is a new type of error, a probabilistic selection of a strategy is performed by choosing the strategy whose effectiveness value exceeds a randomly generated value between 0 and 1. The probability of choosing PAS or GAS is given by a real value which is proportional to each strategy's effectiveness. For example, the probability of selecting PAS as the next produced strategy will be given by:

$$Prob(\text{“}pas\text{”}) = \frac{<Effectiveness\_of\_PAS>}{<Total\_effectiveness(PAS+GAS)>}$$

For example, the probability for choosing a PAS feedback considering grammar errors at beginner level in table 6.4 is calculated as:

$$Prob(\text{“}pas\text{”}) = \frac{91}{91+53} = \frac{91}{144} = 0.63$$

Accordingly, the procedure to determine whether a PAS strategy should be produced or GAS otherwise, proceeds as follows:

```
PROCEDURE    give_PAS(L,Eq)

OUTPUT: TRUE if PAS is given, FALSE otherwise
   IF (<first error> OR (Eq = <previous error>) THEN
      For error Eq:
      IF  ES(Eq,L,pas)>ES(Eq,L,gas)  THEN
           return TRUE
      ELSE return FALSE
   ELSE     ** Probabilistic  Step **
      Let TES be total effectiveness for L:
          TES =  ES(Eq,L,pas)+ES(Eq,L,gas)
      Let P_pas  be the probability of choosing a PAS strategy
      P_pas    = ES(Eq,L,pas)/TES
      P_random = <Generate Random real value between 0 and 1>
      ** Determine whether PAS is chosen **
      IF (P_random < P_pas)  THEN
           return TRUE
      ELSE return FALSE
   END-IF
END-PROCEDURE
```

Once the strategy (S) is selected, the specific type of feedback is generated according to S, the error type (Eq) and the level (L) by using the following procedure:

```
PROCEDURE   select_feedback_type(S,Eq,L)

INPUT: Strategy (S), Error type (Eq), Learner Level (L)

OUTPUT: type of strategy T

Let St be the values of effectiveness of possible individual
   strategies for S from {ET(Eq,L,t)}
Select the type of strategy with  effectiveness value T from St
```

```
   such that:
  1) T is the highest effectiveness   value in St
  2) The type of strategy with effectiveness T has not been
  used before in the same question
END-PROCEDURE
```

A working example of the whole mechanism using the results from our study has been implemented in a simple Prolog module. The input corresponding to the effectiveness values from our studies (observational and case study) is summarized in the tables as follows: The Tables 6.4 show the effectiveness values for each error type (grammar, vocabulary, pronunciation). In addition, in Tables 6.5 and 6.6, the effectiveness values for the specific types of strategies per level for each error type are shown. Here, "n/a" denotes a strategy (or type of strategy) that was not used by the participants in the experimental groups (its effectiveness value is 0), given the corresponding learning level.

The types of GAS strategies included "given", "correction" and "recast". Whereas for PAS, the types involved "clarification-requests", "elicitation", and "meta-linguistic cues".

Gra.	Strategy	
Level	PAS	GAS
beg.	91	53
inter.	60	41
adv.	100	45

Voc.	Strategy	
Level	PAS	GAS
beg.	100	60
inter.	92	37
adv.	100	30

Pron.	Strategy	
Level	PAS	GAS
beg.	n/a	93
inter.	n/a	50
adv.	n/a	70

Figure 6.4: Actual Effectiveness Values of Strategy per Level (ES)

The corresponding feedback produced for a set of 4 questions with different error types detected in a simulation can be seen in the following working trace:

```
Level: beginner Question 1-> (error?) : gra. Input Detected Error:
gra
  Detected Error: gra
```

Gra.	GAS			PAS		
Level	given	corr.	recast	clarif	elic	meta
beg.	75	70	n/a	100	73	n/a
inter.	100	71	n/a	100	55	n/a
adv.	n/a	51	40	n/a	100	100

Figure 6.5: Actual Effectiveness Values of Type of Strategy per Level for Grammar Errors (ET)

Voc.	GAS			PAS		
Lev.	giv.	corr	reca.	clar.	eli.	meta
beg.	n/a	43	n/a	n/a	n/a	100
inter.	n/a	50	33	100	100	80
adv.	n/a	50	28	n/a	n/a	100

Pro.	GAS		
Lev.	giv.	corr	reca.
beg.	93	85	n/a
inter.	n/a	25	n/a
adv.	n/a	83	n/a

Figure 6.6: Actual Effectiveness Values of Type of Strategy per Level for Vocabulary and Pronunciation Errors (ET)

```
Generated Strategy:  pas
Type:   clarification_requests
```

In the first question, the student (beginner) makes a grammar error so a "clarification_requests" (PAS) is generated (see table 6.4 where the effectiveness of PAS is better than GAS, and from tables in 6.5, clarification_requests is the most used PAS strategy):

```
Answer question 1 again ( attempt no. 1) -> 1.- Repaired. 2.-
Unrepaired. Type of Repair?: : 1. Effect:
pas/self_repair(repaired) Error for the same question (none,
<error>)?: none.
```

The student supposedly repairs the error so the effect above is a self-repair. For the second question, the student makes a grammar error and the same information is generated:

```
Question 2-> (error?) : gra. Input Detected Error: gra
  Detected Error: gra
  Generated Strategy:  pas
  Type:   clarification_requests
```

However, the effect is a unrepaired utterance so the question has to be answered again:

```
Answer question 2 again ( attempt no. 1) -> 1.- Repaired. 2.-
Unrepaired. Type of Repair?: : 2. Effect: unrepaired Error for the
same question (none, <error>)?: gra.
  Detected Error: gra
  Generated Strategy:  pas
  Type:   elicitation
```

The student makes the same grammar error for the second time. As this is the same error type, a strategy is randomly selected (according to the probabilities), producing an "elicitation"-type PAS. Next, the student repairs the error:

```
Answer question 2 again ( attempt no. 2) -> 1.- Repaired. 2.-
Unrepaired. Type of Repair?: : 1. Effect:
pas/self_repair(repaired) Error for the same question (none,
<error>)?: none.
```

For the following question (3), the student makes a grammar error:

```
Question 3-> (error?) : gra. Input Detected Error: gra
  Detected Error: gra
  Generated Strategy:  pas
  Type:   clarification_requests
```

The error is repaired but in answering the question again a different error type is detected (pronunciation), therefore the strategy with the highest effectiveness for this error and level is selected ("given"/GAS):

```
Answer question 3 again ( attempt no. 1) -> 1.- Repaired. 2.-
Unrepaired. Type of Repair?: : 1. Effect:
pas/self_repair(repaired) Error for the same question (none,
<error>)?: pro.
  Detected Error: pro
  Generated Strategy:  gas
  Type:   given
```

Next, the student repairs the error but makes a second error (pronunciation). As the model gives account up to the second error only, the student is taken to the next question:

```
Answer question 3 again ( attempt no. 2) -> 1.- Repaired. 2.-
Unrepaired. Type of Repair?: : 1. Effect:
gas/other_repair(repaired) Error for the same question (none,
<error>)?: pro.
  Detected Error: pro
Go on with the next question.
```

Chapter 7

Conclusions and Further Issues

As we pointed out earlier, feedback moves have constituted one of the central aspects of research into producing effective learning in ITS. However, little work on feedback has been done in areas such as ITS for foreign languages or ICALL. Many ICALL systems are created apparently without the authors of these programs considering the issue of how teachers deal with students' errors. SLA research on feedback strategies reveals that teachers have a wide variety of strategies available for the treatment of students' errors. However, it is only recently that systematic studies into the type, frequency and effectiveness of different feedback strategies have been carried out (Long *et al.*, 1997; Doughty and Varela, 1998; Seedhouse, 1997; Lyster, 1998b; Lyster, 1998a).

7.1 Conclusions

In this thesis, we examined a series of considerations for generating corrective feedback in Spanish as a second language in order to contribute to the treatment of errors in an ITS context. We started addressing research questions concerning type, frequency and effectiveness of feedback strategies. Our results reflect the complexity of the process for the treatment of errors and have directly led to a much better understanding of the issues involved. It was also found that it is not only important to select a suitable teaching approach, but also to establish an appropriate set of feedback moves so as to support the students with effective strategies which help them to activate, to construct

and to teach the different types of features involved in second language learning.

With the purpose of providing guidelines for researchers to develop feedback strategies for ITS in the domain of Foreign Language teaching, we studied both positive and corrective feedback strategies in Spanish as FL. Throughout our empirical studies, feedback strategies were investigated in terms of questions which ITS developers might reasonably ask: which errors to treat, when to treat them, and how to treat them.

As expected, this research has confirmed the theme of feedback and guidance moves in ITS for FL as an open area for future developments. Some of these are related to aspects that need more investigations such as the different types of interaction involved in PAS and GAS, while others represent improvements and openness to new development.

It is also worth mentioning the limitations of the corpus used for this research. We gathered several varieties of Spanish L2 classroom interactions which are focused on meaning (13 classroom and 3 tutorial) and on forms (6 classroom and 2 tutorial). Despite these being an appropriate size, we were unable to get a balanced database for comparing the two teaching approaches. Even though the corpus (tutorial corpus) was not small, and was varied enough for us to be able to see tendencies in the organization of the feedback strategies in the L2 tutorial interaction as a whole, it would be desirable to have a much larger and varied corpus to explore.

To assess learning gain, we analysed what happens in the student's next three turns after the teacher draws attention to, corrects, gives information, or elicits completion in response to the student's incorrect answer. Even although the commonly used notion of effectiveness has limitations, the relationship between the frequency of repairs and frequency of each type of corrective feedback gives an indication of the immediate effectiveness of the feedback, at least in terms of what the student did or did not try to do with the feedback. In cases where the student's response to the feedback is a correct answer, this may indicate that the student has noticed the error and the correct answer may indicate "a step at least toward acquisition" (Lightbown, 1998). This awareness of the gap between what the students want to say and what they can say, and what they do not know and what they know, as only partially provided by some corrective strategies, can be a first step towards improvement.

The results of the research suggest that it would be useful to study and analyze a bigger and more heterogeneous corpus of one-to-one tutorial interactions. This aims at investigating further details concerning the issues discovered in our studies such as the combination of feedback moves.

In a individualized educative context it is possible to observe more clearly and deeper the different types of assistance provided by the teacher to the student so to improve his/her discourse production (i.e., scaffolding techniques or combination of strategies which work this way). In addition, it would be extremely important to study the deep interaction in terms of the behavior of the most typical individual strategies in the context of second language acquisition such as meta-linguistic cues, recast, etc.

As for the experimental study, the proposed current design might be improved by having more precise student profiles that will interact with the design's interface. This could deal with the problem which comes up when human subjects are randomly selected as the sample is not properly balanced in terms of the subjects' linguistic competence. This is the situation in which the GAS group showed a better competence than the PAS group. Instead, we'd like to have more homogeneous groups so that we could assess the subjects in advance and better distribute them in a compensatory way.

A important contribution of the experiment is that the treatment of the sample was done in a flexible way in terms of timing and each subject's location. This novel way to deal with samples using Internet resources and distance education technologies shows us a promising method to carry out experiments by using diverse, heterogeneous and ubiquitous samples. At the same time, this suggests the need for a better and deeper treatment of the sample in terms of the selection of subject groups and their linguistic competencies.

Another key contribution of our research was the collection of a corpus for Spanish as L2 composed of different levels of proficiency which was also transcribed and classified according to several moves involved in natural interactions. Indeed, collecting natural classroom interactions is not an easy task because of the professional commitment of teachers and the unwillingness of students so to be recorded.

Although video-tapes record the context and the children´s activities as well as their dialogue interaction, this method of observation is harder to use in the classes

because video cameras are much more intrusive than tape recorders.

In particular, the Spanish language has few naturalistic studies based on real classroom corpus so our data become an important contribution. However, it would be beneficial to produce a bigger corpus, specially concerning the teaching mode in one-to-one interactions. Since they are less typical in a language context, it makes it difficult to collect and analyse data.

We think that this type of used methodology allows us to deal with the lack of a bigger corpus so to be in better conditions to suggest valuable tends in terms of the studies feedback strategies.

7.2 Further Issues

On the basis of this thesis, its results and limitations, there are a number of directions for future research:

- The robustness of the obtained empirical results needs to be verified in future research: it would be worth investigating how L2 teachers combine feedback strategies, and whether teachers tend to use sequences of strategies in a particular way.

- The relationship between the feedback strategies and the teaching approach also needs to be examined: empirical research has shown that the integration of feedback into the focus on form approach has been effective (Doughty and Varela, 1998). Accordingly, we propose to compare the effectiveness of GAS and PAS in both Focus on Form and Focus on Meaning teaching approaches. This aims at getting empirical evidence to support the greater effectiveness of PAS over GAS in a Focus on Form approach, and at the same time, to verify that corrective feedback for a Focus on Form approach is more effective than that for a Focus on Meaning approach in terms of its linguistic accuracy.

- Our studies suggest that teaching and practising grammar aspects might be more effective if they were complemented with instructional efforts aimed at prompting the learners' abilities. For this, we propose to design and implement a proto-

type ITS for improving the learning of other grammar aspects supported by PAS and GAS strategies.

- Further experimental results should be obtained about how learners respond to the different feedback strategies, and whether they result in changes to their learning in the long term. The tendency found in the experimental study may well be verified in longer term experiments.

- Based on the results of our case study, no differences in the frequency or effectiveness of GAS and PAS used in tutorial mode were observed as compared to the classroom mode. However, there are valuable issues concerning the nature of interactions which should be further investigated. Here, we are particularly interested in investigating the different type of interaction involved in each individual strategy and in the combination of them in order to determine whether better interaction in processing feedback may improve the students' learning.

- Our current research can potentially be replicated with other languages as a second language in order to verify the types, frequency and effectiveness of the used feedback strategies so as to make our results and tendencies more robust.

- In terms of vocabulary errors, further analyses are required to investigate the effect of the feedback strategies in a larger tutoring corpus which takes into account assessments based on a pre-test/post-test design.

- Implementing combinations of feedback strategies might be a mechanism worth exploring in future research as long as the ITS allows for the coordination of several strategies to improve effectiveness. For example, "elicitation" and "clarification-requests" fail to activate previous knowledge. Hence a followup GAS strategy that directly corrects or provides the answer could be suitable in this learning context.

- Another important issue concerns the learner's point of view about the different types of corrective feedback: it would be useful to elicit the learners' point of view about their particular preferences as they are corrected. Some specific questions might be addressed: "Do the students want to be corrected?", "Which

strategies are more appealing between the PAS and GAS groups?", "Do the students prefer to correct their errors by themselves or have them corrected by the tutor?" (Cathcart and Olsen, 1976).

- The pedagogical effects of our study on the use of feedback strategies have not yet been proven: the feedback strategies proposed for the treatment of errors in an ITS can be oriented to Spanish in second language classrooms.

- An open question which may guide investigations into different strategies involves rethinking the role of corrective feedback in second language teaching (i.e., What is its role? is it correcting and/or activating previous or new knowledge, or a combination of these to support the teaching-learning process?, etc).

  So far, ICALL systems correct errors by instructing through long, sophisticated and unnatural explanations or error reports, which block effective interaction. We suggest investigating the effective combinations of correction-instruction, activation-correction, and activation-instruction in more natural interactional settings.

Overall, our research approach has been enriched from different disciplines such as Second Language Acquisition (SLA), Intelligent Tutorial Systems (ITS), Intelligent Computer Assisted Language Learning. These diverse perspectives lead to general questions about how ITS can contribute to alleviating the limitations or disadvantages presented by a classroom mode in the treatment of errors, such as giving more opportunity for interactions, prompting corrections, and repairing errors. Moreover, the necessity of implementing feedback strategies in ITSs expands our understanding of this key issue and enables us to envisage the kind of contribution that can be useful for the ITS area, while also improving the teaching-learning process in the context of SLA.

Appendix A

Example of Transcription

Id:traditional4
Subject: Comentario de noticias
Teacher: T4
Focus on Meaning
Teaching Mode:tradicional

Interaction 1

Other 1 S1. Buenos días señora Other 2 T. Buenos días clase..
Other 3 T. >Cómo están ustedes?
Other 4 G. Bien
Conversation-management 5 T. Ok..hoy vamos a tener una clase de conversación Ustedes tienen sus papeles, sus artículos de las Relaciones entre Los Estados Unidos y Cuba .. El tópico hoy es las relaciones entre Cuba y Los Estados Unidos. Ustedes van a leer y después vamos a discutir el contenido del artículo (Lectura del artículo: feedback simple, mmmh, ah bien, gracias, muy bien).

Question-Structure 1 Student-answered-question

Diag-query 6 T.Ahora vamos a hablar, >Qué dice el artículo?.. >Qué

está diciendo?...>Qué quiere decir? Ah.? >de qué se trata el artículo?
Unintelligible 7 S2. .....
Action-directive 8 T. En voz más alta...
Request-clarification 8 T. >Cómo?
Unintelligible 9 S2. ....
Acc 10 T. Muy bien
Rephrasing 10 T. el caso de Elián y las relaciones entre Los Estados Unidos y Cuba y >cómo afecta el caso?, >cómo afecta las relaciones?...
Conversation-management 11 T. Vamos a examinar los párrafos.El primer párrafo el caso del niño cubano,

Question-Structure 2 Student-answered-question

Diag-query 12 T. >qué dice el Primer párrafo?, explícame..El caso del niño cubano ha revolucionado el debate político...en los Estados Unidos durante los últimos cinco meses..ok...la pregunta es...>es la situación con Elián? >Cuál es el caso? >Quién sabe?
Unintelligible 13 S3. ..... (ininteligible en inglés)
Akn 14 T. Aha,
Info-request 14 T. pero dame el cuento, la historia ...>Cuál es el cuento? What's the history?
Unintelligible 15 S3.
Action-directive 16 T. Trata en español.....
Followup 17 T. sí puede ayudarle ..sí está bien... estaba viajando...viajando... y estaba viajando...>cómo?
Partially-correct 18 S4. a Miami
Repetition 19 T. A Miami
Acc 20 T. muy bien
Hint 20 T. En ..en ..>Cómo? En un autobús...en un coche...en...

Correct 21 S3. En barco
Acc 21 T. Muy bien, Student4,
Repetition 21 T. en barco...

Question-Structure 3
Student-answered-question

Diag-query 22 T. y >qué pasó con su mamá?..>qué pasó con su mamá?
AnsL1 23 S5. His mother.... died
Acc 24 T. Muy bie
Repetition 24 T. His mother died
Info-request 25 T. Cómo se dice en Español?
Partially-correct Pro 26 S6. El morir
Correction-recast 27 T. >El?
Minor-errors vword 28 S6. Su ... su mamá died
PAS 29 T. Su mamá
Acc 29 T. aha
PAS 30 T. Su mamá ....
AnsL1 31 S6. Died
Acc 32 T. Ok ...
Hint 32 T. T. yo les voy a dar el verbo to die...
Correct 33 S6. morir
Correct 34 S7. Morir
GAS 35 T. y el tiempo es..murió...su mamá murió....
Correct 36 S7. Murió
Acc 37 T. ok..
Repetition 37 T. Murió.. su mamá
Acc 37 T. Ok
Action-directive 38 T. Entonces.. dame la frase completa, por favor..
Diag-query 38 T. His mother died..dame la frase por favor Student7

... Elián was travelling by ship and his mother died..>cómo se dice en Español?
Incomplete structure 39 S7. Su mamá..
Akn 40 T. mhm
Incomplete structure 41 S6. murió...
Akn 42 T. mhm
PAS 42 T. en..
Incomplete structure 43 S6. viaje
Akn 44 T. mhm
PAS 44 T. >cuándo...?
Request-clarification 45 S6. >cuándo?
Ans 46 T. when?
Incomplete structure 47 S6. ..su barco..
Acc 48 T. Oh!!..ok..Student6
Minor-errors tense 49 S7. Mientras su mamá viajando a barco
GAS 50 T. Estaban viajando
Minor-errors prep 51 S7. estaban viajando a barco
GAS 52 T....en barco
Correct 53 S7. Estaban viajando en barco
Acc 54 T. aha
correct 55 S7. pero su mamá murió
Acc 56 T. Muy bien...muy bien Student7,
Rephrasing 56 T. su mamá murió

Question-Structure 4
Student-answered-question

Diag-query 57 T. y >qué pasó después? >Qué pasó con Elián después?
Action-directive 58 T. Trata Student.
Unintelligible 59 S8. .....
Akn 60 T. Aha,

Action-directive 60 T. dame una frase...
Diag-query 60 T. >Qué pasó con elián después?
Action-directive 60 T. aja..muy bien...en voz más alta
AnsL1 61 S8. en inglés
Acc 62 T. sí...
Info-request 62 T. pero >puede explicarme en español?
Minor-errors tense 63 S8. Yo vivo en..
GAS 64 T. >vivo?.. >Yo vivo? ..
Reject 64 T. no ...
PAS 65 T. >qué tiempo estás utilizando?
Unintelligible 66 S8.
GAS 67 T. vivía
Correct 68 S8. vivía ...el vivía en Miami, pero su papá
Repetition 69 T. Pero su papá
Akn 70 T. mhm
Incorrect agreement 71 S8. quiero...
Reject 72 T. no ..no quiero..
PAS 72 T. su papá...
Minor-errors conjugation 73 S8. quier...
GAS 74 T. no no..es un "e"
Correct 75 S8. Quiere
Acc 76 T. muy bien
Repetition 76 T. su papá quiere.. según el vivía en Miami pero su papá ...
Correct-irrelevant 77 S9. el vivía con su tía y su tío...primo
Rephrasing 78 T. El vivía en Miami con su tía y su tío y también sus primos
Acc 79 T. Bueno...bien...

Question-Structure 5
Student-answered-question

Diag-query 80 pero >qué pasó con su papá en Cuba?
Diag-query 81 >Estaba contento su papá? O >no estaba contento?
Correct-irrelevant 82 S10. su papá está en Cuba
Repetition 83 T. su papá está en Cuba...
Minor-errors vword 84 S11. gobierna..
Acc 85 T. sí
GAS 85 T. con el gobierno..sí
Acc 85 T. muy bien Student11
Diag-query 86 T. pero >cuál era la situación con el papá? >El papá estaba contento? O no?
Incomplete 87 S10. su papá..
Hint 88 T. su papá...su papá >estaba contento?
Correct 89 S10. no
Repetition 90 T. no
Incomplete 91 S10. pero el.. Miami..y..su papa decía ..decía .. decir ..decíe en Miami..
Info-request 92 T. decir..qué?
Correct 93 S10. no está
Rephrasing 94 T. según Student10 no estaba contenta pero su papá lo quería..
Rephrasing 95 T. según Student11 el gobierno tiene que ver con el caso...

Question-Structure 6
Student-answered-question

Diag-query 96 T. >Qué hizo el gobierno de Cuba ....?
Diag-query 96 T. >Quién es el líder del gobierno de Cuba?
Correct 97 S12. Es Fidel Castro
Repetition 98 T. Es Fidel Castro

Acc 99 T. muy bien....

Question-Structure 7
Student-answered-question

Diag-query 99 T. y >Qué hizo Fidel?
Correct-irrelevant 100 S13. Fidel es el presidente de Cuba
Acc 101 T. Muy bien...
Rephrasing 101 T. Fidel es el presidente de Cuba muy bien y
Followup 101 T. >Qué hizo Fidel en cuanto al caso de Elián?
Minor-errors tense 102 S13. El quiere..
GAS 103 T. Fidel quería que Elián..
Minor-errors vword 104 S13. Elián viviera return con su papá
Acc 105 T. Ok
PAS 105 T. Fidel quería que Elián...
Followup 105 T. >Cómo se dice to return?
Correct 106 S14. volver
Acc 107 T. muy bien..
Followup 107 T. >otra palabra? >Otra palabra re..re..regre..?
Correct 108 S15. regresar
Repetition 109 T. regresar
Acc 109 T. bien...
Rephrasing 110 T. Entonces Fidel querría que Elián regresase a casa ok con su papa
Acc 111 T. Ok,
Explanation 111 T. entonces la situación era muy grave, porque Fidel no quiere que Elián quedase en EEUU,

Question-Structure 8
Teacher-answered-question

Diag-query 112 T. >por qué...?
Diag-query 112 T. >cuál era la situación entre EEUU y Cuba?...
>Eran amigos?
Correct 113 S16. no
Repetition 114 T. no
Request-clarification 114 T. pero >qué hace que dice el presidente de los Estados Unidos? O Cuál era la situación en Los Estados Unidos?
Followup 115 T. >Cuál era la situación en Miami en los Estados Unidos? >Qué pasó con la familia de Elián en Miami..? >Qué pasó?
Incomplete structure 116 S16. La familia de Elián
GAS 117 T. mhm..en Miami
Minor-errors tense 118 S16. en Miami quier quiero ..
PAS 119 T. quie..quie
Incorrect tense 120 S16. quiero
Reject 120 T. No, no quiero .....
PAS 120 T. past tense...
Incorrect tense 121 S16. quiere que Elián ...
Action-directive 122 T. Ayúdala Student17, por favor..
Incorrect tense 123 S17. quedar
GAS 124 T. >quedar?
Clarification 124 T. Pero recuerda Student17 que estamos hablando del pasado...
Rephrasing 124 T. entonces tienes que decir la familia querría .. they wanted que Elián quedase en Miami con ellos.

Question-Structure 9
Student-answered-question

Diag-query 125 T. >Qué pasó después?
Diag-query 125 T. >Había muchas demostraciones?

Diag-query 126 T. >Dónde?
Incomplete 127 S18. en Miami
Repetition 128 T. en Miami
Hint 128 T. y también en...
Correct 129 S19. En cuba
Rephrasing 130 T. En Miami y también en Cuba...si había muchas ...muchas...muchas..

Question-Structure 10
Student-answered-question

Diag-query 131 T. Y >cómo resolvieron la situación?....
Diag-query 131 T. >qué pasó después? Después de todo...
Incomplete tense 132 S20. Elián volv..
GAS 133 T. >Elián?
Incomplete tense 134 S20. volv..
PAS 135 T. vol
Correct 136 S21. volvió
Acc 137 T. Muy bien,
Rephrasing 137 T. volvió Elián ...volvió a Cuba
Acc 137 T. Excelente...muy bien

Question-Structure 11
Student-answered-question

Diag-query 138 T. y >qué piensan ustedes que piensan ustedes del caso?..What do you think?
Correct 139 S22. estúpido
Rephrasing 140 T. Según Student22 era estúpido..
Followup 140 T. >por qué?
Unintelligible 141 S22. Why? Lo importante...

Acc 142 T. Ok...
Rephrasing 142 T. según Student22 es estúpido porque la situación real no es el enfoque. El enfoque en Elián,
Rephrasing 142 T. ella piensa que la situación tiene que ver con la política...the politics la política de los EEUU y Cuba.

Interaction 2

Conversation-management 142 T. Y >cuál es la situación de los Estados Unidos y Cuba?...>Cuál es la situación? Ustedes dicen que no son amigos..vamos a investigar a averiguar..
Action-directive 143 T. Vamos a investigar,
Conversation-management 143 T. vamos a leer el párrafo seis ..el sexto párrafo " EEUU que no tiene relaciones diplomáticas con Cuba". Todo el mundo lean por favor...vamos a avaeriguar la situación entre Cuba y los Estados Unidos.
Action-directive 143 T. Lean el párrafo,
Ans 144 G.(La clase lee en voz alta al unísono)
Action-directive 145 T. Ustedes tienen que explicarme qué dice este párrafo ..

Question-Structure 12
Teacher-answered-question

Diag-query 146 T. >Qué dice este párrafo?
AnsL1 147 S23. En inglés
Akn 148 T. Muy bien
Repetition 149 T. Mantiene un embargo económico....
Followup 149 T. >Cuál es un embargo económico? >qué significa?
Correct 150 S23. Economic embargo
Acc 151 T. Sí.. Muy bien,

Request-clarification 151 T. pero >qué significa realmente...?
AnsL1 152 S23. respuesta en inglés
Acc 153 T. Muy bien...muy bien...
Info-request 153 T. pero podemos explicarlo en español. Puede explicar en español ..no tiene relaciones diplomáticas ... mantiene un embargo económico...cuál es un embargo económico?
Hint 154 T. Cuando un país..
Followup 154 T. >qué significa país?
Correct 155 S24. country
Repetition 156 T. country
Explanation 156 T. cuando un país no puede enviar..
Followup 157 T. What's enviar?
Explanation 157 T. To send en este caso.. enviar bienes... goods ..o hacer negocios
Followup 158 T. >What´s hacer negocios?
Correct 159 S24. negotiation
Acc 160 T. aha..
Followup 161 T. >Hacer negocios? No puede hacer negocios ....What's hacer?...
Correct 162 S25. to do
Repetition 163 T. to do...
Followup 163 T. >negocios?
Incorrect vword 164 S24. negotiation
GAS 165 T. >negocios?...business
Rephrasing 166 T. No pueden hacer negocios con otro país...
Request-clarification 166 T. >Comprende clase?
Ans 167 G. yes..
Akn 168 T. right

Question-Structure 13
Student-answered-question

Diag-query 169 T. Mantiene un embargo económico contra el país caribeño ..>Desde cuándo? ...when?
AnsL1 170 S26. Ninetenn sixty two...
Info-request 171 T. en español
Correct 172 S26. 1962
Repetition 173 T. 1962
Rephrasing 174 T. hace mucho tiempo..>no? long time ago...1962 hace mucho tiempo

Question-Structure 14
Teacher-answered-question

Diag-query 174 T. una política que endureció en 1996 con la ley que provee sanciones..What´s sanciones? ..
Correct 175 S27. sanctions
Followup 176 T. what's about provee?
AnsL1 177 S27. ...(incorrect)
Reject 178 T. no, no..
Explanation 178 T. provee ..contra cualquier empresa del mundo...
Followup 178 T. What´s empresa del mundo ...
Incomplete vword 179 S28. ...de world
PAS 180 T. what´s about empresa...>empresa tiene que ver con negocio?
Correct 181 S28. company..
Repetition 182 T. company
Acc 182 T. muy bien
Rephrasing 182 T. so any company of the world.. that mean business in the world

Question-Structure 15

Teacher-answered-question

Diag-query 183 T. Piensan ustedes que los países desarrollados..
>what's los países desarrollados? >Países desarrollados?
Diag-query 183 T. ..qué quiere decir desarrollados?
Diag-query 183 T. >Nadie? Ok ..
Explanation 184 T. Los países grandes que tienen mucho dinero...y son ricos..
Incomplete vword 185 S29. ..country..
Acc 186 T. Ah sí ....
PAS 186 T. pero >en otra palabra desarrollados..?
Unintelligible vword 187 S30.
Reject 188 T. no no no..
Info-request 188 T. >cómo?
Action-directive 188 T. Más fuerte por favor
Correct 189 S15. Develop
Acc 190 T. Excelente...
Repetition 190 T. develops ..
Acc all right..
Rephrasing 191 T. son los países desarrolados son develops countries que tienen mucho dinero y son más o menos ricos...
Domain 191 T. También tenemos otros países los países en vía de desarrollo
Followup 191 T. What do you think ...qué quiere decir .... >cómo se expresa?
Incorrect vword 192 S8. semi develops..
Reject 193 T. no,
Incorrect vword 194 S16. slight country
Reject 195 T. no..
Incorrect vword 196 S24. on develops
Reject 197 T. no,..

PAS 197 T. we use it all the time to describe Jamaica y los países pobres..
Correct 198 S11. Poor countries.....
Repetition 199 T. poor countries ..
Akn 199 T. bien..
Repetition 199 T. developing ...países en vía..
Rephrasing 199 T. entonces tenemos que usar estas dos expresiones los países desarrollados y los en vía de desarrollo...

Question-Structure 16
Student-answered-question

Diag-query 200 T. Dame un ejemplo de un país desarrollado.. un ejemplo ..
Incorrect 201 S9. for example...Cuba
GAS 202 T. Cuba?..>Cuba es un país desarrollado..?
Incorrect 203 S18. Jamaica...
PAS 204 T. Ok..Escucha dame un ejemplo de países desarrollados ...
Correct 205 S7. EEUU
Action-directive 206 T. en voz más alta student36..
Correct 207 S22. EEUU
Correct 208 S12. Los Estados Unidos
Repetition 209 T. Los Estados Unidos
Followup 210 T. Están de acuerdo Do you agree?
Ans 211 G. sí
Rephrasing 211 T. Los Estados Unidos es un país muy desarrollado.. very develops country...ok..
Acc 211 T. muy bien...
Followup 211 T. >otros países desarrollados?
Incorrect 212 S17. Cuba
GAS 213 T. >Cuba? ...>Cuba es un país desarrollado?

PAS 214 T. Piensa bien student 17..

Correct 215 S23. America EEUU

Acc 216 T. ya ..ya decimos..

AnsL1 217 S10. England...

Info-request 218 T. >en Español England?

Rephrasing 218 T. Inglaterra ...

Acc 218 T. también...

Incorrect 219 S25. Haiti..

Reject 219 T. no student40..Haiti ...es un país muy..muy pobre..

Incorrect 220 S20. Europe

Correct 221 S13. Canada

Reject 222 T. Europa no es un país..es un continente...

Correct 223 S18. México

Rephrasing 224 T. México?..México también es ..es un país en vías de desarrollo...

Unintelligible 225 S24. .....

Info-request 226 T. >Cómo?

Correct 227 S16. Cánada

Acc 228 T. sí..

Rephrasing 228 T. Canada también es un país desarrollado

Correct 229 S20. France

Repetition 230 T. La Francia ..sí también..

Followup 231 T. y >los países en vías de desarrollo?

Correct 232 S30. Jamaica..

Acc 233 T. sí muy bien...

Correct 234 S13. Cuba

Repetition 235 T. Cuba

Acc 235 T. muy bien...

Correct 236 S25. Jamaica

Akn 237 T. sí student ya decimos...

Correct 238 S32. Caribe

Akn 239 T. muy bien Student32..
Rephrasing 239 T. muchos países del Caribe...

Question-Structure 17 Teacher-answered-question

Diag-query 240 T. otra pregunta ....>Piensan ustedes que los países desarrollados tienen el derecho el derecho ... de intervenir..?
Followup 240 T. >qué significa intervenir?
Correct 241 S26. intervene
Acc 242 T. muy bien
Repetition 242 T. intervene..
Followup 243 T. Tienen el derecho de intervenir en la política ...>qué significa política?
Correct 244 S30. politics
Repetition 245 T. politics..
Acc 245 T. muy bien
Diag-query 246 T. >Tienen el derecho de intervenir en la política de los países en vías de Desarrollo?
Diag-query 246 T. Voy a repetir...piensan ustedes que los países desarrollados..tienen el derecho de intervenir en la política de los países pobres? >Quién comprende la pregunta?...>Quién? Es muy larga..I know...voy a tratar otra vez..silencio..escuchen..
Followup 246 T. >piensan ustedes...qué significa?
Hint 247 T. Do you....
Correct 248 S12. think
Repetition 249 T. do you think ..
Acc 249 T. muy bien...
Repetition 249 T. do you think..
Acc 249 T. right..
Conversation-management 250 T. Es una pregunta..para ustedes ..que

los países ricos..o los países desarrollados...tienen ...el derecho ..have the right...intervenir en la política de los países pobres...

Request-clarification 250 T. >comprenden ahora?

Ans 251 S21. yo comprendo

Akn 252 T. all right ..

Action-directive 252 T. explícame en inglés..

AnsL1 253 S12. Explicación en inglés

Acc 254 T. muy bien...all right..

Request-clarification 255 T. >Comprenden?

Ans 256 G. sí

Acc 257 T. muy bien...

Diag-query 258 T. >Qué piensan..ustedes piensan que SI tienen el derecho de intervenir..en la política en los países pobres..si?

Ans 259 S21. Sí

Repetition 260 T. sí guau..

Followup 260 T. explícame...por qué?

AnsL1 261 S21. actually no..

Akn 262 T. ah..

Rephrasing 262 T. ella cambia ahora dice no...

Appendix B

Example of Transcription Processed Automatically

```
Id:traditional4
Subject: Comentario de noticias
Teacher: T4
Focus on Meaning
Mode:tradicional
-----------------------------------------
@Errors_Grammar
  tense:8
 ----->Utterances donde ocurren son: 63 102 118 120 121 123 132
  structure:5
 ----->Utterances donde ocurren son: 39 41 43 47 116
  pro:1
 ----->Utterances donde ocurren son: 26
  conjugation:1
 ----->Utterances donde ocurren son: 73
  prep:1
 ----->Utterances donde ocurren son: 51
  agreement:1
```

```
 ----->Utterances donde ocurren son: 71
  tense:1
 ----->Utterances donde ocurren son: 49
@Errors_Vocabulary
  vword:9
 ----->Utterances donde ocurren son: 28 84 104 164 179 185 193 195 197
@Errors_Pronunciation @Number_Feedback
  repetition:28
 ----->Utterances donde ocurren son: 19 21 24 37 69 76 83 90 98 109 114
 127 149 156 163 173 182 190 199 199 209 230 235 242 245 249 249 260
  rephrasing:24
 ----->Utterances donde ocurren son: 10 56 78 94 95 101 110 124 130 137
 140 142 142 165 173 182 190 199 211 218 224 228 239 261
  GAS:15
 ----->Utterances donde ocurren son: 27 35 50 52 64 67 74 85 103 117
 124 133 165 202 214
  explanation:5
 ----->Utterances donde ocurren son: 111 156 157 178 184
@Number_Correctness
  correct:41
 ----->Utterances donde ocurren son: 21 33 34 36 53 55 68 75 89 93 97
 106 108 113 128 136 139 150 155 159 162 172 175 181 189 198 205 207
 208 215 221 223 227 229 232 234 236 238 241 244 248
  incorrect:13
 ----->Utterances donde ocurren son: 71 120 121 123 164 193 195 197
 201 203 213 219 220
  incomplete:12
 ----->Utterances donde ocurren son: 39 41 43 47 87 91 116 126 132
 134 179 185
  ansl1:10
 ----->Utterances donde ocurren son: 23 31 61 147 152 170 177 217
```

253 261
unintelligible:9
----->Utterances donde ocurren son: 7 9 13 15 59 66 141 186 225
minor-errors:9
----->Utterances donde ocurren son: 28 49 51 63 73 84 102 104 118
correct-irrelevant:3
----->Utterances donde ocurren son: 77 82 100
partially-correct:2
----->Utterances donde ocurren son: 18 26
@Feedback_After_Grammar
GAS:9
----->Utterances donde ocurren son: 27 50 52 64 74 103 117 124 133
PAS:6
----->Utterances donde ocurren son: 42 44 72 119 120 135
@Feedback_After_Vocabulary
PAS:5
----->Utterances donde ocurren son: 29 105 180 186 197
GAS:2
----->Utterances donde ocurren son: 85 165
@Feedback_After_Pronunciation @Feedback_After_Correctness
repetition:28
----->Utterances donde ocurren son: 19 21 24 37 69 76 83 90 98
109 114 127 149 156 163 173 182 190 199 199 209 230 235 242
245 249 249 260
rephrasing:22
----->Utterances donde ocurren son: 10 56 78 94 95 101 110 130
137 140 142 142 173 182 190 199 211 218 224 228 239 261
PAS:11
----->Utterances donde ocurren son: 17 20 32 88 107 127 154
188 204 214 247
explanation:5

```
 ----->Utterances donde ocurren son: 111 156 157 178 184
  GAS:4
 ----->Utterances donde ocurren son: 35 67 202 214
@1_Turn_After_PAS_GRAMMAR_ERROR
  incorrect:2
 ----->Utterances donde ocurren son: 120 121
  incomplete:1
 ----->Utterances donde ocurren son: 43
  correct:1
 ----->Utterances donde ocurren son: 136
  request-clarification:1
 ----->Utterances donde ocurren son: 45
  minor-errors:1
 ----->Utterances donde ocurren son: 73
@2_Turn_After_PAS_GRAMMAR_ERROR
  action-directive:1
 ----->Utterances donde ocurren son: 122
  ans:1
 ----->Utterances donde ocurren son: 46
  akn:1
 ----->Utterances donde ocurren son: 44
  reject:1
 ----->Utterances donde ocurren son: 120
  acc:1
 ----->Utterances donde ocurren son: 137
@3_Turn_After_PAS_GRAMMAR_ERROR
  incomplete:1
 ----->Utterances donde ocurren son: 47
  incorrect:1
 ----->Utterances donde ocurren son: 123
@1_Turn_After_GAS_GRAMMAR_ERROR
```

```
 minor-errors:4
 ----->Utterances donde ocurren son: 28 51 104 118
 correct:2
 ----->Utterances donde ocurren son: 53 75
 incomplete:1
 ----->Utterances donde ocurren son: 134
 reject:1
 ----->Utterances donde ocurren son: 64
@2_Turn_After_GAS_GRAMMAR_ERROR
 acc:3
 ----->Utterances donde ocurren son: 54 76 105
@3_Turn_After_GAS_GRAMMAR_ERROR
 correct:1
 ----->Utterances donde ocurren son: 55
@Turns/Teacher
---> Num. of Utterances (teacher): 246
---> Average Length of Utterance (teac): 5.93
---> TAGS Summary:
-----------------------------------------------------------
(ans)=1     (info-request)=8   (explanation)=5 (rephrasing)=22
(PAS)=11   (repetition)=27 (GAS)=15 (unintelligible)=1 (acc)=38
(diag-query)=31   (followup)=19 (akn)=16 (action-directive)=13
(reject)=10 (request-clarification)=6
-----------------------------------------------------------
@Turns/Student

---> Num. of Utterances (student): 113
---> Average Length of Utterance (stu): 1
---> TAGS Summary:
-----------------------------------------------------------
(incomplete)=12  (partially-correct)=2   (ans)=6 (correct)=41
```

```
(repetition)=1    (rephrasing)=2 (acc)=2    (unintelligible)=8
(incorrect)=13    (akn)=1    (correct-irrelevant)=3
(request-clarification)=1 (ansl1)=10    (minor-errors)=9
```

Appendix C

Details of questions for pretest, posttest and activities

```
#PreTest

<e>Completa el siguiente email que una joven de Edimburgo le envía
a su amiga Chilena.
<e>Usa los verbos que están entrepar&eacute;ntesis, escríbelos en
el tiempo, persona y <e>modo que consideres más apropiados.

<i> Fill in the following email which a young friend from Edinburgh
sends to her Chilean <i> friend.  Use the verbs in brackets and write
them down in the <i> tense, person and modal you think they are correct.

1:<pre>[ Date : Tue, 27 Jun 2001 17:42:41 GMT<p>
From : jillmorgan virgin.net,<p>
To: mariaortiz yahoo.com <p>
Querida María:]</pre> <p>
[Espero que] @estes@(estar) [muy bien] [al recibo de este email].
Te estoy escribiendo para [pedirte un favor].
```

2:[En mi mail anterior], [yo te había sugerido que]
tú me @averiguaras, averiguases@ (averiguar)
[sobre el turismo del norte de tu país].

3:[Es probable que] Chris, unos amigos y yo @pasemos@ (pasar)
[nuestras vacaciones de verano] allá.

4: También [nos agradaría mucho que]
@compartieramos,compartiesemos@ (compartir) [algunos días]
contigo [en tu ciudad Santiago].

5:Yo sé que Santiago @presenta@ (presentar)
[muchos lugares interesantes para conocer].

6:[En el caso de que] tú no puedas, Chris me aconsejó
que te @pregunte, pregunto,preguntaba,preguntara/c@ (preguntar)
[si conoces] a [alguna guía turística].

7:Evidentemente, [dicha persona] @tenía,tenga,tiene/c,tuviera@
(tener) que conocer bien [la zona norte].

8:[Deseamos que] ella @habló,hablara,habla,hable/c@ (hablar)
inglés, además de español,

9:[Nos gustaría que] tú nos
@acompañabas,acompañaras/c,
acompañes,acompañas@ (acompañar) a conocer
[la región del norte de Chile].

10:[Sin embargo], dudo mucho que tú

@puedes,pudieras,puedas/c,pudiste@ ([poder]) [tomar vacaciones]. [Te agradecemos] [de antemano] [tu ayuda]. Envíanos pronto [tus sugerencias].<p> Cariños!! Jill.

#Activity 1

<e>Completa estas ideas que Jill le comenta a sus amigos, después que le envía el email a María.
<i>Fill in these ideas which Jill tell to his friend Chris, after sending <i> the email to Mar\355a.

1:[Espero que] María nos @mande@ (mandar) pronto [la información] que [le pedí].

2:Ella me [había sugerido que] la @visitara, visitase@ (visitar) [en nuestras vacaciones].

3:Desearía que ella nos @recibiera,recibiese@(recibir) [en su casa] en Santiago [antes de viajar al norte].

4:[Me agrada mucho] [la idea de] que nosotros @compartamos@ (compartir) [algunos días] con María.

5:[Estoy segura] de que nosotros @mejoraremos@ ([mejorar]) [nuestro Español] [durante nuestra estadia].

6:María [me había aconsejado que] @conozca,conociera/c,conocía, conozco@ (conocer) [la zona norte de su país], porque es [muy hermosa].

```
7:[Es posible] que nosotros @tenemos,ten&iacute;amos,tengamos/c,
tuvieramos@ (tener) que llevar s&oacute;lo [ropa de verano].

8:[Es cierto] que [el viaje a Chile] @demoraba,demora/c,
demor&oacute;, demorara@ (demorar)[entre 14 y 16 horas].

9:Dudo mucho que @llov&iacute;a,lloviera,llueva/c,llueve@ (llover)
[en el norte de Chile], porque es desierto.

10:[Me gustar&iacute;a] mucho que nosotros
@pasamos,pasabamos,pasemos,pasaramos/c@ (pasar)
 [algunos d&iacute;as] [recorriendo Santiago].


#Activity 2

<e>Completa este mail que Mar&iacute;a le env&iacute;a como
respuesta  a Jill.

<i>Fill in this email that Maria sends to Jill as a response.

1:Querida Jill,<p>
[Me agradar&iacute;a mucho que] t&uacute; @pasases,pasaras@
(pasar) [tus vacaciones] [en mi pa&iacute;s].

2:[Por supuesto] que, deseo que t&uacute; te  @alojes@ (alojar)
[en mi casa].  [Lamentablemente, no tengo espacio para recibirlos
a todos].

3:[Espero que] t&uacute; @disfrutes@(disfrutar) tambi&eacute;n
[conociendo algunos interesantes lugares de mi ciudad],
```

Santiago de Chile.

4:[Ahora bien], [en cuanto al norte de mi país]
[es evidente que] [la zona de San Pedro de Atacama]
@ofrece@ (ofrecer) [muchos atractivos.][a los turistas].

5:Específicamente, [yo te aconsejaría que]
tú @visitaras, visitases@ (visitar) [el Valle de la Luna],
[un lugar inhóspito de impactante belleza].

6:Yo sé que [este paisaje árido]
@presentara, presentaría, presenta/c, presentaba@ (presentar)
[características únicas] [en el mundo], porque
[se parece a la superficie lunar].

7:[Es posible] que tú @encuentras, encuentres/c,encontraras,
encontrabas@ (encontrar) [muchos visitantes extranjeros recorriendo
los salares y lagunas donde habitan los flamencos].

8:[Durante el día], [el sol] sofoca [por eso]
[te recomendaría que] @llevabas,lleves,llevaras/c,llevas@
(llevar) [muchas botellas de agua para la sed].

9:[Es probable que] San Pedro de Atacama te @interesaría,
interesara,interesaba, interese/c@ (interesar) porque [esta zona]
tiene [un pasado arqueológico de 11 mil
años antes de Cristo].

10:[Me gustaría que] @conozcas,conocías,conocieras/c,
conoces@ (conocer) [las hermosas figuras de oro del Museo
Arqueológico del Padre Le Paige].

```
#Actividad 3

<e>Completa este segundo email que Mar&iacute;a le env&iacute;a
como respuesta  a Jill.  <i>Fill in this second email that Maria
sends to Jill as a response.

1:Querida Jill<p>
[En mi mail anterior], [te había sugerido que]
@conocieras,conocieses@(conocer) el valle de la Luna. [Te escribo]
 ahora [para contarte sobre los Geysers del Tatio].

2:[En este lugar], [es posible]  que [los turistas]
@observen@ (observar)  [violentos chorros de agua y vapor que irrumpen
 en el amanecer desde las profundidades del desierto].

3:[Yo s&eacute; que] [los chorros de agua de estos geysers] @alcanzan@
[(alcanzar) hasta 30 metros de altura].

4: [Me agradar&iacute;a mucho que] t&uacute; @contemplaras,contemplases@
(contemplar) los geysers [muy temprano en la manana],
[porque el espect&aacute;culo es maravilloso].

5:[Espero que] t&uacute; @tomes@ [(tomar) unas lindas
fotos de ese lugar].

6:Hay tambi&eacute;n [ba&ntilde;os termales naturales]
[cerca de los geysers]. [Me gustar&iacute;a que] t&uacute; @aprovechas,
aproveches, aprovecharas/c, aprovechabas@ (aprovechar)
[de tomar algunos ba&ntilde;os].
```

7:[Es evidente que] [la temperatura del agua termal] @pueda, pudiera, puede/c, pudo@ (poder) [alcanzar los 85 grados celsius].

8:[Es probable que] [un huevo] @pudo,pueda/c, puede, pudiera@ (poder) cocerse [en un par de segundos] [en el agua termal].

9:[Ahora bien], yo te aconsejaría que @trajeses/c, traigas,traes, trajiste@ (traer) [alguna ropa abrigadora] porque temprano en la mañana [las temperaturas ambientales] son muy bajas.

10: [Deseo] que [todos estos datos e información] @son,fuesen, eran, sean/c@ muy útiles para ti.<p> Escríbeme si necesitas otro favor.<p> Hasta pronto, María.

#Post Test

<e> Completa este email que Jill le envía a María.
<i> Fill in this email which Jill sends to María.

1: <pre>Date : Tue, 2 Jul 2001 17:42:41 GMT<p>
From : jillmorgan virgin.net,<p>
To: mariaortiz yahoo.com <p>
Querida María:</pre> <p>
[Te agradezco mucho toda la información que me has enviado]. [Me agradaría] que también tú me @mandaras, mandases@(mandar) [algunas fotos digitalizadas de los Geysers del Tatio].

2:[Después de lo que me has contado], yo [estoy segura]

de que nosotros @disfrutaremos@ (disfrutar)mucho [conociendo esos lugares de San Pedro de Atacama].

3:[Espero que] [durante nuestra estadía en Chile] nosotros @tengamos@(tener) [muchas oportunidades][para practicar nuestro Español].

4:[Le he comentado a mi hermana nuestro viaje] y [es posible] que ella me @preste@ (prestar) [su cámara de video].

5:Ella también [me había recomendado] que @llevara,llevase@ (llevar) [ropa abrigadora],[porque las noches en el desierto son muy heladas].

6:[Me gustaría que] tú nos @acompañes, acompañabas, acompañaras/c,acompañas@ (acompañar) [en nuestro viaje al Norte], [pero entiendo que estarás muy ocupada en tu trabajo].

7:Evidentemente que, el Norte de Chile @presentaba,presente, presenta/c,presentara@ (presentar) [una vegetación impresionante].

8:[Por eso], mis amigos [me aconsejan que] @comprara,compre/c,compraba,compra@ (comprar) [muchos rollos de fotos].

9:Desearía que Chris @pudiera/c,pudo,pueda,podrá@ reservar [los pasajes con tiempo]para no tener problemas [con la disponibilidad de asientos para los vuelos]

10:[Dudo mucho] que mis amigos @estaban,están,estuvieran, estén/c@ [(estar) en

desacuerdo con mi sugerencia].

[Bueno, mi querida amiga, espero nos veamos muy pronto].<p>

[Un abrazo], Jill.

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