The integration of CALL in the ESL classroom: reconciling agendas

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The Integration of CALL in the ESL Classroom: Reconciling Agendas

By

Faiza Derbel

A thesis submitted to the graduate faculty
in partial fulfillment of the degree of

MASTER OF ARTS

Major: Teaching English as a Second Language/Applied Linguistics (Computer Assisted Language Learning)

Program of Study Committee:
Dan Douglas (Major Professor)
Carol Chapelle
Denise Schmidt

Iowa State University
Ames, Iowa
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Graduate College
Iowa State University

This is to certify that the master’s thesis of

Faiza Derbel

has met the thesis requirement of Iowa State University

Signatures have been redacted for privacy
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ABSTRACT

The present research explores the possibility of integrating Computer Assisted Language Learning in the ESL classroom. Two reading activities are used with ESL students as part of their instruction in English 101 R (Reading Strategies). Data is collected as the students are undertaking the reading activity and interviewed after completing it. First, the classroom session was audio-taped and the students’ computer data was stored using a screen capturing software called Camtasia. Each implementation of the unit yielded a set of data that was analyzed to uncover the classroom processes involved and the learners’ interaction with the materials. The data was then be contrasted with the teachers’ intentions and implicit theories underlying the design of the activities. The ultimate purpose was to identify mismatches, if any, between the teacher’s agenda and the learners’ agenda in this CALL event. In the light of the findings, suggestions are made as to ways to improve the design and implementation of CALL materials in ESL contexts.
CHAPTER 1. INTRODUCTION

The use of technology in language education has been around for some time, but it was not until the late 1980s that computer-assisted instruction (CAI) and Computer-Assisted Language Learning (CALL) gained ground (Chapelle, 2001). Many factors contributed to a rapid take-off in the field. Improvements in hardware from the mainframe computer to the microcomputer stand alone opened doors, not only to researchers and software developers but also to teachers and learners. The establishment of channels of communication among CALL professionals helped frame research and development agendas in CALL. CALL developers and researchers working on high profile projects in North America, New Zealand, Australia and Europe were not able to expand their activities beyond the confines of university departments or development centers and laboratories to reach the grass root level of schools and classrooms. CALL experts in Europe are striving to establish respectability of CALL research in academia (Davies, 2001). If they persist, it will be reasonable to expect that in the future there will be CALL departments in European universities.

National and international educational policy trends are presenting challenges to CALL experts, CALL developers and CALL practitioners. At the same time, the number of CALL users is expanding beyond imagination and new technologies are changing the work environment of teachers in universities and schools. The challenges for research and language pedagogy are tremendous (Chapelle, 2001; Garrett, 1991). A combination of computer hardware and software capabilities, access to internet networks, and multimedia production capabilities are revolutionizing teachers’ work. As technology expands in schools, teacher educators and practitioners are asking more and more questions, pressing educational leaders to stop and think about the impact on teaching and learning with technology (Cuban, 1994; 1998). A number of educational leaders argue that the transformation of schools and the anticipated re-structuring of learning that technology promotes is unlikely to become a reality if teachers do not become technology-using practitioners. The challenge for teacher educators is whether to focus on developing teachers as consumers of technology or as developers of their own materials (Amiri, 2000; Johnson, 1999). A precondition for the integration of technology in schools of the type that are going
to re-structure and transform the learning experience (Papert, 1982; 1987) is the active participation of teachers in the process. Teachers in the midst of the process of equipping schools with computers will need to emerge as pro-active, engaged users of technology aware of the potential, as well as pitfalls, of technology use in instructional settings. Most certainly, they will need to be learners of technology to be able to use pro-actively the technological tools made available to them. Given the evolving nature of technology, there are no limits as to what teachers must learn about computers, authoring tools and templates, course management software, and multimedia production list is never-ending. Literature focusing on teachers as implementers of technological innovations portrays them in terms of the technology-using teacher ideal.

Technology-using teachers are referred to as “exemplary teachers” (Ertmer et al., 2001) who are reflective learners and users of technology (Becker & Riel, 1999). There is an on-going debate over whether technology-using teachers embrace a particular ‘desired’ view of learning compatible for instruction with technology or whether the use of technology transforms the technology-using teachers’ beliefs once they are immersed in technology-rich school environments. For Salomon and Almog (1998), for instance, philosophical and psychological issues associated with the attempt to integrate technology in education are paramount, but they see the relationship between technology and education as reciprocal:

As technologies and educational usages develop, and particularly in recent years when those developments have outpaced developments of our psychological conceptions, technology comes to challenge educational psychology. And it challenges educational psychology by both reawakening old and partly dormant issues (such as transfer of learning or the roles of intentionality and mindfulness) and by demanding new conceptions and novel understandings of human behavior, learning, and instruction. (p. 223)

The know-how component is no less important in building teacher confidence if we assume that they are going to develop their technology-use vision from practice. What is certain, however, is that the presence of technology in the society at large, schools and classrooms is having an unprecedented effect on the teaching/learning process and personal experiences of teachers working with technology need to be documented and analyzed
against these hypotheses about what might happen to their beliefs and prospective practice. For one, Ertmer et al. (2001) conclude that definitions and characteristics of the exemplary teacher in the literature do not always coincide with teachers’ portrayals of themselves and their practice:

...definitions of exemplary, held by teachers themselves, are not necessarily based on definitions provided in the literature, but rather such definitions are based on the very real and practical world in which teachers implement their practice. (p. 15)

Cuban (1994) additionally cautioned in this earlier work that “exemplariness” depends on human and contextual factors as well as the degree of preparedness on the part of teachers to teach with computers. He found that what distinguishes exemplary teachers from other teachers was the presence of support systems in the schools and formal training in more than one of the following areas:

...(a) how to integrate software into existing lessons in the subjects they taught, (b) how to organize class activities to allow for computer use during class time, (c) how to write computer programs, (d) how to use word-processing programs, and (e) how to use other computer applications. (p. 309)

Another dimension of teaching in an electronic age is the re-definition of literacy and the debate surrounding implications for the conceptualization of the ‘literate person’ in the 21st century (Rassool, 1999). In the next chapter, I will discuss the implications of concepts like “multiple literacy” on educational processes in general and the teaching of English as a Second or Foreign Language (ESL/EFL) (Shetzer & Warschauer, 2000). Discussions surrounding teaching in an electronic culture send the message that classroom teachers have wider options by using information and technology to promote collaborative group work where learners construct knowledge (Kasper, 2000; Rassool, 1999; Warschauer, 2000). The debate over the shifting definitions of literacy has special implications for the teaching of reading and design of instructional materials using electronic text (e-text) and computer technology (Chun, 2001; Douglas-Mills, 2000; Kasper, 2000; Chun & Plass, 1997). At this point in human history (beginning of 21st Century), the complete switch to teaching with e-text has not taken place. What is taking place is a transitional period where the frames of
reference for reading instruction are still rooted in reading theories developed in the years of
the paper-based text period. Therefore, it is necessary that students be used to inform
researchers about the experience of learning with e-text, the teacher’s analysis is going to be
informed by patterns and behaviors observed in contexts where paper-based text was used in
the traditional classroom (Sutherland-Smith, 2002). The value of such research carried out
by the teachers using off-line or computer tracking devices to collect data that will contribute
to formulating an answer to a number of pressing questions. For example, it is not clear at
this moment what reading theory (Chun, 2001; Spiro et al., 1991; Grabe, 1991) is more
compatible with reading in electronic environments.

1.1 Purpose of the study:

The purpose of this study then is to explore the possibility of integrating Computer-Assisted Language Learning (CALL) reading materials within an Academic Reading Strategies course offered to international students at Iowa State University (ISU). The project described in this study is a close-up picture of two instructional events when two CALL reading activities are used as sources of input. The main thrust of the research is to address the question of how and to what extent these two multimedia reading comprehension units are perceived to be used and how they are actually used by students. More specifically, the researcher attempts to detect and identify the procedures students employ while undertaking the units and to analyze the nature of the interaction between the students and the units as language input.

The study is multilayered. First, it makes explicit a teacher’s theory of the design of CALL materials for pedagogical use. Second, it explores and describes how the students go about using the materials. Finally, it examines how learners, as end users, talk about their experience with using the materials and their perceptions of learning with online materials. By examining the types of interactions that take place as the students work with the materials and their views of CALL materials, the researcher will attempt to bring together the teacher’s rationale and the conclusions drawn from students’ operational data and views to discuss implications for teaching reading using computers.
The present researcher and teacher was she undertook the task of designing the reading units used in this research as part of her attempt to learn about using technology in her own teaching. Thus, the purpose of undertaking this study is to shed light on issues surrounding the creation, implementation and use by students of computer-based reading activities. It applies a suggestion by Chapelle (1998) to document and evaluate CALL multimedia materials by exploring process. The decisions taken in the design process of the two reading units used in this study were informed by views on CALL design (Bickerton, 1999; Bickerton et al., 2001; Levy, 1999), SLA theory (Chapelle, 1998; 2001), and reading theory in paper-based contexts (Grabe, 1991; Chun 2001). In addition, as a teacher, I suspect my implicit theories of teaching and practical knowledge of learners and classrooms have entered into play. These might not surface in the account, but would have been in the background guiding my subjective judgments (Chapelle, 2001).

By virtue of the variety of data used, this study it will give expression to the implicit theory of the teacher and sheds light on the students' voice and perspectives as participants in the process. I will point out in my description of the units that a number of compromises had to be made along the way and point to areas of mismatch I expect to arise in the task situation as the students use the units. For example, it can be anticipated that learners perceive the type of learning supported by the activities and tasks proposed to them according to their own frames of reference and not necessarily those of the teacher, (Allwright, 1984; Kumaravadivelu, 1991) the software developer or the CALL designer.

The arguments for the possible mismatch between planned teaching and expected learning outcomes are not new in Applied Linguistics literature. Allwright (1984) called for research projects that might account for the mismatches emerging as part of the interaction process between learners and lessons. He looked into five a priori plausible SLA hypotheses that can be sources of differences in perceptions. He argues that Krashen’s hypotheses (see hypotheses 2, 3, and 4 in Table 1.2 below) do not account fully for “the ‘mechanism’ of linguistic development” (p. 9) and that research that focuses on process and on eliciting learners’ views might be the way forward.
Table 1.2 SLA hypotheses as missing links in teaching/learning situations (Allwright, 1984, pp. 5-8)

<table>
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<th>Hypothesis</th>
<th>Description</th>
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<tr>
<td>1. The ‘incubation’ hypothesis</td>
<td>Whatever learners are taught will need an ‘incubation’ period before it appears in their performance.</td>
</tr>
<tr>
<td>(Lightbown et al., 1980; Prabhu, 1980)</td>
<td></td>
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<tr>
<td>2. The ‘input’ hypothesis</td>
<td>Lessons are sets of opportunities to encounter comprehensible input.</td>
</tr>
<tr>
<td>(Krashen, 1982)</td>
<td></td>
</tr>
<tr>
<td>3. The ‘natural process’ hypothesis</td>
<td>Instruction frustrates learners. Learners should be allowed to use whatever processes suit them.</td>
</tr>
<tr>
<td>(Krashen, 1982)</td>
<td></td>
</tr>
<tr>
<td>4. The ‘natural order’ hypothesis</td>
<td>Classroom language development is also subject to a natural order that instruction cannot disturb.</td>
</tr>
<tr>
<td>(Krashen, 1982)</td>
<td></td>
</tr>
<tr>
<td>5. The ‘personal agenda’ hypothesis</td>
<td>Learners selectively take from a lesson what they want to learn and only learn it in the particular manner they want to do it.</td>
</tr>
<tr>
<td>(Schumann and Schumann, 1977)</td>
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In her study focusing on students working in pairs on scanning advertisements, Kumaravadivelu (1991) was able to identify ten potential sources of mismatch between learners’ perceptions and the teacher’s in this teaching/learning situation. While emphasizing the fact that this situation should be taken as evidence that the students and teacher are co-constructing the learning experience, she further added that there may be other undetermined areas of mismatch.
Table 1.2: Sources of mismatch between teachers and learners in a task situation (Kumaravadivelu, 1991, pp. 101-106)

<table>
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<tr>
<th>Student</th>
<th>Teacher</th>
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<tr>
<td>1. Cognitive</td>
<td>Lacking prior knowledge about an aspect of the problem to be solved in a task.</td>
</tr>
<tr>
<td>2. Communicative</td>
<td>Unable to communicate his/her ideas clearly.</td>
</tr>
<tr>
<td>3. Linguistic</td>
<td>Unfamiliar with syntactic, semantic, and pragmatic knowledge minimally required for the performance of the task.</td>
</tr>
<tr>
<td>4. Pedagogic</td>
<td>Holds perceptions of stated or unstated short and/or long-term objectives(s) of the task.</td>
</tr>
<tr>
<td>5. Strategic</td>
<td>Makes limited use of learning strategies needed for the performance of the task.</td>
</tr>
<tr>
<td>6. Cultural</td>
<td>Misses cultural connotation of an expression or topic.</td>
</tr>
<tr>
<td>7. Evaluative</td>
<td>Unable to match newly presented items with prior knowledge of rules.</td>
</tr>
<tr>
<td>8. Procedural</td>
<td>Describes the procedural aspect of the task.</td>
</tr>
<tr>
<td>9. Instructional</td>
<td>Misunderstands directions and explanations.</td>
</tr>
<tr>
<td>10. Attitudinal</td>
<td>Comes with attitudes and preconceived notions of classroom culture.</td>
</tr>
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It is with these hypotheses and arguments in mind that this exploratory study of two classroom events is undertaken. Whatever the shortcomings of "Do-It-Yourself" materials may be, the teacher in this study will attempt to identify the areas of mismatch inferred from student performance data and what they report about their experience.

1.2 Rationale:

As a teacher I am not involved in any of the macro level decisions at the level of the institution, but a teacher who is developing skills in technology use and exploring the pedagogical potential of using computer-based reading materials with her own class. The idea of this project was initiated by a teacher, who sees the potential of using computers in language learning and feels the need to introduce learners to the use of computers for learning purposes. As the researcher in this project, I am also a practitioner asking pedagogical questions about the incorporation of electronic text within a paper-based reading course. In this sense, the present project can be considered to be Action Research (AR) as defined by Nunan (1992): teacher research is labeled Action Research "if it is initiated by a question, is supported by data and interpretation, and is carried out by a practitioner investigating aspects of his or her own context and situation" (18). The present project meets those criteria. Indeed, while conscious of more radical AR perspectives (Kemmis & McTaggart, 1985), the present researcher was content with this "minimalist definition", as Nunan put it. Besides being undertaken in partial fulfillment of a graduate degree, it takes the form of "exploratory practice" (Allwright, 1991) on the path to a teacher’s learning to work with technology. As will be explained throughout the various chapters of this thesis, there are many conflicting agendas to be reconciled as part of the process of experimenting with technology use in the design and implementation process. The present study reports this growth experience from the inside out.

Competing agendas in any teaching/learning situation can stem from curriculum specifications, teaching/learning theory, technological capabilities, teacher beliefs and decisions, and the learner’s personal schema and agendas. This project is conceived from the premise that these agendas overlap, diverge and compete during the instructional process. However, the teacher as professional will attempt to balance the various agendas inherent in
the context to meet the demands of the situation and to achieve the required standards, learning goals and so on. Thus, the exploratory aspect of this research resides partly in uncovering some of the complex, dynamic and unpredictable aspects in this learning situation.

It is worth reminding my reader at this point that the above views are already fairly well established with reference to English language teaching in traditional classrooms. The present project adds another dimension to this complexity- the introduction of computer-based materials. It is therefore expected that this new element is going to give rise to new agendas in the teacher's and learners' minds. In the context of this study, the course syllabus objectives, the teacher's beliefs, the software used, and the students' learning needs and styles all come into contact.

In the next chapter, I will elaborate on the design principles outlined in the CALL literature and describe the practical considerations intervening in the design process of the two multimedia reading activities used in this research. The purpose of the overview of theory and the description of practice in technology-enriched environments is to show how the two are interrelated. Documentation of the use of materials by real students will shed light on the interaction between learners and the materials, which in turn, embed the teacher's pedagogical intentions and compromises. The learners' agendas may be inferred by tracking their moves on the computer and what they report during the follow-up interviews. The researcher will deduce patterns of use from the students' use of the CALL activities and reflect on the lessons to be learned about the interrelationship between theory and practice in CALL. The ultimate aim of this research project is to contribute to the development of a theory of practice in CALL. By making various aspects of the use of CALL in an ESL classroom context, and the views of participants within it explicit, comprehensive and verifiable, this research tells the inside story of an attempt to integrate CALL in educational contexts. I find the involvement of the teacher as researcher investigating the prospects of integrating technology in a language education course as vital to formulating principles for teaching/learning in technology-enhanced classrooms. This study has connections with a number of issues in the integration of technology in ESL/EFL contexts. Although this research project is implemented in an American university context with one group of
students, the issues it touches upon, explores and discusses are highly debated in the field in North America, Europe and a whole range of countries concerned with revamping ESL/EFL practice by incorporating technology in their curricula.

1.3 Research questions:

With the above theoretical and practical considerations in mind, the researcher aims to address the research questions below:

1. How do the learners actually use the CALL materials and to what extent do they interact with the content and design of the activities?

2. To what extent do the learners' perceptions and use of the materials converge or diverge with the teacher's intentions and expectations?

1.4 Organization of the study

The next chapter reviews previous research and development in CALL and pays special attention to concepts related to electronic literacy and discusses their implications for the teaching of reading comprehension using hypertext and multimedia. I survey frameworks for the pedagogical design of activities in CALL in general, and in teaching multimedia reading comprehension. In chapter 3, I describe the approach, design and methodology of my study and describe the materials used and procedures followed in the research process. Chapters 4 and 5 are devoted to data analysis. The final chapter connects the research results to the research questions and appraises the initial premises that motivated the research. I conclude with a discussion of implications for teaching reading in computer environments and make recommendations for further research in CALL.
CHAPTER 2. RELATED ISSUES IN READING MULTIMEDIA CALL

In this chapter, I will discuss issues that interweave in educational contexts when the purpose is to teach with technology. The situation is more complex for teachers since they are at the heart of the decision process. In their attempt to integrate technology, they will need to make informed decisions and reconcile the different elements that determine the outcome of their experience of teaching with CALL. They need to make informed decisions about issues related to literacy in an electronic age, issues of CALL material design and issues related to teaching academic reading skills in a computer-assisted format. In the next section I will focus on views related to electronic literacy and their implications for the conception of the reading skills needed and the positioning of the teaching of reading within an electronic literacy framework. Research based on experiments with technology and particular types of materials are needed to help show the way forward in teaching with CALL while basing their practice on strong theoretical foundations.

2.1 Reading in the electronic age

The biggest challenge for the reading teacher in the 21st century is the presence of new modes of communication, 'new technologies', and the way this element alters the reading process and the literacy experience in general (Warschauer, 2000). New concepts such as "information technology", "information society", "hypermedia," "Hypertext", "multiple literacies", "technological literacy", "computer literacy" are signals that we are witnessing shifts in the way we perceive traditional literacy (in the singular). As explained by Rassool (1999, p.1) multimodal computer text and the advent of a new concept "information technology" (IT for short) brought with it a shift in the literacy experience:

The multimodal textual environments have also altered the literacy process itself. We now rely on a variety of skills, knowledges, behaviors, multisensory ‘experiences’ and ‘personae’ to access, retrieve and process information and to produce knowledge. (Rassool, 1999, p. 14)
The reading experience has definitely changed. The literacy experience is lived in a completely different environment that combines sounds, graphics, charts, images, and so on. The shift from a print-based reading experience to reading multimodal electronic texts gave rise to the new term ‘multiliteracies’.

In a world suffused by information we need to be not only literate in terms of reading and writing and having functional technical skills but also to be able to participate in a range of discourses and...different languages, registers and dialects. Within the multiple reading worlds created by information technology, the literacy goal-posts have already been shifted. (Rassool, 1999, p. 15)

The above views and definitions of terms have serious implications for the reading process in general and for professionals engaged in teaching reading in academic contexts. In academic teaching contexts, there is a more pressing need for the definitions of constructs that can serve as touchstones for the work of teachers and learners. Teachers of academic reading are not dealing with casual browsing or surfing to locate information. In that respect, the pedagogical recommendations put forth by Rassool (1999) are too general to provide any tangible guidance for teachers. As explained by Walz (2001a, 2001b) in her two articles, the shift from print-based mode to electronic format is a challenge for readers that should not be taken for granted.

Walz (2001a) summarizes a number of facts about reading in electronic environments that teachers of foreign language need to recognize and deal with before they send their students off on web quests. Considering the novelty of the experience of reading in electronic mode, learners need coaching so that they develop the procedural schema to read interactively; that is, expect their students to engage in low-level (bottom-up) as well as high-level processing (top-down) of text. Students having to read in a hypertext context run into numerous difficulties. The first is the problem of the interface. When reading on screen, the text can be displayed in a variety of ways: it might require vertical and /or horizontal scrolling, it might be written in a combination of font sizes and colors, presented in frames or in drop box format and mixed with symbols, icons, logos, and abbreviations. The second issue is the difference in content. The language found in websites is varied. This is particularly difficult for international students. The language of websites is in authentic form
embodying the language varieties, idiosyncratic use, coined words, and original spelling that imitates speech. In this context, work on developing bottom-up processing to meet the demands of this more complex task of reading online becomes a necessary pedagogical goal in academic reading. Because Rassool (1999) and Shetzer and Warschauer's (2000) assume that the students they have in mind do not need to work on bottom-up processing and thus, shift attention to extensive reading. They emphasize the need for teachers to center instruction around developing in the learners the research and analysis skills they consider central to literacy in the electronic age. It is not clear where the reading process fits in the students' scheme of work or what the nature of the reading process is. Shetzer and Warschauer's (2000) framework rests on three components: (i) communication, (ii) research and (iii) construction. The first focuses on the specific language use features of computer-mediated communication (CMC) and the demands it puts on participants as communicators. The second pedagogical objective on their framework, construction, is can be considered parallel to writing in traditional conceptions of literacy. It involves training students to produce 'hypertext'. They explain:

"Hypertext authoring is not only a matter of reconceptualizing how to arrange words; it also involves creative use of other media, such as graphics, audio, and video" (p. 174)

The third component, research, is examined in the light of the difference between reading in the paper-based text days and reading as part of searching for information on the internet. The reading process and strategies differ when students go to look up information on the Internet. The process involves two sets of skills progressing in tandem. Shetzer and Warschauer (2000, p. 175) see that the use of the Internet for research projects to promote 'critical literacy'- or rather their understanding of it (see Rassool 1999, p. 9). In their view, the student user of the internet who knows "how to use search engines effectively" and how to assess the use of the information for the given purpose and make a decision about pursuing the search or terminating it to start a new one, can be said to have acquired 'critical literacy'.

The suggestions accompanying the framework give enough guidance to teachers whose objective might be to focus on language use and literacy. It takes into account a view
of language learning methodology (functional-notional/the integration of skills), an education principle (scaffolding and constructivism). However, serious questions can be raised about the possibility of developing reading skills. It seems that the broad goal of developing electronic literacy might downplay the need to need to develop reading skills. It seems that the implication is that the reading skill will take care of itself as the students busy themselves with their web authoring projects. Learning to read is not incidental. It is too optimistic to assume that students can overcome the difficulties mentioned above, let alone make the leap to high-level processing. Walz (2001b) explains in her discussion of higher-level processes that readers working online can face problems if unequipped with the high-level processing skills required. Readers need to develop the schema needed to comprehend and interpret the endless subject areas, decipher the cultural references embedded in e-texts, and to infer and evaluate the writers’ messages. She suggests that teachers develop teaching activities that promote skills for analyzing websites, summarizing search engine searches, forming questions about cultural allusions, identifying perspectives, and so on.

In light of Walz’s suggestions, Shetzer and Warschauer (2000) clearly need to flesh out their framework with specifications of entry levels, activity type, task typology, and build in a system of assessing students’ progress. With reference to university level ESL students, Kasper (2000) suggests a range of literacies (multiple literacies) encompassing academic literacy, critical literacy and electronic literacy. The two categories, electronic literacy and critical literacy in Kasper (2000) coincide with Shetzer and Warschauer’s definition of ‘electronic literacy’. However, the domains he includes under ‘functionally literate’ and ‘critically literate’ parallel the types of language use and judgment skills they grouped under ‘communication’. Kasper defines two concepts in terms of what competencies they require:

[ESL students] must become functionally literate, able to speak, understand, read, and write English, as well as use English to acquire, articulate and expand their knowledge. They must also become academically literate, able to read and understand interdisciplinary texts, analyze and respond to those texts through various modes of written and oral discourse, and expand their knowledge through sustained and focused research. (Emphasis added) (p. 106)
What his study demonstrates is not the power of technology alone. It demonstrates the strength of a curriculum that balances and synchronizes the various aspects of traditional academic literacy and electronic literacy employing a learner-centered pedagogy. What made the whole difference was the this bridging of old ways of learning (overt instruction) and new ways of learning using situated practice and collaboration projects (critical framing). An interesting element downplayed by Kasper (2000) and not accounted for in the Shezter and Warschauer (2000) framework, was the role of the teacher. In Kasper (2000) the teacher is required at the same time to give ‘overt instruction’ and to be a participant in the online discussions (facilitator) but in her analysis, she failed to recognize the role the teacher played in the learning/teaching process. Thus far, the shifts in pedagogy recommended by Shezter and Warschauer (2000) and embodied to some extent in Kasper’s study point to curriculum and course management considerations. They also point to differences in the process of learning in technological environments. These shifts call for new learning systems emphasizing the role of hypertext in the process. An example of a specific theory of learning used as a basis for a literary curriculum is the one proposed by Spiro et al. (1991) called Cognitive Flexibility Theory. They explained it as follows:

“[Cognitive flexibility] includes the ability to represent knowledge from different conceptual and case perspectives and then, when the knowledge must later be used, the ability to construct from those different conceptual and case representations a knowledge ensemble tailored to the needs of the understanding or problem-solving situation at hand.” (p. 24)

They put their theory into practice in a literature hypertext-based instructional program, KANE (Knowledge Acquisition in Nonlinear Environments), in which they made use of hyperlinks that provided the learner with a varied type of additional knowledge structures. The links open windows on new knowledge structures in varied form. The links can provide an expert commentary on the literary work in question, context-sensitive particularized definitions, or cues to concepts that might be relevant to interpretation (Spiro et al., 1991, p. 31). This trend to make use of hyperlinks for teaching content seems to be gaining a lot of ground in the literature on multiple literacies and certainly is an indicator of pedagogical innovation with hypertext, multimedia and technology. However, it is worth
noting at this point of the discussion of developments affecting conceptions of literacy, that conventional text can bear features of non-linearity. The idea of non-linear reading and writing did not emerge with the use of computers or the internet. Snyder (1996, p. 20), for example, attests that earlier attempts were made in the 19th century. According to Snyder (1996, p. 24-25), Samuel Taylor Coleridge wanted to produce around 1849 an encyclopedia according to a system that is alternative to using alphabetical ordering. Then Ted Nelson, another visionary who coined the term ‘hypertext’, wanted to create an evolving non-sequential text as system to record all world literature. The logic of ‘hypertext’ is also present in the non-canonical postmodern literary discourse about text, author and reader led by figures of the movement like Rolland Barthes, Jacques Derrida and Michel Foucault. Therefore, ‘hypertext’ as a concept refers to breaking away from conventional texts by providing readers with more than one path through the text and hence encouraging non-linear reading.

To conclude, the literature on literacy in the electronic age reveals a new paradigm for education in general and for literacy. Paper-based reading and writing are no longer the *sine qua non* of literacy. The features of the text produced in the electronic age with the help of the computer is multimodal and fluid requiring of the reader (and the writer) to transcend the word level and to constantly construct and de-construct knowledge. As opposed to traditional learning environments, hypertext systems present “[a] criss-crossed landscape…, with its suggestion of a non-linear and multidimensional traversal of complex subject-matter, returning to the same place in the conceptual landscape on different occasions, coming from different directions.” (p. 29) With reference to the production and use of hypertext in the business world, Kumruck (1998) comments on the role of the reader in a hypertext environment:

Hypertext changes the reader’s role in the sense that they must create their own context. No longer do they receive a coherent, argumentatively consistent text. To a greater extent than with a conventional text, the readers must be active in reception and structuring. A typical feature of the readers’ new role is that they can co-author hypertexts, by means of technically provided optional tools for annotation and introduction of new links and nodes. (p. 163)
There are indications that awareness about the changes in literacy acts when the computer and the internet enter the scene is increasing among professionals in language arts and in ESL (Meskill & Mossop, 2000; Sutherland-Smith, 2002; Stepp-Greany, 2002). Data obtained from these studies points to changes in the way teachers and students perceive the difference between working in conventional literacy contexts and computer-aided contexts. The brief comparison above draws attention to the possible impact on the reader, implications for the reading process, and the development of the ‘multiliteracy’ in the electronic age. The implications for pedagogy reside in appreciating the impact on cognitive processes whenever individuals are faced with communication in hypertext mode.

2.2 Research on reading multimedia CALL

In their review of research on reading and comprehension in CALL second language teaching, Cobb and Stevens (1996) identify three trends in research on reading multimedia text. The first trend consists of pedagogically oriented research of the type used in this project, research evolving round experimentation with Text Manipulation (TM) and research focusing on the use of multimodal text in the teaching of vocabulary. It is worth pointing out that TM is not a reading theory. It is a technology that has the potential of implementing a pedagogy for multiliteracy (Mayer, 1997; Kasper 2000) and offering ways of manipulating and packaging text for the second language learner as ‘comprehensible input’ in text-based authentic communicative tasks (Chapelle, 1999).

Cobb and Stevens (1996) do not see the use of the computer to teach ‘conventional’ reading comprehension activities as likely to produce a revolution in the use of electronic text (e-text) and media in education. Though they gracefully recognize that there is advantage to this type of research in that it might give support to particular type of curricula, they do not see designing reading activities that “emulate” those used in conventional classrooms likely to result in bringing about change in pedagogy. This type of research, they argue, is outdated and the materials designed for that purpose time-consuming and short-lived. In contrast, this type of research that Chapelle et al. (1996) term “pedagogically-motivated research” is useful “to develop our understanding of the value of computer programs for improving learners’ engagement with language learning activities” (39). Thus, the
investigation of CALL activities in general (Hegelheimer & Chapelle, 2000; Chapelle, 1997; 1998), not only reading activities in classroom contexts, is essential to the development of a CALL-specific pedagogy. Using the principles of TM as outlined by Cobb and Stevens (1996) can be expected to enhance the teaching/learning experience (see Mills, 2000 for technological clarifications). It also has potential for the construction of e-texts learning systems to teach content subjects of the type developed by Spiro et al. (1991) or Mayer (1997). If adopted as a principle for the construction, deconstruction and adaptation of electronic texts specific for use in the teaching of reading, it can be expected that established reading pedagogy be renewed. In their review of research on reading with technology, texts with activities Kamil et al. (2000) concluded:

There seem to be at least three separate situations in which hypertext is used. There is a literacy version of hypertext in which a reader is encouraged to create a unique story. A second use of hypertext is to add information to allow readers to explore text material in greater detail. A third use is to create study environments. Our review of the research shows so little work on each of these areas that it is difficult to reach a strong conclusion. (p. 774)

Another research focus mentioned in Cobb and Stevens' (1996) review does not focus on reading per se but uses a form of TM. It consists of a growing body of research focusing on annotations for the presentation of vocabulary (Watanabe, 1997; Al-Seghayer, 2001; Yoshi and Flaitz, 2002). Except for Watanabe\(^1\) (1997) who was working with traditional paper-based text, this type of research aims to explore the efficacy of incorporating particular modes of media presentations such as multimodal text annotations (textual, visual, or auditory). Research in this area focuses on exploring whether and how a particular mode of presentation or a particular combination can facilitate overall text comprehension and vocabulary acquisition (Chun & Plass, 1997). A case in point is a study by Al-Seghayer (2001) who tested three combinations of text annotations with second language learners: (i) printed text definition alone, (ii) printed text definition with still pictures and (iii) printed text

\(^1\) Watanabe found no significant difference between the effect of annotations in the form of a text single definition or multiple-choice definitions.
definition with video. He then used the performance scores of students in vocabulary recognition and production tests to evaluate the utility of multimedia annotations in vocabulary acquisition. He found that the combination text and video clip produced the best results on post-tests. In addition, data from questionnaires corroborated his findings indicating that text annotation was rated the lowest among the three modes of presentation and that dual presentation was appreciated better than just one mode. Yoshi and Flaitz (2002) tested the use of text only, picture only, and a combination of the two with ESL adult learners. She then tested the level of their vocabulary retention using three types of instruments: “Picture recognition, Word recognition, and Definition Supply tests.” (33) Like Al-Sghaier, they found that subjects who used the text only format had the lowest scores in the short and long term. Thus, research on annotations and glossing can have implications for design decisions in multimedia reading CALL especially when it comes to anticipating the effect of a particular type of lexical help to learners (Raia, 2002).

Recent articles focusing on computer-aided reading as integrated class activities (Kitajima, 2002; Raia, 2002) tend to focus on describing the process of creating the reading programs and leave the implementation process unexplored. Kitajima (2002) described a reading program in Japanese that seems to be at the trial stage. His article includes one paragraph in which he reports that eight volunteers tried the software, and on the basis of their comments, he formulated a number of questions about what would happen if used by students. His comments on what is “unknown” can perhaps develop into a research agenda some day but there is no indication in the article that it will. Raia (2002), on the other hand, describes an intermediate distance learning reading program in Latin, created by an intercollegiate team at New Rochelle, New York. At the end of the article, the writer reports comments extracted from her own journal written during the piloting stage and comments made by two external assessors. These comments are generally optimistic but in the absence of usability data, it also leaves a great deal of uncertainty about the long-term benefits to be derived by users.

One of the rare studies is the project carried out by Kol and Schcolnik (2002). The focus of this study is to explore what strategies that students use when reading on screen. Using an experimental design, they compared the test results of students trained in the use of
exploration strategies with those of the control group who did not receive that training, and were also tested using texts on paper. Contrary to the researchers' expectations, the results showed that both groups compared equally well. Moreover, their results contradicted the results of the pilot study, which indicated that skimming was better on paper. As puzzling as it seems, their research design does not incorporate a measure to observe students at work while using the online materials and therefore, it is hard to warrant that the students actually made use of strategies during the test. Previous research that tracked student use of CALL materials indicated that students do not always explore or use the design options of the materials to the full (Chapelle & Mizuno, 1989; Chapelle, 1994; Hsu et al. 1993). Focus on eliciting the product of reading leaves the processes at play uncovered (Hulstijn, 1993).

Interestingly, Kol and Schcolnik (2002) assumed that the students did make full use of the Find option in Word as recommended, and reckoned that the students working online may have been overwhelmed by the demand of scanning through a long document in order to find the needed word in the right context. They attribute the difference in score to the fact that scanning on paper is a simpler task:

...while scanning on paper, readers go directly to that section of the text in which they expect to find the relevant information and thereby avoid unnecessary stops. The positive value of the find feature may well be neutralized by the multiple stops in irrelevant sections of the text. (p. 74-75)

Sutherland-Smith (2002) reported her experience using internet searches with her students in an Australian primary school and raises issues about the difference between reading on screen and reading on paper. She conducted a 10-week study of students' use of the web. She collected data through observation of students at work and by conducting 'informal conversation' with them afterwards. She concludes that reading from the internet requires alternative strategies such as "non-hierarchical strategies of thinking" (p. 664) and "visual literacy skills to understand multimedia components" (p. 665). Examined in the light of the discussion in the beginning of this chapter (section 2.1), these assertions are not surprising. What is interesting is that the researcher and other teachers in her school developed a list of teaching strategies to teach web-reading strategies. They discovered that strategies normally considered 'good' strategies in traditional reading contexts can be
ineffective when reading from the web. For example, reading intensively following every
detail and every link is a strategy transferred from traditional reading contexts. They assert
that this is a very important difference from reading for comprehension in the text-based
situation and hence recommend that teachers teach students a “snatch-and-grab” reading
technique: “In the snatch-and-grab approach students skim text to identify a key word or
phrase and grab the text onto disk or save the site as a bookmark” (p. 666).

Reading here is a matter of skimming to identify information for later use. This step
is followed by a technique that helps the students “[refine] key-word searches” (p. 666) and
“break down the information into manageable sections or chunks” (p. 666). Sutherland-
Smith’s (2002) provides insights about the practical issues surrounding the translation of
ideas found in Shetzer and Warschauer’s (2000) framework discussed in section 2.1 in
practical terms. However, the data collection process is flawed. It is not clear whether and
how the students’ views were collected to make the quotes she provided reliable. In addition,
there is no indication as to the degree of consensus about the issues raised among the
students.

There seems to be a general problem with research on computer-aided reading in
educational contexts. There seems to be a trend to deal with reading as a means to an end
within a web literacy framework, and if ever practitioners are interested in incorporating
online reading activities as part of reading curricula in academic settings, much of their
efforts seem to be centered around building a rationale, finding the software, designing tasks,
and carrying out informal testing and evaluation as a form of trouble shooting before
implementing them (Kessler & Plakans, 2001). Clearly, teachers are not engaging in
carrying out research projects to document and investigate their attempts to integrate
technology in the teaching of reading. Whenever they are designing courseware and
implementing it (Kol & Schcolnik, 2002), they are using a product-oriented research design
that does not answer the critical questions about the process of using computer-enhanced
reading activities.
The elaboration of a pedagogy for reading in CALL is unlikely to be forthcoming if processes associated with the use of CALL reading materials are left unexplored. In the next chapter, I will describe the research methods congruent with this objective used in a set of research projects not focusing on the teaching of reading but that can be models of research designs adopting a more balanced research approach (Bland et al., 1990; Park, 1994; Desmarais, 1998; Romano-Hvid, 2002; Pujola, 2002). The line of CALL enquiry adopted in these projects is more likely to account for the complexity of the teaching/learning situation in CALL contexts as argued by Chapelle (2000). In the immediate, however, I will discuss issues surrounding design processes of CALL materials in general and discuss the types of decisions likely to impinge on the features of CALL materials designed with a specific teaching situation in mind. In section 3.5 I will focus on describing the rationale underlying the design of the teaching units used in this study.

2.3 Approaches to CALL design

The debate over design and software issues in CALL points to possible tensions between the second language learning goal focus of the materials and the technological options allowed by particular authoring tools or software (Cobb and Stevens, 1996; Hubbard, 1996; Plass, 1998; Levy, 1999; Bickerton et al., 2001; Mills 2000; Stepp-Greany, 2002).

Plass (1998), for instance, draws on a model proposed by Wallace and Anderson (1993) to distinguish between four approaches to interface design: a craft approach, an enhanced engineering approach, a technologist approach, and a cognitive approach. Choice in the craft approach, according to Plass (1998), can be dictated by practical and economic circumstances surrounding the project. In this type of situation, the design model is mainly conceived relying on the designer’s subjective judgment, the technical means available to him/her, and the degree of know-how the designer has. The enhanced software approach refers to situations where the designer uses a traditional structured software engineering model as a shell to fit user and task characteristics. In this situation, a designer opts for particular software and attempts to fit the pedagogical objectives with what can be achieved with the software. A designer functioning within the cognitive approach bases his decisions by referring to a psychological knowledge theory of learning. If a “cognitive approach”
means a learning theory of learning underlying the design, then that theory can be any of the
well-known learning theories such as Behaviorism, Cognitivism, or Constructivism. Other
philosophical design arguments can be from a particular SLA theory (Chapelle, 1998a; 2001)
or a particular constructivist theory (Spiro et al. 1991). While I find these models helpful in
contemplating elements at play in the design process, I would add that the difference
between the enhanced software engineering approach and the technologist approach not so
clear-cut. Therefore, I gloss them under technologist approaches in Figure 2 below. What
is likely to happen in reality is to see the designer wrestle with practical, technological,
theoretical and contextual considerations in the design process.

Figure 1.1: Approaches to design interface, based on Plass 1998, p. 37

Indeed, as explained by Levy (1999, p. 84) many inter-related factors can influence
the design process: potential users, and learning context, emergent goals, and available
hardware and software. Therefore, even if a designer has a clear and stable vision of what
type of course he/she is meant to produce, the evaluation and selection of relevant authoring
tools needed might not be as straightforward a task as one might think (Bickerton 1999,
Bickerton et al., 2001). Taxonomies and checklists abound (Bader, 2000) but the question is
who is doing the evaluating and whose perspective is taken into consideration— that of the
software developer, the teacher or the learner? (Kessler & Plakans, 2001). Hubbard (1996)
points out that the questions asked by courseware developers differ from those asked by
teachers. He warns:
Often missed is the fact that the field really involves the interplay of humans and technology and that the human end is especially significant. The choices a developer makes in how to present language and practice activities, the way the teacher utilizes the program, and the degree of success or failure of a CALL lesson in a specific situation. It is this interplay, and not just the frozen set of instructions in the computer program, which ultimately determines the methodology of the field. (Emphasis added) (p. 15)

Examined in light of the diagram above (Figure 2), the interplay Hubbard mentions will make it difficult to dissect approaches and to situate designers within them. The closer we get to the grass root level, the more we will see the material developer moving back and forth along a technology-oriented and pedagogy-oriented continuum. Hubbard himself proposes a framework that is primarily pedagogy-oriented by drawing on two classic teaching methodology frameworks (Richards & Rogers, 1982; Phillips, 1985). What makes Richards and Rogers’ (1982) framework attractive to Hubbard is perhaps the fact that the model is widely used in pre-service teacher education programs in U.K. and worldwide. Hubbard’s framework and especially his ideas related to “teacher control” under his implementation module are enlightening. However, he runs into difficulty at this level of the framework as it turns out that the ‘courseware’ is not to be developed by the teacher. The teacher within the implementation phase is going to work around a “courseware” adding a “preparatory activity” here and a follow-up activity there. It provides nonetheless an exhaustive rational managerial plan to integrate technology into an institution and within a course.

In short, any piece of courseware is a projection of the personalities of the designers (Hubbard, 1996; Davies & Williamson, 1998) and any use of that courseware will depend on the individual agendas of the users. In my experience with creating the two reading units used in this project, I realized that I had to make a number of compromises along the way. The data collected as the students worked on the activity revealed other areas of mismatch between my own anticipation as to what the students might do and what they actually did.

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2 Also used are more recent versions of Richards and Rogers (1986, 2001).
Previous researchers have already pointed to situations of similar mismatch where the learners did not make full use of options the designer provided for them (Hsu et al., 1993). In contrast, Harben (1999) who created a multimedia listening activity and had 23 students try it did not find any areas of mismatch. He commented that the computer tracking data showed that the learners’ “usage varied widely among subjects listening to the same phrases” (31) and also that the “subjects made varied use of the option of viewing the video sections again before having the correct answer confirmed” (31). He interpreted the variation in use as a sign of students working their own way through the material. However, in his rush to prove that his theoretical rationale for creating the activities is valid, he does not elaborate on the nature of the variation and provides instead sweeping generalizations like “the majority of subjects watched the whole video dialogue after finishing the questions, and they all looked at the transcript at the end of the exercise” (31). This is not the attitude adopted by the researcher in this study. As pointed out earlier, not only is it true that learners’ priorities might not coincide with the ones held by the designer (or teacher), the tension can come from the range of choices and options allowed by the technological tools available to the designer (Stepp-Greany, 2002). The points I have raised above give support to a research agenda in CALL that seeks to account for the complexity of the situation and heterogeneity among CALL users. The research strategy I will employ is a three-stage procedure that will allow the exploration of various facets of two CALL events.
CHAPTER 3. METHODOLOGY

3.1 Introduction

This chapter outlines the philosophical and practical principles that guided the conceptualization and design of the study. I begin by stating my approach to educational research and my view of the purpose of research in CALL. Then, I describe the type of data sought in the study and the approach I used to answer the research questions:

1. How do the learners actually use the CALL materials and to what extent do they interact with the content and design of the activities?

2. To what extent do the learners’ perceptions and use of the materials converge or diverge with the intentions and expectations of the teacher?

I will describe the teaching units used in terms of two sets of underlying principles: language learning principles and CALL design principles. This research project followed the agenda recommended by Chapelle (1997; 1998a) that researchers should look at CALL design and implementation in the classroom. The SLA and methodological principles need to be explicit, so that they can be analyzed in light of the students who use the material. For example, if the designer of the CALL activities claims to be using a communicative methodology, it is important to know what version he is applying (Holliday, 1994). If the teaching activity is a reading activity, it is important to make explicit the conception of reading held by the teacher. As I pointed out earlier, this is only one facet of the interplay between various actors in the CALL environment. Documenting what students do with materials is needed to supplement our knowledge about what happens to the intended principles. Further corroboration is needed by way of eliciting the views of learners about the experience and the materials (Allwright & Bailey, 1991). A few attempts to move CALL research design in the direction I have outlined are just developing (Chun, 2001; Romano-Hvid, 2002).
3.2 Ontological and epistemological premises

Denzin and Lincoln (1994) argue that researchers do not choose a methodology or a set of techniques. The researcher’s view of the world (ontology) and of how knowledge is achieved (epistemology), as well as their view of the way the world should be studied (methodology), are interconnected. That is, a particular worldview determines the types of decisions at the other levels. This situation holds true in this project. I view teaching situations as complex social contexts (Breen, 1985; Larsen-Freeman, 1997) that encompass dynamic interrelated phenomena. Therefore, this research aims to look at a teaching situation applying a methodology that seeks to account for the dynamic, complex and unpredictable. This implies a need to collect data that reflect the varied perspectives of participants: the teacher as the designer, the students as end-users, and the computer as a tool. The principle of triangulation in the design process accommodates multiple perspectives within the learning/teaching situation as a social system (Cohen and Manion, 1994). Like different pieces of the same puzzle, different standpoints of participants help construct the overall picture.

The researcher in this study is a teacher who is at the crossroads of the research process. From a Positivist perspective, this degree of involvement may be seen as problematic. It can be seen as resulting in subjectivity and bias on the part of the researcher. The positivist requirement of detaching the enquirer from the enquired phenomenon is believed to be a guarantee for the veracity of the findings. From a Naturalist perspective, the researcher is required to attend to the complexities of human phenomena by entering the world of the enquired (Guba & Lincoln, 1994). When Naturalists use the word ‘participant’ they mean that the knowledge produced is co-constructed between researcher and participant. The researcher’s meanings and those of the participants interweave and produce “collective stories” (Muller and Glassner, 1997, p. 104) embedding intersubjective views of the phenomenon under study. In this type of research, the balance between objectivity and subjectivity is blurred. The above views apply to the situation in this research. For example, I am the teacher but also a participant interacting with my own students in the research situation. Therefore, subjectivity in this study is tolerated for epistemological purposes. As a researcher, I am part of the network of human relations in the events I am attempting to
research. In the interview situation, for instance, my role is to give expression to the students’ views by interacting with them. My involvement is inevitable if the purpose of the interaction is to prompt the participants and to dig into their meanings and interpretations. Inevitably, my questions, prompts for clarification, reaction to ‘unexpected’ statements are part of the workings of the interview as a social and communicative event (Hymes, 1967). It was for these specific advantages that I settled for the methodological choice of using the interview as data collection instrument. It must be recognized that, from my position as a teacher and designer of the materials discussed, I made no attempt to take on the role of the indifferent, dispassionate and impartial interlocutor. As I was transcribing the data, I did notice that, on occasions, I was not able to hide my astonishment (judging from my tone of voice) or approval of what the students were saying. I would suggest that this is only obvious to the ear of an experienced reflective researcher and that these ‘slips’ went unnoticed by the student in question. Even if they were, I prefer to think of the participants as active participants and not so helpless as to be baffled by my reactions (Roebuck, 2000). In general, I made conscious efforts throughout to keep a middle position and present myself as an open listener to my students’ views and only challenging them when necessary.

Moreover, it follows from the research approach I adopt that the data collected be handled using principles of “grounded theory” (Glaser & Strauss, 1967). As advocated by Glaser and Strauss, I use analytic induction to generate meanings and categories from the data rather than select categories from theory and impose them on the data. Once meanings and interpretations are formulated, they can be examined in light of theory. The final part of the analysis chapters (sections 4.4 and 5.6) serve this specific aim. Thus, my research aims and investigatory approach emphasize the emic (insider’s perspective) and rely heavily on interpretive processes. I have collected a set of data as students performed the reading activities, and another set from retrospective interviews. I have examined this information in light of the teacher’s intentions and expectations (section 3.5). The different types of data are amenable to various qualitative data analysis techniques (Dey, 1993), as described in section 3.6.

In summary, this research project is situated within a CALL research tradition that cannot be labeled a ‘paradigm’ yet (Kuhn, 1970). According to Chapelle et al. (1996), it is a
pedagogically-oriented 'tradition' aiming to analyze interactions between learners and software options made available by the designer of the activities. The analysis is expected to reveal whether learners make use of the options that serve the intentions of the designer.

3.3 Research design and methods

My approach to research in CALL requires the researcher to embark on a search for ideas from previous research to inform his/her design choice. The broad idea behind this research project, inspired by Chapelle's (1998) guidelines for the evaluation of multimedia CALL, uses specifically-designed multimedia learning activities based on relevant hypotheses about SLA. In section 3.3, I will explain that designing a reading unit with comprehension tasks calls on other learning and pedagogical principles from reading theory. I argued earlier that recognizing the complexity of teaching situations requires the collection of different sets of data. For easier reference, I gloss the data collection instruments and the type of data yielded in Table 3.1.

The first important set of data collected in this study consists of video recordings of students, as they worked on activities using computer-compatible screen-capturing software called Camtasia (TechSmith, 2002). The second data collection instrument is a short questionnaire, completed by participants before undertaking the first reading unit. The Learner Profile Questionnaire (see Appendix A) is used to collect biographical data about learners and their previous use of computers and multimedia both in general and for purposes of language learning. The third data collection instrument is a semi-structured interview protocol used with the learner upon completion of each unit. I have asked all students the same set of questions twice: upon completion of the first and then the second reading unit. During the two sessions, the teacher used a small recorder equipped with a sensitive microphone. I will comment on the insights gained from these recordings in section 3.4.

The research design yields two sets of data as part of the implementation process of the two units.

Similarly, I have designed each classroom session to investigate a different aspect of the situation. The data includes subjective measures in the form of oral reports (Ericsson & Simon, 1980), and objective measures in the form of computer-aided tracking. Though it
may be that some students were very conscious of the fact that they were being recorded, the use of the device ensured a high degree of unobtrusiveness. *Camtasia* allows the storage of data as a digital video that can be saved as AVI (Audio Video Interleaved) files. This tracking method allows tracing moves through color highlighting, yellow for cursor pointer, blue for left mouse clicks, and red for right clicks. It is also possible to capture sounds made by keyboard strokes, mouse clicks, and any conversation in the surrounding area. The *Camtasia* files and the semi-structured interviews were transcribed in full. I used a two-step process to transcribe *Camtasia* files. First, I transcribed the moves and behavior, in one column. Second, I added inferences about the type of interaction in a second column (see Appendix B). Classroom data were transcribed in a similar way: one column documented the language and behaviors, and a second column included inferences about the functions of the interactions (see Appendix C).

Table 3.1 Features of the data obtained for each teaching unit.

<table>
<thead>
<tr>
<th>Research Instruments</th>
<th>Data Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner profile questionnaire</td>
<td>Data on learner background, previous experience with computer use for language learning</td>
</tr>
<tr>
<td>Audio recording of class sessions</td>
<td>Data on learner-teacher interaction</td>
</tr>
<tr>
<td><em>Camtasia</em> recording</td>
<td>Data on what student actually did while performing the unit</td>
</tr>
<tr>
<td>Audio recording of interviews</td>
<td>Data on learners’ experience with the use of the units, perceptions of learning goals, and their views about aspects of its design.</td>
</tr>
</tbody>
</table>

As can be gleaned from the description of the data collection instruments and the features of the data obtained, this research project yields mostly qualitative data (Larsen-Freeman & Long, 1991). Avenues for analysis were explored in previous studies that
employed integrated teaching units and focused on investigating processes. Park (1994) helped me figure out a system of coding Camtasia data that bears a lot of similarity with hers. Desmarais et al. (1998), who lost their tracking data, inspired me by making explicit what they would have looked for and what they could have inferred. Their analysis of students' synopses, collected through direct observation, helped me understand students' behaviors and moves as they used my units. Harben (1999), who incorporated a measure of learners' perception using an online questionnaire, sensitized me to the ideas that can emerge from students' interview data. In the next chapter, I will go into further details about how each type of data are utilized.

3.4 Participants

I have used the units as part of a normal teaching routine in two sections of English 101 R (a course in reading strategies). I used one section of 11 students for data collection (see Human Subjects Approval Form in Appendix D). Both graduate and undergraduate students are required to meet the language proficiency requirement at Iowa State University. Students' placement at this level was a consequence of their performance scores in the ISU Placement Test, administered in the beginning of the school year. The study focused on analysis of data obtained from five students. Due to loss of portions of the AVI files, I have excluded participants whose data was partially lost leaving me with the five participants used in this report.

The researcher was contemplating using a multilayered process following from analysis of the Camtasia data, such as selecting participants with specific navigation styles. Consoled with the fact that the data collected were rich and varied, I proceeded with the analysis that focuses on the remaining five participants. Participants were referred to as 1, 4, 6, 7 and 9 for a practical reason. I managed the data by assigning numbers to the computer stations the students were using in the lab, which helped me keep track of the various AVI files. Students used the same computer stations in the next session. The technical problem affected only the first set of AVI files, collected during the implementation of the first teaching unit. However, I judged it important to take advantage of data from the use of a
second reading unit rather than focus on just one unit. I have reported data for five participants:

Table 3.2 Participants in the study

<table>
<thead>
<tr>
<th>Participant</th>
<th>Gender</th>
<th>Level</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>P 1 (1)</td>
<td>Male</td>
<td>Graduate</td>
<td>Egypt</td>
</tr>
<tr>
<td>P 4 (4)</td>
<td>Male</td>
<td>Undergraduate</td>
<td>Korea</td>
</tr>
<tr>
<td>P 6 (6)</td>
<td>Female</td>
<td>Graduate</td>
<td>Korea</td>
</tr>
<tr>
<td>P 7 (7)</td>
<td>Male</td>
<td>Graduate</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>P 9 (9)</td>
<td>Female</td>
<td>Undergraduate</td>
<td>Korea</td>
</tr>
</tbody>
</table>

3.5 The reading units

I have designed the units used in this project with students of English 101 R in mind. Throughout the semester, I incorporated technology in my teaching, so that students would become accustomed to working with tools such as online dictionaries, sites for reading resources, and e-mail to post responses to reading assignments. Within this modest goal, it was necessary to be on schedule with the course syllabus. The students had to hand-in weekly paper and pencil reading comprehension assignments and take three in-class paper and pencil vocabulary tests. The electronic resources, to which I referred the students every now and then, were designed to build upon course content, and the strategies focused on particular teaching units.

I have developed the two teaching units according to the course requirements (McCarthy, 1994). Though teaching units bring fresh content and timely topics, they are in a sense, emulations of the overall structure of units in the textbook used for this class (Packenham, 2000). In the next section, I will describe the units used in this study and outline their pedagogical principles. In section 3.4.2, I will describe the features of the
software used for designing the activities, and the ways these features impinged on the design and user interface.

3.5.1 Pedagogical goals

English 101 R is an academic reading course that aims to train students in the use of reading strategies and in the building of vocabulary. A typical unit consists of a pre-reading activity, comprehension-building tasks, post-reading activities ("Main Idea Check", "A Closer Look" and "What do you think?"), and a vocabulary-practice section ("Recognizing Synonyms", "Understanding Connections"). Examined against models of reading surveyed in Grabe (1991, p. 379), there is particular emphasis on component skills such as vocabulary, structural knowledge, and formal discourse-structure knowledge. Reading activities that deal with the second type involve students in producing diagrams or flow charts of text organization, and in recognizing logical patterns of texts, such as cause-effect patterns. The reading passages in the textbook include comments on the margins to direct students' attention to the need to use meta-cognitive strategies\(^1\) while reading. Consider the example below:

Quickly look forward in the text. Identify and mark where the writer introduces these characteristics. Then come back to this sentence, and continue reading. (170)

Moreover, the view of the reading process implicit in the textbook is one that recognizes the interaction of many component skills and the need for the reader to interact with the text. Expressed in terms of reading metaphors, bottom-up as well as top-down processes are dealt with throughout the textbook materials. Moreover, there is emphasis on activating prior knowledge and raising awareness about text organization and relationships between its parts. Bottom-up reading is also encouraged through the guiding remarks accompanying the passage, and reflected in the emphasis on vocabulary knowledge as a facilitating factor in reading comprehension.

\(^1\) O'Malley and Chamot (1990) define meta-cognitive strategies as "an attempt to regulate language learning by means of planning, monitoring, and evaluating" (536)
Thus, the two units used in this study replicate the overall structure of the units in the textbook. The Euro Unit and the Poppy Unit follow the same structure except that the prediction activity is less extensive in the Poppy Unit. In this Unit, I provide basic information through two hyperlinks: one leading to a map of Myanmar - the country where the story takes place, and a picture of the Poppy plant as background image. The prediction activity in the Euro Unit was relatively more elaborate due to the specialized content (economics) and the cultural context. The goals of this prelude are to introduce students to the idea of common currency and to visualize the Euro by means of images of banknotes in different denominations. I believed that this text-specific background knowledge was necessary to the processing of the text. In the Poppy Unit, however, I thought the students were able to handle the content and engage in exploratory reading (Tudor, 1989, p. 334).

Comprehension activities are central components of each unit. They are composed of a text and a series of tasks designed to promote reading for comprehension. I use task as defined by Nunan (1989):

a piece of classroom work which involves learners in comprehending, manipulating, producing or interacting in the target language while their attention is principally focused on meaning rather than form. (10)

These tasks are meant to encourage learners to “distinguish between different levels of importance in the text. Each task in the comprehension activity deals with a specific skill: locating main ideas, supporting ideas, details and inferring meaning from context (Anderson, 1994, p. 183). These strategies and associated component skills are cultivated as part of the comprehension activity in both units (see Table 3.3). Comprehension tasks are of the closed type (Robinson, 2001) presented either in true/false or multiple-choice format. In the Poppy Unit, immediate feedback is given but in the Euro Unit, delayed feedback is given in the form of answer keys. Post-reading vocabulary tasks followed each comprehension activity and connected tasks. In the Euro Unit, students are required to fill in the gaps in two short dialogues. This time they are given immediate feedback: when students clicked ‘check’, the computer embedded the correct word in bold in the dialogue and gave a score. If the student misses a word, the following additional message is displayed: “Some of your answers are
incorrect. Incorrect words in your answer have been left unchanged for you.” In the next line, a score is given in percentage.

Table 3.3 Structure and sequence of the units used in the study

<table>
<thead>
<tr>
<th>Advance Organizer</th>
<th>Comprehension Activity</th>
<th>Vocabulary Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>The “Euro Unit”</td>
<td>Yes/No questions</td>
<td>2 gap-fill tasks</td>
</tr>
<tr>
<td></td>
<td>Multiple choice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Main idea check</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reading for general information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reading for details</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inferring meaning from context</td>
<td></td>
</tr>
<tr>
<td>The “Poppy Unit”</td>
<td>Background image</td>
<td>Find the antonym</td>
</tr>
<tr>
<td></td>
<td>Link to map</td>
<td>(5 words)</td>
</tr>
<tr>
<td></td>
<td>Main idea check</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reading for general idea</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reading for specific details</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inferring meaning from context</td>
<td></td>
</tr>
</tbody>
</table>

The post-reading vocabulary task in the Poppy Unit is a quiz. I ask students to provide the antonym for five words encountered in the reading. They have the possibility to resort to ‘hint’ and immediate feedback (‘check’ button). If the answer is correct, the student gets another word that is a possible antonym to the word in the question, followed by a score. If the answer is wrong, the following message would be displayed: “This part of your answer is correct: …st.” and a free letter is given in another line: “Next correct letter is: ‘l’” If no letters can be kept from the original answer, the student receives a free letter “next correct letter is: ‘b’.” The score is lowered each time the student resorts to hint.
In addition, I designed the units with a few SLA hypotheses in mind. Chapelle (1998) enumerates seven hypotheses for developing CALL activities, according to SLA principles. Making input salient for learners is a condition that applies to the presentation of the two reading passages, as sources of linguistic input. Especially in the Euro Unit, the input was made salient through provision of context-specific explanations of thirteen vocabulary items. The conviction in SLA is that learners will transform this form of ‘comprehensible input’ (Krashen, 1982) into intake, and thus acquire new vocabulary items. Simultaneously, this form of text manipulation draws students’ attention to linguistic elements so that they attend to them and transform them into intake (Schmidt, 2001).

The third condition in Chapelle’s (1998) framework was that “learners need to have opportunities to produce target language output”. This resonates with Swain’s (1985, 2000) Output Hypothesis, which was met to some degree. The comprehension questions elicited output from learners that allowed them to focus on various elements of contextual meaning. I expected that the elicitation of output would engage students in the negotiation of meaning while searching for information related to the different questions. Students were given opportunities to test their own comprehension (hypotheses about the ideas communicated in the reading) through the feedback function. In the multiple choice comprehension exercises, the students needed to read the various options, process the information in them, and then evaluate them against the information in the text. By attending to feedback messages of the type: “Sorry. Try again,” students had an additional opportunity to evaluate their understanding and reach conclusions about the correct answer.

Similarly, the two gap-fill vocabulary check exercises in the Euro Unit should encourage negotiation of meaning. The vocabulary check dialogues provide an opportunity for students to negotiate answers by having to insert words in the appropriate blanks, while minding the total context. Chapelle’s conditions that “learners need to notice errors in their own output” and correct them, can be met through the feedback function. If students do not notice their own errors, feedback will trigger attention to error and force reflection on their errors, and therefore, alter their original answers. In my judgment, task 4 in the Poppy Unit is a better illustration of a task that encourages interaction with the computer, negotiation of meaning, and implicit teaching of vocabulary. The word in the question, the word guessed
right or corrected, and the other possible antonym given by the computer in the last message can be considered additional input.

In the account above, I have clarified a number of principles that came into play in the design of the two units. After they had been developed, it remained to be seen what the students would do with them.

3.5.2 Design options

I wrote the two units described above using Dreamweaver, version 4 (2000), an HTML editor that does not require knowledge of programming or HTML tagging. It is an easy tool for the integration of multimedia (images, sounds, animation, and video) into design. I have edited the images used in the Euro Unit using Adobe Photoshop 5.0. Except for the vocabulary check tasks, the unit was designed using Dreamweaver. For these tasks, I resorted to Hot Potatoes Half-Baked Software Version 5 (Half-Baked Software, Inc., 2002) downloadable from the internet as “shareware”. The process is almost reversed in the Poppy Unit. I created all the tasks of the using Half-Baked Potatoes (HBP), and then fitted them into the rest of the shell designed in Dreamweaver. Interest in the incorporation of immediate feedback motivated my decision even though it was in a sense a half-measure. The feedback function in HBP is not adaptive. It secures only feedback of the corrective type and the message included in the hint function does not allow for intelligent comments. In task 4 of the Poppy Unit, the hint consisted of giving an extra letter, and thus, encouraging guessing on the part of the student, rather than high-level processing. Therefore, I was skeptical about the possibility of the hint function to bring about optimal conditions for negotiation of meaning and modified input. Awareness of this limitation was frustrating to the designer. However, considering the circumstances surrounding the development of the units and the fact that the teacher was only starting to learn about CALL design, it was not realistic to expect customization of the materials as described by Mills (2000).

3.6 Procedures

3.6.1 Piloting

The units were tested several times informally and formally. I first asked my Fall Semester students in my 101 Listening and 101 Reading to visit my webpage, try the units
and send me their comments over the Christmas break. The students who posted comments (11 students) were encouraging and flattering at times but also identified broken links, *culs de sac*, and navigation difficulties. In addition, two fellow students examined the units and drew my attention to possible difficulties arising from ambiguous statements, possible causes of confusion surrounding the alternatives given, and clarity of the items.

I piloted the units with another 101 R class section first. I discovered that the annotations in the Euro Unit were deactivated with Netscape Navigator. I also noticed that students could, out of curiosity, change the settings or open other applications and thus cause unnecessary technical problems that would disturb the data collection process. To avoid these problems, I had all computer screens already set and displaying the reading unit and moved the chairs away from the computers and placed them around the tables in the middle of the computer laboratory. This arrangement made it possible to explain beforehand the purpose of the study, collect the completed Learner Profile Questionnaire and the consent letters and give the students directions to sign up for an interview time slot as they walked out of the computer laboratory. Students were also given a rough estimate as the amount of time needed to complete the task, which following the piloting was estimated to 40:00-45:00 minutes for the Euro Unit and 30:00-35:00 minutes for the Poppy Unit. In addition, piloting helped work out a solution for storing the large AVI files (a 30-minute AVI file can be around 450 KB). Since there were only three CD burners in the computer laboratory, the technical support staff created a temporary space to save the data on computers first and then on CDs.

3.6.2. Fieldwork

I collected the data on two occasions. The first session was February 27 and the second March 13. The students undertook each reading activity in normal class time, in the computer laboratory. Students were told that they could work at their own pace but were asked to sign up for an interview (see protocol in Appendix E) the same afternoon or the next day. The interviews were conducted in English and aided by a computer monitor displaying the units. All interviews, which lasted from 35:00 to 45:00 minutes, were audio recorded.
I also recorded the two class sessions by means of a small recorder equipped with a small sensitive microphone to document teacher-student interactions. The recordings were of high quality but while transcribing them, I realized that I myself was creating too much background noise (footsteps and mouse clicks) and that it was sometimes hard to tell which student was speaking to me, especially if the student was whispering. This was not too serious a problem for the purpose of this study but might be if the identity of the students is crucial for the analysis. As illustrated in the Table 3.4, the data collection process yielded two sets of data, each comprised of operational and verbal report data.

Table 3.4: The variety of data types collected in this study

<table>
<thead>
<tr>
<th>Class session 1</th>
<th>Learner Profile Questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>Camtasia</em> data set 1</td>
</tr>
<tr>
<td></td>
<td>Interview data set 1</td>
</tr>
<tr>
<td></td>
<td>Audio recording 1</td>
</tr>
<tr>
<td>Class session 2</td>
<td><em>Camtasia</em> data set 2</td>
</tr>
<tr>
<td></td>
<td>Interview data set 2</td>
</tr>
<tr>
<td></td>
<td>Audio recording 2</td>
</tr>
</tbody>
</table>

3.7 Methods of Analysis

I used different kinds of data analyses in this study. I chose triangulation to corroborate the information in the interview data and the *Camtasia* data. This approach helped identify areas of mismatch between pedagogical intent and learner performance on the one hand, and learner perception on the other. I analyzed the interview data by using a systematic method of examining each question across cases. I analyzed the answers of the five participants, for each particular question, in terms of convergence and divergence. I repeated this process with the same question asked upon completion of the second unit, and cross-examined answers for degrees of consistency or difference.
Analysis of Camtasia data was the most complex task in this study. It had to be conducted at various stages. In the first stage, I transformed the digital video into CALL text (Chapelle, 1994). This implies transforming visual information into actions (behaviors) of the kind:

Student: Clicks 'enter'
Computer: Displays comprehension activity
Student: Move mouse pointer over title

In addition, I logged time in order to mark particular episodes, such as the time when the student finished the first reading of the text and when he/she started a new task. I also logged pauses beyond six seconds. The next step was to transform behaviors and actions into discourse functions, following Sinclair & Coulthard's (1975) classification of types of discourse functions occurring in conventional language classrooms. The process of classifying the operational data into moves and acts gives transcripts as exemplified in this extract:

<table>
<thead>
<tr>
<th>Participant</th>
<th>Transcript</th>
<th>Moves &amp; Acts</th>
</tr>
</thead>
<tbody>
<tr>
<td>P 1:</td>
<td>Selects a for sentence 4</td>
<td>Initiating [output-with error]</td>
</tr>
<tr>
<td>PC:</td>
<td>Sorry!</td>
<td>Feedback [evaluation-wrong]</td>
</tr>
<tr>
<td></td>
<td>Try again.</td>
<td>Follow-up [advice]</td>
</tr>
</tbody>
</table>

(Participant 1, Camtasia data, page 4)

The second step of the transcription is a process of translating students' and teachers' actions into obligatory functional moves labeled as Initiation, Response, and Follow-up. Under a functional move like Feedback, there can be obligatory acts like evaluation, repetition, or comment.
The analysis was exploratory, and guided by readings that pointed out to what students might generally do as they work with teaching materials and what strategies they might employ when in difficulty (Desmarais et al., 1998; Park, 1994; Anderson, 1991; Hsu et al. 1993; Chapelle and Mizuno, 1989). I was, therefore, interested in identifying observable navigation patterns and working styles in the units in general and within particular task episodes. I examined Camtasia data of the first and the second units, for each student, independently (case by case). This type of within-case horizontal analysis (Dey, 1993, p. 92) is tedious but necessary to develop a sense of whether particular strategies are part of individual styles or a general trend. This explains the choice of writing case accounts from the analysis of Camtasia data. The summary following the case reports emphasizes salient features of students’ use of materials. When applicable, I will make further connections by cross-examining operational data in light of the interview data and/or the pedagogical intentions and expectations underlying the design (stated in sections 3.4.1 and 3.4.2). The following two chapters are devoted to the analysis and interpretation of the data, in the way described above.
CHAPTER 4. ANALYSIS OF OPERATIONAL DATA

4.1 Introduction

This chapter is based on analysis of data obtained through the Student Profile Questionnaire and the Camtasia recordings of the students working on the reading units. First, the profile of each participant will be drawn by relying on their responses to the short questionnaire completed before performance of the first unit. The profile will help us understand more about the participants and their previous experience with computer use for educational purposes. Second, the navigation trends and working styles of each participant will be described by focusing on observable features of the operational data that indicate patterns of completing the tasks, order of completing them, time spent on particular aspects of the tasks, and the use of options available (annotations and feedback).

The performance patterns and strategies used by the five participants are compared and contrasted to point to areas of convergence and divergence among the participants in computer use (research question 1). These empirically-based observations and inferences will be discussed in light of the teacher’s design choices and their strengths and limitations. Each case summary and the cross-case comparison will help paint a clearer picture of both the idiosyncratic and the common processes involved in the use of the two CALL activities used in this project.

The following analysis uncovers only those aspects of the students’ performance that the researcher could observe and/or infer. The Camtasia recordings had a number of limitations:

- It is hard to see what the student is doing when he/she is not using the mouse pointer;
- when the student places the pointer on the scroll bar on one side of the frame, it will be impossible to decide where he/she is looking;
• when a student makes a stop or a long pause, there is no way for the researcher to infer rationally what the student is doing (thinking, writing, or reading).

Therefore, pauses and stops were logged in the transcriptions but were not used as an indication of the use of strategies. In addition, time and product factors (number of correct/wrong answers) were not considered relevant for the purpose of the analysis. However, it was necessary to connect performance when it could clearly be observed as outcome of problem-solving strategies.

Transcripts of the audio recordings of the two classroom sessions were examined to identify patterns of teacher-learner interaction in this computer-mediated learning situation. However, the aim of the analysis was to identify the topic and function of the interactions initiated by the students and teacher (see Tables 4.1 and 4.2.). A general observation was that the exchanges were not continuous or connected as one might expect them to be. There were numerous long pauses when no exchanges took place. The number of exchanges when the students initiated questions or the teacher offered help varied greatly from session 1 to session 2. In session two, the number of exchanges dropped considerably. In session 1, the majority of the exchanges students initiated were about a missing question number in the worksheet. In session 2, the majority of the students' initiations were triggered by unfamiliarity with the format of Task 4.

The classroom data were not used for triangulation purposes but they clearly indicated that the pattern deviates from the one noticed in traditional classrooms (Sinclair and Coulthard, 1975). The exchanges not tabulated in Table 4.1 and 4.2 were about seating the students, giving directives about the worksheet, reminding the students of the purpose of the study (session 2) and arranging for interviews on the way out. Attempts in analyzing classroom conversation in CMC contexts are already pointing in this direction (Negretti, 1999; Sengupta, 2001) suggesting the need of a research agenda that focuses on the impact of these new interaction patterns on language acquisition (Ortega, 1997).
Table 4.1: Teacher-student interaction, classroom session 1

<table>
<thead>
<tr>
<th>Topic</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student initiated requests for help</td>
<td></td>
</tr>
<tr>
<td>Filling worksheet</td>
<td>9</td>
</tr>
<tr>
<td>Meaning of a word</td>
<td>4</td>
</tr>
<tr>
<td>Completing task</td>
<td>1</td>
</tr>
<tr>
<td>Teacher initiated offer for help</td>
<td></td>
</tr>
<tr>
<td>Computer function</td>
<td>4</td>
</tr>
<tr>
<td>Monitoring progress</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 4.2: Teacher-student interaction, classroom session 2

<table>
<thead>
<tr>
<th>Topic</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student initiated requests for help</td>
<td></td>
</tr>
<tr>
<td>Completing Task 4</td>
<td>7</td>
</tr>
<tr>
<td>Teacher initiated offers for help</td>
<td></td>
</tr>
<tr>
<td>Computer function</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
</tr>
</tbody>
</table>

Another aspect of the situation is the participants’ frames of reference and schema they bring to this CALL environment. These were explored by means of follow-up semi-structured interviews. The semi-structured interviews were meant to help reveal the students’ perceptions of the activities and their interpretation of the teacher’s implicit objectives (research question 2). The interview data will be discussed question by question and across case focusing on similarities as well as differences in the respondents’ views and
interpretations. This section will be followed by an appraisal of the participants' views and how they converged with the teachers' objectives stated in section 3.4 above.

4.2 Case Summaries

The case summaries below will be based on two types of data: (i) data obtained through the Learner Profile Questionnaire (see Appendix E) and (ii) data obtained through the Camtasia recordings during the two occasions when the students performed the online reading units. I will use each set of data to build a case of each individual learner as user of the online materials. This chapter will be concluded with a synthesis of the features of CALL activity use across cases.

4.2.1 Participant 1 (P1)

4.2.1.1 Profile

Participant 1 is an Egyptian male student in Systems Engineering. As a graduate student, he is also a technical assistant and statistics analyst in the education department. He has hands-on experience with video-conferencing, CMC rooms and mentions taking two distance learning courses on WebCT. His responses to the question about computer use indicate that he is using computers and multimedia in everyday communication, but makes limited use of online learning materials. He checks four of the choices given that indicate he uses the computer to do activities that focus on isolated skills. For example, he does not indicate that he uses online reading materials but happens to tick online listening activities. His answers to items 6 and 7 indicate that he is interested in using online materials for educational purposes and agrees strongly with four major presumptions about the advantages of using computers for learning. The only statement he disagrees with is 7.3 ("I can become frustrated and not finish"). The last response is cohesive with his enthusiastic attitude to the use of technology in general, but contrary to what he thought Camtasia data revealed, he did become frustrated by a particular task type and exited the unit. His hands-on experience with distance education as part of his job led him to produce a view of the role computers might play in English language teaching as producing and implementing long distance courses. Not only did he think it was a feasible idea, he offered his help if I ever wanted to do that.
4.2.1.2 Task performance

Data collected while P1 worked on both units show that his navigation patterns in the comprehension tasks were constant. Whenever there was clear indication of the mouse pointer, he is shown to proceed in a linear way. He would read the text line by line first, read the task statements, the options attached to them and then make the choice. However, he stumbles when dealing with the vocabulary exercises in the two units. The last two gap-fill exercises at the end of the Euro unit frustrated him. He did not seem to employ any exploration of what the words meant nor why he had them wrong. He makes a few "hit and miss" attempts and then exited the unit. While working on the Poppy unit, the same scenario took place. He became frustrated upon employing the same ‘hit and miss’ strategy and withdrew.

Starting from task 2 in the prediction activity, he reads the instructions and all the options before answering. He makes the statements and options salient to himself by highlighting them, scrolling up and down the options and finally making a decision. He proceeds in a similar style with task 3. As the images load, he attempts to explore further by clicking at one image of a bank note, which shows that this participant is experienced with using multimodal information. He takes 02:16 minutes to write down information on the worksheet for task 1 and 05:00 minutes of work off-screen to fill up worksheet questions for task 2.

When dealing with the comprehension activity, he starts by estimating the length of the text and then reads the text paragraph-by-paragraph and line by line. He marked his moves on the screen by moving the mouse pointer over the lines he was reading. That was the general trend although on a couple of occasions, he placed the cursor to the right and used what appears to be eye movement reading. He stops at two annotated words in passing (one in paragraph 1 (‘billboard’) and one in paragraph 2 (‘denominations’). Immediately after checking the second word, he stops using the mouse as a pointer and we are left to infer he is using eye movement. He completes the reading for general understanding (skimming) in 07:53 minutes.
He provides a wrong answer for the main idea check task (general idea) even though he seems to be employing the right strategies. He read every statement given before deciding to select 4. He surface reads, but does not seem to evaluate long enough for completeness of the information in each statement. While performing task 2 he proceeded in a linear way question-by-question, stopping only once to read the statement in question 3 for a second time. It seems that he relies on recall after the first reading to provide answers to questions that deal with specific details. When uncertain, he hesitates for a while and then selects another option. When dealing with task 4 he hesitates over question 7, marks a 00:25 minute pause but is content with re-reading the options. The only time he ever referred back to the text was when considering question 7 in task 2.

The vocabulary check was a problem for this student. Once Dialogue 1 (gap-fill exercise) is displayed on the screen, he seems to be passing the mouse over the words and the dialogues indicating perhaps he was reading and exploring the words given and planning which word would go in which blank. He makes a first attempt working globally; i.e. filling all the words and clicking ‘check’. This process yields only one correct answer, ‘twenties’ in blank 3. His response was to work differently in the second attempt; i.e. type in one word and then ‘check’. Two problems emerge here. He tends to swap the words around randomly rather than determine the choice through an examination of meaning within the sentence. The second problem is that he does not take advantage of the feedback. For example, he retypes ‘exchange’ in blank 1 even though the feedback message indicated that it was not the word needed. After three attempts, he clicks ‘next’. At this point, the student changes strategy while working on the next gap-fill exercise. He stops taking risks working globally and chooses to fill word by word and check the answer each time. After the second attempt, he checks his answer and exits the task. Interestingly enough, he makes a navigation detour and stopping at task 4 refilling with ‘correct’ responses. This leads one to conclude that he is at ease when working on comprehension questions. When working on the Euro Unit, this student navigated with ease but in a linear way. He emerges as working in a systematic, orderly fashion as long as he is dealing with multiple-choice questions, but when it came to the vocabulary checks tasks he was not able to use the vocabulary encountered in the reading into output. He also did not make use of the feedback clues to control his output.
While performing the Poppy Unit, P1 progressed in a similar fashion. In general, the student is systematic in his approach to the task working in a linear way following the order of the tasks and the questions as laid out by the design. He reads all instructions, all statements and follows the order prescribed by the overall design. As in the previous unit, he runs into difficulty in the vocabulary check task. Camtasia recording of his performance of the Poppy Unit shows that similar to the way he worked on the Euro Unit, he will not go back to the text while dealing with the comprehension tasks. There is also similar evidence that the student follows the same task execution procedure. He starts with a first reading of the text, this time spending 10:12 minutes using the same technique of pointing with the mouse for the large part, but then switches towards the end (paragraph 6 up) to eye movement. The recording also shows that before selecting an answer to a question, the student reads the statement, all the options and then selects the answer.

The only difference noted in the way he proceeded was when working on the Poppy Unit is due to the immediate feedback function. This feature of the design forces the student to proceed item by item since the feedback pops up in top section of the task frame. This element seems to be valued by the participant. He makes a deliberate move to scroll up the frame to view the feedback message in task 2. However, in all instances where the student received ‘wrong’ for feedback in task 2 and 3, it is clear that the student automatically selects the other option. Indeed, out of the four instances of negative feedback, the student just selects the other alternative without referring back to the text to confirm or disconfirm. This student’s troubles begin with the last vocabulary task. Though this task is different from the gap-fill exercise in the Euro Unit, the principle is the same. The student is required to provide output using the words encountered in the reading. What is surprising is that he does not process the instructions and starts giving synonyms instead of antonyms. In addition, he tries to resort to ‘hint’ right from the start seeing that he did not process the instructions. He seems not to have processed the information and moves on to fill in the next box without realizing he is required to give the opposite. He dismisses feedback and hint and moves to number three. He gives a synonym again and withdraws immediately.
To summarize, the data collected from this participant working on the two units shows a consistent working style. He works in a linear way and employs similar navigation habits. The data reveal that in the two units the student works more smoothly with the multiple-choice type of task. He seems to want to finish the task on the first attempt spending as little time as possible on it. It is clear, however, that he is not skilled in solving vocabulary check problems that require using the language items encountered in the reading in a different context. The feedback element in the Poppy Unit showed that the participant only reacts to the feedback without making an attempt to evaluate or revise answers.

4.2.2 Participant 4 (P 4)

4.2.2.1 Profile

Participant 4 is a male Business student from South Korea. According to his responses to the questions in the Learner Profile Questionnaire, his use of computers includes word processing, e-mail and surfing the internet while his use of multimedia is limited to CD-Roms. In response to section 5, he indicates having prior experience with using online resources such as vocabulary exercises, grammar exercises and online dictionaries. Like other participants, he only had experience with using isolated skills. In fact, this particular student pointed out in the interview that performing the Euro Unit was the first time for him to use a computer to do a reading activity that includes various integrated tasks.

In line with his answer to section 6, he feels that working with computers keeps him interested. As for his answers to section 7, he agrees with the positive views generally held about the use of computers in classrooms. He then agrees that computers allow self-pacing and self-correction, and with the fact that it is a convenient and flexible means of instruction. However, he does not hold the view that working with computers can bring about frustration on the part of the learner or lead to the conclusion that they will replace teachers. In the final open question, he mainly states that computer use boosts children’s motivation. He emphasized the motivation factor a lot in the interview.

4.2.2.2 Task Performance:

When working on the Euro Unit, P 4 generally proceeds methodically through the tasks. He starts by choosing not to stop too long at the overview. As he reads, he has a
particular style of running the mouse over a chunk of the instructions or reading and then highlighting three to four lines at a time. At first, this behavior with the mouse appeared like a “navigation tick” but it turned out this was a personal style. By doing this, the text and background are contrasted to the rest of the text. It can be that the technique helps him see better what he is reading and perhaps help him read faster focusing on a particular bit at a time.

He goes through the prediction activity smoothly. He works his way through the first two prediction tasks writing simultaneously on the worksheet (verified). Considering the degree of success while answering, he appears to have the needed schema to read the text with ease. He passes on to the comprehension activity. First, there is no indication that he read the instructions as he goes straight to the title. This explains why he had difficulties with the annotated words since he did not realize he had to double click. Therefore, his three attempts to check the annotated words were to no avail. What is interesting is that he does not resort to the teacher for help (class session recording).

He completes the first reading of the text proceeding paragraph by paragraph, and line by line in 06:23 minutes. He successfully answers the main idea check and starts working on task 2. A distinctive feature of this student’s procedure is that he does not answer the questions in order. He skips 1 to answer 2, 3 and 4. Then he skips 5 and answers 6 before he goes back to question 1. He considers doing question 10 moves on to 8 and then back to 5. In all this, there is no evidence that he went back to the text except for the one occasion when he scrolled up the text frame so that the first three paragraphs be visible. While performing task 3, he also skips question 2 and goes back to it after dealing with the other four. In task 4, in contrast, he goes back to answering in order. Again, there is no sign of him resorting to the reading but he appears to be carefully considering the options and reading the statements. He clicks on the ‘check answer key’ link but does not stop at it or attempt to verify the answers.

Similar to other students, he proceeds globally in his first attempt to do the gap-fill exercise, but after that, he starts working item by item proceeding by elimination once given feedback. He stumbles in the first exercises as he missed the ‘s’ in ‘denominations’ and thus,
when the computer did not recognize the answer, he also eliminated it as a possible answer failing to notice the spelling mistake. What is interesting is that he persisted placing mouse over words given, highlighting them one by one and trying every probable answer. Actually, he had to refill the dialogue at three times and finally went back to 'denominations' proceeding by elimination. In dialogue 2, the second gap-fill exercise, things went more smoothly. He managed to fill in the correct words from the first attempt.

When the participant is presented with the Poppy Unit cover page, he chooses to click 'enter' without using the links to background information. He then begins to read the article. Within a few seconds, he seemed to consider clicking 'show tasks' but does not do that and continues a first general reading. During that first reading, he maintains his distinctive style of highlighting two to three line chunks or part of a sentence. What is remarkable is that the highlighting and the move to the next three lines can be somewhat quick. I personally could not read the chunks fast enough to follow the next one. He clicked on [show tasks] within 03:07 minutes and started to read as he responded to the questions in the tasks. The rest of the Camtasia data recording confirms that he was indeed referring to the text as he did the comprehension tasks. In the follow-up interview, he explains that he prefers to read the questions before reading in detail.

When dealing with the tasks, he reads the question (highlighting the whole text of it) and reading all the options and then makes a decision. He also resorts to the feedback function but as observed with other participants, his reaction to the immediate feedback given in tasks 1, 2 and 3, is just to opt for the next alternative without referring back to the text to confirm/disconfirm details in question. In task 2, for instance, the participant makes three errors and in all of these instances, he just clicks another alternative. He is successful in these second hits but does not show any sign of evaluating once feedback is given. Although there is not enough evidence to claim that he always tries to locate information before selecting an answer, it is clear that he was not always looking in the right paragraph. In one instance (question 2, task 2), he was looking in paragraph 2 while the information is partly in paragraph 1 but in general to be inferred from the text as a whole. Yet, he selects the correct choice. In contrast, in the case of question 3 it can be that he made an error because he was looking in the wrong spot (paragraph 3) while the needed information is in paragraph 2. A
close examination of the spot where he was looking and the questions he was tackling, it can be noted that he was reading one paragraph ahead in every answer until he reached question 9. He dealt with questions 6 and 7 from recall only. He even seemed to have lost concentration as he started responding by writing 'true' in the box opposite the question. He comes back on track with question 9, which obliged him to scroll back up the text frame to the level of paragraph 4 where the details are located. The paragraph he goes back to does include the details but not necessarily the lines he highlighted. The information is four lines up in the same paragraph. One observation is that the participant at this point seems to be proceeding at a relatively fast pace. While the focus in the options was on 'seven pounds', it seems he focused on 'half-acre'. He was able to answer questions 10, 11, 12 from recall and in question 14 he goes back to the interactive style (when not certain of the answer!) spotting information in the paragraph as a whole and examining the question and statement and then highlighting the sentence where the detail might be. He misses out in question 15 although he was at the level of the right paragraph. In this case, he chose to read only statement A and not to confirm his choice (B) against a specific sentence in the text as he did before.

In task 3, he keeps working in an orderly manner through the task, using the same interactive style referring back to the text to spot the word, but as there is more involved in this exercise than just spotting information, the attempts were not always successful (4 out of 10 wrong). He also remains constant as to the way he reacts to the immediate feedback. He does not re-evaluate the answers. It can be that he has problems discriminating between the words in the options given. What he needed to do was infer meaning from context plus background knowledge of other vocabulary. As he starts task 4, it becomes clear that he does not pay attention to the instructions. He resorts to 'hint' before making a try but later on uses the feedback function more efficiently. When given feedback, he also types in the alternative and checks again. It was not clear what the purpose is for this student. My first impression was that he was double-checking whether the alternative answers work but I inferred from the interviews later that the students were hoping to see their score improve. When this participant is facing difficulty with the last word in task 4, he makes use of resourcing. He scrolls back to paragraph 6 to locate the word in the text, makes a first attempt, uses the feedback to make a second and a third until he reaches the answer.
To summarize, it is clear that the only thing Participant 4 has in common with the other participants is his reaction to the feedback. Analysis of the Camtasia data indicates that this participant has a distinctive personal working style while reading and tackling the questions. When reading he highlights chunks of text, he chooses to answer the questions in a given task in the order that suits him not as laid out by the designer, and chooses to work on the text starting from the questions. This choice brought about a more interactive style whereby he is observed going back and forth between the text and the questions. However, while this interactive style was rare among the participants in this study, it was more prominent in the Poppy Unit. Indeed, P 4 referred to the text 13 times as he worked on the tasks in this unit while in the Euro Unit there was only one reference to the text while working on the tasks. In the Poppy Unit, it was clear his reading was guided by the questions. Skipping questions and going back to them later was a constant feature of his working style in both units. If this participant is to be faulted on anything, it would be his tendency to skip general instructions and the teacher’s explanations of the purpose of the units. He skipped the ‘overview’ in the Euro Unit and the introductory note in the Poppy Unit.

4.2.3 Participant 6 (P 6)

4.2.3.1 Learner Profile

P 6 is a female graduate student from South Korea. She is also a Teaching Assistant in the Mathematics department. Though she uses computers for her own teaching, she points out during the interview that she does not like using computers for language learning. The information collected through the Learner Profile Questionnaire shows that other than for applications for her teaching (programming for use of algorithms), her use of the computer outside her professional life is limited to e-mail and surfing the internet. She checked only two items in the section related to the use of computers for language teaching purposes (section 5): “online listening activities” and “online dictionaries”. Incidentally, these two areas are already part of a course in listening strategies (English 101 L) she was taking. In section 6 she confirms further that she is uncomfortable working with computers for class work as indicated by her choice of ‘nervous’ and ‘indifferent’. Her lack of excitement about the use of electronic media for learning is coupled with a view that there are disadvantages
associated with the use of computers in education. She agrees with only one statement that carries a positive view of computer use for learning “I can make sure my answers are correct.” By the same token, she selects “strongly disagree” for the statements that say that working with computers allows for self-pacing and convenience but does not think that computers can replace teachers. Her self-perception that she can become frustrated and not finish a task while working online can be traced back to her attitude toward learning with computers. While not addressing the open ended question in the questionnaire, she wrote:

“...I don’t like learning language by computers since times and places are limited to me to use computers (I don’t have my own computer). Moreover, when I watch the monitor my eyes are tired easily so I can not pay attention to it.”

From the outset, this participant has a clear preference for more traditional learning modes. Her statement is surprising seeing that she is proficient with computers.

4.2.3.2 Task Performance

This participant’s personal style while working with the computer is of two types depending on the task. She adopts one style for the comprehension tasks and one for the vocabulary check tasks. While performing the comprehension task, her navigation pattern is characterized by linearity. She follows the order as required by the design and works through it at the same constant pace. It was possible to follow her moves on the Camtasia recording by following the mouse pointer as she uses it to keep track with what she is reading.

While working on the prediction activity of the Euro unit, she works slowly but steadily and stops to make guesses. She reads the instructions as well as the options, thus, making informed choices. When she once made the wrong click and a different window popped-up, she did not have any difficulty going back quickly to the task. She then re-enters the ‘comprehension activity’ scrolls up, down and sideways as if to assess its length and starts reading the text line-by-line, paragraph-by-paragraph using the mouse pointer to keep track of what she was reading. It can thus be observed that she proceeds until the end of the text. She then decides to answer the main idea check question in task 1 after having spent 06: 42 minutes on that first general reading. As she starts tackling the comprehension questions, she appears to have an interactive style. She reads portions of the text, reads the statements in
the questions and then selects the answer. She makes four errors along the way using this strategy. What is more interesting is that in some instances (questions 5 and 6) she was using the same technique of not looking in the right spot where the information pertinent to the questions is located, and yet making correct answers. There were also instance when she did not resort to the text (questions 9 and 10) and producing one wrong and one correct answer. When dealing with task 3 she does not resort to the text but reads the choices given. This strategy leads to two wrong answers and one self-correction. In task 4 (inferring vocabulary from context), she proceeds without reference to the text, relying totally on recall.

It is when dealing with the vocabulary check exercise that the student’s style changes. In the first attempt, she does not use self-regulating. For example, she types two words in one blank and checks and makes spelling errors, and does not notice them. She seems to be confused about the meaning of ‘change’ vs. ‘exchange’ and ‘currency’ vs. ‘money’ and ‘money’ vs. ‘coins’. Her moves then consist of swapping the words around apparently without any processing of the meaning or discriminating among the meanings of the words in the list given. In the end, she gives up trying and clicks next. What is surprising is that in the next task (dialogue 2) she starts to use the cut and paste function and again fails to exercise self-regulating. She would paste two words into the same blanks. As noticed previously with other participants, the student works globally in the first attempt but after that, she works item by item. At the end, she manages to finish the task after numerous “hit-and-miss” attempts. She did not do any evaluating and did not explore the meaning of the words she had problems with. It was interesting to watch the frantic moves she makes in the Camtasia recording. She was just cutting and pasting one word at a time as if applying some probability rule. In the end, she exits before completing the task like P 1.

While working on the Poppy Unit, this student begins the unit by reading the text in a similar systematic linear way (paragraph-by-paragraph and line-by-line). After this first general and rather slow reading (19:25 minutes), she begins the tasks. As in the previous unit, she reads all the options and makes decisions accordingly but in the main idea check exercise, it seems she did not see the feedback or did not read it carefully. She does not make a second attempt. It appears to have been the case because in the follow up interview
she was convinced she had the right answer. Her reaction to the feedback is similar to the other participants. She just clicks on the next best option.

In task 2 (comprehension), the student proceeds item by item in a systematic way. She normally reads the statement and the two options and then makes a choice. On the two occasions where she makes wrong choices, her reaction to the negative feedback was to click automatically on the other option. There was no sign of exploring or evaluating relevant information. This does not mean that the participant does not make use of evaluation as can be seen in her attempt to respond to question 12. She reads the statements, goes to the text to find the relevant information and then makes a choice. It appears that the student does not employ the resourcing and evaluation consistently. In fact, she referred back to the text only on two occasions. She performs task 3 in the same manner relying only on the statements in the task. Though she seems not to have any problems finding the correct answers (she makes only one error), an automatic click follows the feedback message ‘wrong’. She also stops moving the mouse pointer over the options at this level of the task. She moves the mouse pointer over the sentence given and then clicks. It can also be that she has less trouble decoding the information at this point.

Like the other participants, she has more trouble dealing with task 4. She experiences a few navigation difficulties. As she experiences less success with finding the correct answer for question 1, she moves to question 3 making one wrong answer in the first attempt but succeeds in the second. In question 2 she misses out on word category. She does not make use of the feedback message and moves on to question 4. When she gets feedback for question 5 indicating that she needs to try again, she chooses to go back instead to question 1. She tries to get a hint first even though she should have discovered by then that hitting ‘hint’ first does not work. It is clear that this task has become like a dead end for her. She goes back to question 2 and types in a correct answer. She receives a second possible answer that she decides to use hoping to see her score increase (confirmed in interview data). She then makes a second attempt for question 1 as she succeeds in connecting the pieces of information she received after each comment. It is clear that she really does not know the meaning of ‘devastating’ in question 5 since she gives ‘increase’ as antonym. She soon exits the task.
To summarize, in the two units this participant spends a lot of time reading the text for the first time. When working on the comprehension tasks, she would explore and evaluate the choices given and then take decisions before receiving feedback. The student makes use of evaluation and resourcing as long as she does not have immediate feedback. However, she made the same type of moves as the other participants once given the feedback in the Poppy Unit. Processing feedback of a different style in task 4 did not seem to be helpful for her since she was not able to benefit from the hints given. When it comes to multiple-choice exercises, she seems comfortable and progresses steadily with the task. In the Euro activity where there was delayed feedback, her Camtasia data reflected more evaluation and exploration and more frequent reference to the text (5 times vs. 2 in the Poppy Unit). What can be deduced about the way this student worked in the Poppy Unit, is that she did not feel the need to refer to the text perhaps because she spent such a long time reading it in the first place. It is also in the Poppy Unit that it became clear that when facing difficulty she begins to work in a chaotic way and withdraws from the activity.

4.2.4 Participant 7 (P 7)

4.2.4.1 Profile

P 7 is a male graduate student from Hong Kong specializing in Management Information Systems. According to responses to sections 2 and 3, he uses computers frequently for word processing, electronic communication, for collecting information on the web and shopping. He also uses multimedia like videos, CDs and Mini Discs. However, he does not seem to have had long experience with integrated units of learning. Following his responses in section 5, it can be inferred that his use of the computer as a language learning tool is limited to using it to practice isolated skills such as online grammar, quizzes, and vocabulary exercises.

In section 6 and 7, he gives answers that indicate a positive view of using computers in English language classes. He agrees with the two statements related to two advantages attached to the use of computers in learning situations; namely, flexibility in adapting to student pace and convenience of use. However, he does not see that the computer can replace the teacher and does not think that learning through the computers can make him frustrated.
In his answer to the open-ended question, he mentions that the computer plays a significant role in his learning (word processing and internet). He is enthusiastic about computers in general and their use in education. He reports feeling interested when asked to carry out a search for a class. Indeed, during the interview, he asked many questions about the software templates I was using and inquired about the possibility of putting the course (101 R) on WebCT.

4.2.4.2 Task Performance

This student’s navigation patterns in the comprehension activity and the vocabulary post-reading tasks are consistent over the two experiments. He stands out as an example of the ‘interactive reader’. He uses resourcing and evaluating. He is the only participant who established the connection between the reading and the vocabulary exercises. In both reading activities, he read the text first and then started working on the comprehension questions. Before answering each question, he explores the text and then selects the alternatives.

The Camtasia recording of this student working on the comprehension activity reveals he gave the text one general reading making use of resourcing. He checked four annotated vocabulary words. After that first reading (09:10 minutes), he starts answering the questions in the comprehension tasks making frequent reference to the text to locate the information needed. Interestingly enough, he stopped referring back to the text when he was working on task 4 (inferring meaning from context). It appears he was content with reading the options. He even attempted to self-correct without reference to the text. His strategy was not as successful as he made 6 wrong choices out of ten in this particular task. This is in complete contrast with his performance in the final tasks: the two gap-fill exercises. He fills all the blanks correctly from the first attempt; a rare achievement in this study.

When working on the Poppy Unit, P 7 remained consistent in his navigation pattern with the exception of the difference noted when reacting to the feedback function. He starts by skipping the directions in the introductory page, checks the map but does not stop to read after returning to the introduction page. He reads the text paragraph-by-paragraph (spending 07.21 minutes) and then displays the tasks. He answers the main idea check wrongly but as he receives the feedback message, he automatically clicks D. When dealing with the
comprehension tasks his style did not change. He kept on referring back to the text before clicking on the options although he made more use of this strategy in task 2 than in task 3. An important observation is his response to the feedback. Clearly, if P 7's answer is wrong, and that happened 5 times out of 15 in task 2, he would automatically select the other option. He also did the same in task 3. It is also possible that the way the task is designed encourages him to navigate in this manner (by “hit and miss”). Looking closely at the Camtasia data of this participant working on task 3, it can be noted that he resumes referring back to the text before selecting a choice for the first two questions but reverts back to making second guesses.

The last task, task 4, was most demanding for this student. First, he runs into difficulty not knowing how to make use 'check' and 'hint' in the HBP interface. After three attempts, he gives up on question 1 and goes to question 2. For question 3 he manages to give a correct answer but without making use of the hint given. As an answer to question 5, he suggests 'concentrate' as antonym for 'devastating' but decides not to build on the hint that the word should start with 'con' and end with 'e' ('con...e'). He opts instead to go back to question 3 and types 'weakness' in the box. It is noticeable that he already had a hint indicating that the word needed ends with '...less'. After that, he goes back to question 4 and types 'permit'. Since the required answer is 'to permit', he could not see that the problem was with word category. That was exactly the problem with his initial answer 'allow', which is the other alternative good answer. This is another situation where a participant’s working style is changed when facing difficulty.

To summarize, this student is probably the most systematic of all participants. He emerges as another interactive reader who goes back and forth between the text and the task questions and/or options. Unlike P 6, the occasions recorded when he refers to the text is the same in both units. The data shows that he employs a number of ‘good’ strategies like planning, self-regulating and self-evaluating though not always awarded with a ‘correct’ answer.
4.2.5 Participant 9 (P 9)

4.2.5.1 Profile

The fifth participant in this study, P 9, is a female undergraduate student from Korea majoring in Psychology. In relation to the questions in sections 3 and 4 she indicates that she uses computers word processing, electronic communication and to surf the net. When it comes to language computer-aided language learning (section 5), she ticks grammar exercises, listening resources and electronic dictionaries. Like P 6, this student is also taking English 101 L, which includes online listening assignments as part of the course. What is important in this situation is that the participant did not check ‘online reading’ indicating the lack of experience with reading online. Her answers to the questions in sections 6 and 7 reflect a positive view of the potential use of computers in language classrooms. She agrees with the statement that learning online respects the individual learner’s pace, availability of feedback, and flexibility in use in terms of time and space. On the other hand she disagreed with the possibility of feeling frustrated when using computers for language learning and the possibility of the computer replacing the teacher. The latter view can be attributed to her limited experience with learning individually from online resources (i.e. without the teacher). He writes two sentences in response to the open question about the role that computers can play in language learning to the effect that computers can help learners improve their language skills by giving them the possibility of using dictionaries or checking grammar.

4.2.5.2 Task Performance

The navigation pattern of this student in the Euro Unit during the pre-reading and while-reading, shows she progresses through the unit task-by-task proceeding slowly using the worksheet as required by the teacher. A top-down analysis of this student’s performance data as she worked on the Euro Unit reveals a working style that is rather linear. There were instances of interaction (going back and forth between text and task) within some tasks only.

She starts by opening the ‘overview’ page but chooses not to read the information provided. She progresses smoothly through the prediction activity not seeming to have any problems with the questions. It can be observed that she makes pauses (00:17 minutes for question 3 and 00:13 minutes for question 5) before she checks an answer but it is not clear
where she is looking. It can be inferred that the learner is weighing the options (evaluating/exploring) but in each case, this attempt at evaluating/exploring did not pay off. She spends 04.29 minutes off-screen that could have been used filling in the worksheet. When she enters the comprehension activity page, she skips the instructions and scrolls up and down the task frame and up and down the text frame. These apparently 'aimless' moves noted with other participants can be seen as evidence for planning and self-regulating. The participant is trying to estimate the length of the text and tasks. The actual reading begins as she places the mouse over paragraph 1 and starts scrolling down the text bit by bit checking the annotated words accordingly. The student checks 6 out of the 13 words available. This is the highest number recorded among the participants. She completes the first reading (reading for gist/skimming) of the text and turns to task 1 (05:47 minutes). Although she appears to be evaluating the options given and exploring parts of the text for clues, she was not able to select the correct statement representing the main idea.

The student progresses through the second task clicking 'true' or 'false' accordingly without attempting to identify the specific details in the text. She refers back to the text only once. In total, she resorts twice to the text: once when dealing with the main idea check question and a second time to locate the information needed to answer question 7. Interestingly, the student is looking in paragraph 6 while the information for question 7 is located in paragraph 4. Lack of interaction with the text becomes more apparent in the next task especially that this task requires identifying specific details. When she proceeds to task 3, she continues to work from recall while the task requires more focused reading. She employs the same procedure for the next task (inferring vocabulary in context). Similarly, there was no evidence in the Camtasia recording that she revisited details in the text or monitored her answers. The student produced only four correct guesses out of 10. She stops at “check answers” and spends 03:09 minutes off screen presumably correcting answers on the worksheet. Once done, she goes back to the activities and starts refilling the answers. It is not clear what the purpose was of refilling the answers twice.

In the last two tasks of the unit, the gap fill dialogues, she works globally filling all the blanks and then checks her answers. After receiving feedback, she continues to work globally filling with alternative answers the three blanks and then checking. She is not
successful in her attempt but persists in swapping the words around without any apparent processing for meanings. She finally changes tactic and starts filling one blank at a time eliciting feedback after each attempt. She manages to obtain two more correct answers in the end (‘convert’ and ‘denominations’) but gets frustrated with blank 3 (‘twenties’) and clicks ‘next’. In the second gap fill task, she maintains the same approach. In her first attempt, she works globally filling all the blanks and then checking. She manages to fill three blanks correctly and then the fourth in the second attempt.

The Camtasia screen capturing data for this unit reveal that in the Poppy Unit, the pattern of this student’s interaction with the computer is affected by the immediate feedback function. Similarly, to the way she worked in the previous unit, the student clicks ‘enter’ without reading the introductions. That means she did not benefit from the background information provided in the introductory page. When she clicked ‘show task’ after reading paragraph 1 and 2, it seemed at first that she was going to go about the reading differently this time round. However, she just scrolled up and down the text and task frames to estimate the length of the reading comprehension activity and then carried on reading the text line by line. Once done, she directs her attention to the tasks.

Upon selecting the answer for the main idea check, she moves on to the next task without noticing that immediate feedback is given on top, so she goes on without editing her answer. In the second task, she notices that feedback is given in the top of the task frame. A new pattern emerged during the performance of this task. The student selects a choice and then viewing the feedback. If the feedback is “correct”, she proceeds to the next question and if the feedback is “wrong,” she automatically makes a second guess. The student did not resort to the text to perform task 2 and whenever she had a wrong answer, she did not feel the need to verify the information in the text. This was the case in the six occasions (out of 15) when her answers were wrong. It can be that the student did not really perceive the need for focused attention required by the task. It can also be that the provision of immediate feedback of the corrective type (‘correct’/’wrong’) made the task of reaching a correct answer not dependent on in-depth reading.
While working on task 3, the student was inconsistent in the procedure employed to answer the questions. In the beginning of the task, she relied on the feedback function to change answers around without resorting to the text. By question 5, she started resorting more to the text and stopping at the options given before making the choice. She then reverts in the last two questions to the original tactic of just making a 'next best guess' leaving to the text unattended to.

At the level of task 4, the student experiences difficulties with the interface. She follows the feedback coming from the computer and progresses by completing the two first words, but it is interesting to notice how she interacts with the comment in the feedback providing alternative answer 'powerless' and how she makes a generalization about 'weak' to give 'weakless'. Seeing her score reduced, she thought that 'weak' was not correct. She is then assured by the computer that 'weak' and 'powerless' are two possible correct answers. She tries from the start to make use of the 'hint' function as if she does not have any clue what the answer might be. Since the computer only allows the use of 'hint' after a first attempt, she enters one letter 'p' and then proceeds by overusing the 'hint' function completing the word 'productive' one letter at a time.

Participant 9 has a stable working style for all tasks. She tries in both units to evaluate options marking stops to think about the answers, but progresses through the tasks without making limited reference to the text. Her use of metacognitive strategies is limited. She skips the introductory directions in both units and does not seem to read the task question. At first, she does not even notice that feedback is given. The feedback did not trigger any negotiating on her part. She does not attempt to assess the information in the text and self-correct. Instead, she tends to be preoccupied with the score persisting in her “hit-and-miss” strategy swapping words around rather than evaluating their meaning. One is tempted to conclude that it is only thanks to the free letters that she completes task 4 in the Poppy Unit. She would have exited the task otherwise as she did in dialogue 1 of the Euro Unit.
4.3 Across-case commentary

The detailed description of the student operational data presented in this chapter is expected to help address the first research question: "How do learners actually use the CALL materials and to what extent do they interact with the content and design of the activities?" In its raw form, Camtasia data include rich and varied information about behavior, product, and task execution speed and procedures. The operational data included idiosyncratic details about computer use that are irrelevant to the purpose of the study, but nonetheless worth noting. I noticed a number of what can be referred to as "navigation ticks"—sets of behaviors with the computer that had no connection with the performance of the tasks. These can stake the form of successive mouse clicks for no obvious reason, clicking on the back button when not planning to go back, scrolling up and down the frames every now and then, and highlighting words randomly. The Camtasia data was analyzed in order to identify acts and moves students make as they worked on the units that can provide evidence for student interaction with the materials as content and interface. The analysis was not focused on product or speed of execution of particular tasks but there was an attempt to look out for the use of learning strategies.

The biographical data indicated that the participants have limited experience with using computers for language learning. They can use computers to surf the internet, to send e-mails, to chat or to 'practice' isolated language skills (e.g. grammar exercises) but did not have previous experience with undertaking an integrated multimedia reading comprehension unit. The only experience with undertaking reading tasks online would have been when they had taken the computer-based TOEFL test and that was the case of P 1, P 4 and P 6 only. Considering the specificities of reading in multimedia environments (see section 2.1), the participants were undertaking an activity that is distinguishable from the types of activities they would normally engage in with computers. As can be deduced from the descriptions of the navigation patterns of the five participants, common patterns emerged (see Table 4.3) showing that the students did not have the type of procedural schema anticipated in the design process. The Camtasia recordings indicate that they were generally adapting to this
new experience but that, at times, they were facing procedural problems for which they had no solution. This situation resulted at times in withdrawal from the task.

The novelty of the experience brought about practical problems as to how to go about reading electronic text and complete reading comprehension tasks around it. That was especially obvious when the students were working on the vocabulary check tasks in the two units; the fill-in-the-blanks dialogues in the Euro Unit and task 4 in the Poppy Unit. I pointed out in the analysis above that when P1, P 4 and P 6 were facing difficulties, their navigation style can become less regular and that they can start making disconnected moves. I also observed that they can persist in repeating the same moves and then exit. The same observation can be made about these students’ inability to use efficiently the help provided by the computer. For example, when the feedback is a comment, the students did not know how to connect the message in a new feedback to the one preceding it.

As noted in the reports of the ten performance files examined above, there was a recurrent pattern of task completion in the reading comprehension activity summarized in Table 4.3. This pattern was broken only once by P 4 in the Poppy Unit when he decided to start from the tasks and read accordingly:

Table 4.3: Common procedures used by students in the comprehension activities

<table>
<thead>
<tr>
<th>Reading the text</th>
<th>Read the text from beginning to end once before tackling the comprehension questions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehension tasks</td>
<td>Read statements and options in the task question and then answer from recall.</td>
</tr>
<tr>
<td></td>
<td>Revise answers before checking feedback.</td>
</tr>
<tr>
<td></td>
<td>Answer the questions in order as laid out by the design.</td>
</tr>
</tbody>
</table>
This pattern of approaching the reading comprehension tasks reveals a linear reading style. It also shows that the students did not resort to the text to find the details they needed to answer the questions. The figures in Table 4.4 show that although the frequency of reference back to the text differed among the five participants, the use of the procedure was lower than expected. The data show that the students' use of this procedure can be unstable across units. For example, P1 rarely referred to the text in either unit while in P 7 referred equally as often to the text in both units. P 9, however, referred to the text much more often in the Poppy Unit and P 6's use of the procedure rocketed in the Poppy Unit. P6 and P9 are also inconsistent in how often they referred to the text across units. P 6 made five references back to the text in the Euro Unit but only two in the Poppy Unit. P 9 referred back to the text twice in the Euro Unit and seven times in the second unit. P 7 was the only student whose style was consistent. In general, he stood out as being systematic and exhaustive in his procedures throughout the two units.

As there was no way to ask the particular students why they were doing what they were doing, it is only possible to make speculations about the students' procedural schema to understand this phenomenon. Although one might expect that task type can trigger a reader's need to refer to the text, it is likely that the participants do not perceive the need for their reading goal. In other words, how students decide to go about performing the task can be dependent on how they perceive the task. During the follow up interview with P1, he mentioned the time factor because he associated undertaking the units with his training for the TOEFL test. It seems that P 1 was functioning from the conviction that a slow working style is disadvantageous. In other instances (P 6 and P 9), the students failed to establish the connection between the vocabulary tasks and the text. As a result, they did not attempt to go back to the text to make inferences.

Table 4.4: Reference back to the text while answering comprehension questions

<table>
<thead>
<tr>
<th>Participants</th>
<th>Euro Unit</th>
<th>Poppy Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
The above figures show that the students did not meet the teacher’s expectations. The teacher held high expectations of what the students ought to be doing. The teacher expected the students to read for specific details and go back and forth between text and tasks. She also expected to see them monitor their comprehension process once their attention is drawn to incorrect answers. That is, employ an evaluation process and repair accordingly. The operational data show that the students were either too certain and did not evaluate their answers or just opted for the next best answer. Only one participant in this study (P 7) met this expectation. Evaluating as a strategy was rarely employed by the remaining participants and whenever they did, it was before receiving feedback.

It appears that the students function with a different theory of the reading process and that can be because they framed the reading activity as a test rather than a learning task. As teacher, I expected the students to monitor their comprehension and exercise control over the tasks and text. It turned out they were not recognizing that their problem is resulting from not focusing on details in the text and when they revised their answers, no attempt was made at identifying the source of the problem. Instead, they blindly clicked on the next possible alternative. Although the participants were in the seventh week of a course that aims to develop in them the use of reading strategies of the type I mentioned above, and therefore, it was not expected that they exhibit a high degree of strategy use, the observations about the non-use of evaluating and the impulsive reaction to the feedback function was surprising. The need to confirm or disconfirm statements as many times as is necessary is an aspect that can be reinforced by teachers in the traditional classroom situation. However, in a computer-aided reading context, their inability to transfer these procedures when working on the
computer raises questions about having students work individually on materials of the type used in this study. It is evident that the students do not make the ‘desired’ choices. Judging from the operational data in this study, this can lead to performance-oriented reading and impulsive reactions to the immediate feedback function.

A close examination of the students' procedural data reveals that the participants can at times work in a non-linear fashion. Again, this is a speculation based on observation. It became obvious that the students in this study did not jump around tasks at all. The only instances of non-linear processing were only noted within particular tasks when students were uncertain about the answer. The only problem is that they were certain most of the time not feeling the need to self-correct. As Desmarais et al. (1998) point out in their study, a distinction should be made between non-linear in the sense I was using it above as reflection of interactivity and a dynamic working style and non-linear in the sense that is an indicator of a chaotic working style. A non-linear working style can be a sign of a strategy like advanced planning when you skip a question and read on until you find the relevant information. Non-linear ways of proceeding were not frequent in the Camtasia data but a pattern can be traced. When in doubt, students can skip a question within a task and then go back to it later.

Moreover, the incorporation of the feedback function in the Poppy Unit did not bring about the type of cognitive and cognitive processing expected. In the description of the activities (section 3.6), it was expected that the provision of feedback would encourage a certain degree of negotiation on the part of the students. The students reacted in one of the two ways to the feedback message: (i) click another option in response to negative feedback (wrong) and (ii) give priority to the score. When working on the gap-fill exercises, the students adopted two distinct steps. In the first attempt, they would complete the task as a whole, revise their answers and then check the feedback. Once feedback is provided, they start working item by item checking accordingly until they reach the correct answer. From the students’ perspective, it seems that the presence of corrective feedback (‘correct’/wrong’) motivates them to proceed no matter how. It was clear a number of times when students were dealing with the vocabulary check tasks that they were just swapping the words around and not paying attention to the overall meaning of the dialogue (Euro Unit).
The teacher's expectation that the feedback will trigger a process of negotiation of meaning was not confirmed in the operational data. It was clear during the interviews that some students did not realize the words were extracted from the reading. Bearing in mind that delayed feedback was used in the Euro Unit, Camtasia data revealed that two students only (P1 and P9) stopped at some length to check the answer key in the Euro Unit (see Table 4.5). In contrast, students stopped every time to look up the immediate feedback in the Poppy Unit. Clearly, the participants favored the immediate feedback but there was no evidence that it triggered the mechanisms expected according to the teacher's perception of ideal reading conditions. From a language learning perspective, this feature did not encourage further processing of the information in the text nor did it lead to negotiation of meaning. Dependence on the feedback and hint functions can be attributed to the students' low proficiency level, but the problem is that the students did not use them in the way expected. The analysis in the next chapter (section 5.2) will show that the students were unaware of the fact they were not processing language, or at least not as we understand it in SLA terms. Paradoxically, the feedback was the aspect of the design they appreciated most because, they claim, it helped them correct their answers as they progressed through the tasks.

Table 4.5: Time spent on answer key in Euro Unit

<table>
<thead>
<tr>
<th>Participants</th>
<th>Time in minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>02:41</td>
</tr>
<tr>
<td>P4</td>
<td>00:00</td>
</tr>
<tr>
<td>P6</td>
<td>01:00</td>
</tr>
<tr>
<td>P7</td>
<td>00:30</td>
</tr>
<tr>
<td>P9</td>
<td>03:09</td>
</tr>
</tbody>
</table>
Another aspect of the students’ use of the materials was their reaction to the design options in the two units. The first remark is the tendency of the participants to skip introductory pages and instructions to exercises. Three of the participants (P 4, P 6 and P 9) click automatically on the ‘enter’ button in the Poppy Unit. In the Euro Unit, two skip the overview (P 7 and P 9). P 6 did not read the instructions on top of the reading passage in the Euro Unit and therefore, did not realize that a double click was needed for the annotated words to be displayed. This was in fact a design difficulty since conventionally one mouse click is used to display items and the two clicks for hiding them. In task 4 of the Poppy Unit, four students (P 7 is the exception) checked ‘hint’ first before making an attempt mainly because they did not take the time to read the instructions. In addition, the students the students did not make full use the annotated. Except for P 9 who checked six of the annotated words, no more than two or three words were checked by any of the four other participants (see Table 4.6). The limited use of this feature can be explained by the fact that the students deemed the explanation unnecessary for their goal as readers. In addition, the look-up behavior of the participants might have been influenced by the fact that the same words were not focused on in the inference exercises. Indeed, some students explained in the interview that they chose not to resort to some of the words because they knew them.

Table 4.6: Use of annotated words in the Euro Unit

<table>
<thead>
<tr>
<th>Participants</th>
<th>Words checked</th>
</tr>
</thead>
<tbody>
<tr>
<td>P 1</td>
<td>2</td>
</tr>
<tr>
<td>P 4</td>
<td>0</td>
</tr>
<tr>
<td>P 6</td>
<td>2</td>
</tr>
<tr>
<td>P 7</td>
<td>3</td>
</tr>
<tr>
<td>P 9</td>
<td>6</td>
</tr>
</tbody>
</table>
To recapitulate, analysis of operational data of each participant indicated that there were more common trends than idiosyncracies. I have pointed out to the individual differences throughout the analysis. In Table 4.7, I synthesize the observations and inferences made about the common trends observed and inferred about the students' use of the materials in this study. As illustrated above, the Camtasia data helped identify common trends related to four areas of material use: (i) navigation patterns, (ii) interaction with the design options, (iii) completion procedures, and (iv) strategies used. In addition, it can be noted that vocabulary development as a pedagogical objective was missed out by the participants. Their output and procedures in the inference vocabulary tasks (multiple-choice) indicate that their priority was to eliminate the distracters and evaluate the word against the options given rather than try to infer its meaning from context. Thus, they dealt with the vocabulary tasks in the comprehension activity as vocabulary check tasks, not as opportunities to read for meaning. In the vocabulary check exercises in the Euro Unit, they were evaluating the words against each other rather than examining how the individual words fit within the context of the dialogues.

Examined against the ideas proposed by Allwright (1984), the operational data give support to his contentions about the 'input' hypothesis. The students' reactions to the instructional materials in the two units were surprising. For example, they chose to skip or to underuse features meant to provide comprehensible input or direct their attention to input in the unit. The students did not focus on the vocabulary as part of the comprehension process and did not attempt to infer meaning from context while performing the vocabulary tasks. Contrary to my expectations, the feedback function encouraged superficial reading.

With reference to Kumaravadivelu's (1991) ten categories, the students' personal agendas can be a source of mismatch between what teachers expect them to do while reading and what they actually do. The mismatch can be due to their view of reading as comprehension check, the students did not feel the need to resort to the options intended to facilitate in-depth reading and negotiation of meaning. This personal agenda was in total contradiction with the teacher's view of the reading process as an interactive process. In this case, the students' goal was to answer correctly and not to process the information. This area of mismatch overlapped with another at the procedural level. In Kumaravadivelu's (1991)
study, he found out that while the students were interested in describing the procedural aspect of the task, the teacher was interested in them finding a solution. In this study, the reverse happened. While I was interested in observing a focus on the reading process, my students were focusing on reading as product.

Table 4.7: Common trends in student use of the materials

| Navigation patterns | Generally linear  
|                     | Non-linear when in difficulty  
| Use of options      | Limited use of annotated vocabulary, answer key & welcome screen  
|                     | overuse of the feedback and hint functions  
| Procedures          | Read text first and then tackle comprehension tasks  
|                     | Answer questions from recall  
|                     | Complete vocabulary tasks globally before feedback  
|                     | Proceed item by item after feedback  
| Strategies          | Limited use of resourcing and monitoring  
|                     | Use of self-evaluation before feedback appears  
|                     | Use of cognitive strategies within task  

The most surprising area of mismatch to the researcher is the one related to what Kumaravadivelu called the 'strategic'. First of all the students' use of strategies was limited and when they did, they did not use the monitoring of the comprehension process needed in an efficient way. There was not much evidence in the data that the students attempted to use the different phases of the monitoring process (Block, 1992, p. 326) which includes
recognizing a problem, identifying the source of the problem, and revising the answers. The remedial actions were not made through a process of analysis of the errors and a search for the correct answer. They simply tried another alternative without referring to the text (Table 4.4) or just swapped the words around until they reached the correct combination. It seems that the freedom of navigation does not necessarily lead to the use of the desired strategies. Perception of the task needs to be changed before we send the students to use CALL materials on their own. Feedback that encourages the type of monitoring needed for this task might be necessary.
CHAPTER 5: THE STUDENTS’ PERSPECTIVES

5.1 Introduction

In the previous chapter, analysis of the Camtasia data helped generate a few ideas about areas of mismatch between the teacher’s intentions and expectations embedded in the design and what the students did with it. The conclusions made about the students’ use of the materials were based on observations and inferences made relying on the recordings documenting their acts and moves. In this chapter, I will present the analysis of data collected through a semi-structured interview protocols conducted with the students shortly after completion of each unit. Thus, the students’ views and perceptions expressed in two interviews will be used to supplement the computer tracking data presented in the previous chapter. The two sets of data are meant to contribute to addressing the second research question in this study: “To what extent do the learners’ perceptions and use of the materials converge or diverge with the teacher’s intentions and expectations?”

As explained in the methodology chapter (section 3.2), the students were asked the same questions during each follow-up interview. Since the interview protocol consisted of a set of uniform questions, the themes are already determined by the interview protocol (see Appendix D). Thus, the analysis will evolve round the following themes: (i) the students’ overall impressions of the units, (ii) their interpretation of my pedagogical purpose in the units, (iii) their views of what they consider the strongest and weakest part/feature(s) of the units, and (iv) their recommendations for improving the content and design of the units. This portion of the data will be analyzed across case (see Figure 5.1) to uncover the students’ (re)interpretations of the units on their own terms (Breen, 1987, p. 24). It is at this stage of the analysis that the objective of understanding the nature of the mismatch between teacher intentions and learner interpretations in this particular situation of CALL material use is achieved. In the next chapter, I will discuss the issues arising from this study and indicate ways to narrow the gap between teacher intention and learner interpretation in CALL environments.
Figure 5.1 Cross-case analysis of interview data, based on Dey (1993, p. 130)

5.2 Overall impression of the units

The most interesting information in this part of the data was how three participants likened them to standardized tests like the GRE and TOEFL. They also found the first unit more complex and more demanding or, to put it differently, the second unit as being easier to navigate and perform mainly due to the immediate feedback provided. The students believed that the feedback helped them read and understand the ideas in the text. They also reported in the interviews that the feedback message helped them go back to the text and verify their understanding. Examination of the Camtasia data showed a different picture: the students
generally go back to the text when in doubt while considering their choice but once given the feedback, there was no evidence that they refer back to the text to understand why their answer was wrong. I will first discuss the views about the unit in general and then turn to the issue of feedback and how it was perceived and used.

The students who established a link between the units and the TOEFL test (three participants) differed in how directly they established that link. The most direct link was voiced by participant 4 who was incidentally the first interviewee to mention it. This explains my reaction to his statement:

FD: So, my first question is, “how did you feel generally about this teaching unit?  
P 4: It’s much like TOEFL computer-based test.  
FD: Oh, really?  
P 4: I mean it was like eh…  
FD: When did you take the TOEFL?  
P 4: Last Fall.  
FD: Was it the new formula? The new TOEFL?  
P 4: The newest. Yeah, it was the computer-based test. First of all, it scared me.  
FD: It scared you?…  
P 4: Just because it was similar to the TOEFL test.  
FD: Oh really?  
P 4: But it’s really- I mean really interesting for me.  
(P 4, Euro interview, page 1)

The second participant, who made reference to the TOEFL in the interviews was P 1. This participant brought up the TOEFL as he commented on task 1 (Main Idea Check) in the Poppy Unit. The task format and the feedback provided reminded them of a rule of thumb for successfully completing TOEFL format tasks. Hence, he framed the inclusion of feedback in task 1 (Main Idea Check) as a positive aspect of the task design. This gives an idea what baggage the students might bring to a task.

…I learned before that if it is a full answer, 2 is completely wrong and there is a close answer and you make conclusions from that. So A is “close but not complete”, you see? This is a good thing! So, it is either A or D. For those people who are used to the TOEFL, they (TOEFL trainers) teach us when you answer the TOEFL…First, if you don’t know the answer, eliminate two and think about the other two.  
(Participant 1, Poppy Unit interview, page 2)
This participant makes a second reference to the TOEFL when I prompted him about the fact that the tasks do not pop up simultaneously with the text. It seems this feature of the design did not go against his expectations. He comments:

...I used to read the text alone first just for five minutes- kind of go around and then look at the questions again to do the task. Yeah, they did that in the TOEFL exam. You don’t know- you read it (the text) and then you go to the questions and go back again to the text.

(Participant 1, Poppy Unit interview, page 3)

The third participant who likened aspects of the units to standardized tests was P 6. For a start, this participant kept referring to the Units as ‘tests’ and the tasks as ‘problems’ but it is in the Euro interview that she established an indirect link in the sense that she perceived it as a possible preparation for the TOEFL or GRE. She meant by making the connection to say that the Unit was interesting.

I think it is very useful for taking general tests like TOEFL or GRE.

(Participant 6, Euro Unit Interview, page 1)

The question at this point of the analysis is if the three participants quoted above make a direct or indirect connection to the TOEFL meaning by this a positive feature, what did the two others say about these units? If it is not the testing feature, what else did they concentrate on? What appears to have made the difference is that P 6 looked at the units from the perspective of how ‘informative’ they are for him. He, for example, thought that the Euro Unit was more interesting by the sheer fact that he had a direct interest in its subject matter being a business major. As for P 9, she seemed to develop her impression in terms of how demanding it is to perform them. She felt the Euro Unit was “labory” (labor-intensive!) while the Poppy Unit “more easy” (easier) to do; and therefore, she felt more comfortable with it.

It appears that the type of feedback used made a difference in the participants’ perception of unit and task complexity. Clearly, the five participants highlighted the feedback in the Poppy Unit as the outstanding feature of this unit. Though the students expressed the views that they did not mind delayed feedback in the Euro Unit, they clearly
preferred the type of immediate feedback provided in the Poppy Unit. As the forthcoming data extracts will indicate, this was a surprising revelation for me as designer during the interviews. As I did not examine the Camtasia data at that point, my reaction was intuitively to prompt the students for elaboration on how they believed they benefited from it. These interactions with the students in the interview situation shed light on another discrepancy between my convictions as a teacher (or rather suspicions about the usefulness of immediate feedback) and the students’ perceptions of how immediate feedback contributes to their learning. The students’ views are in contradiction with the observations and conclusions reached following the analysis of the Camtasia data indicating that the students’ use of the feedback function did not promote in-depth reading. While many of them insist in the interview that the feedback helped them focus on the text and that they were urged to read again to locate the information, it was not clear that they actually did that in actual practice. Cross-examination of the students’ claims in the Poppy Unit follow-up interview against their respective Camtasia data point to the fact that the students did not in reality engage in any evaluation of the wrong answers. There is no evidence in any of the Camtasia data that the participants, while performing the reading comprehension tasks, attempted to self-correct through a process of disconfirmation of the original choice upon receiving feedback. To illustrate my point about the discrepancy about what students say they do and what they actually do on the one hand and what we as designers expect and what the students actually do, I will present extracts from the interview data and corroborate each extract with evidence found in the Camtasia data.

In response to my prompt about the value of the A/B option in task 2 of the Poppy Unit, P 1 argued that the problem lies in the fact that there are two options rather than three. He posited that if a student is forced to choose between three options rather than two, he/she would be forced to go back to the task and verify the information. The Camtasia data of this particular student’s performance of task 3 reveal that he engages in exactly that type of behavior despite the fact that there were three options:
<table>
<thead>
<tr>
<th>Participant</th>
<th>Transcript</th>
<th>Moves and Acts</th>
</tr>
</thead>
<tbody>
<tr>
<td>P 1:</td>
<td>Selects a for sentence 4</td>
<td>Initiating [output-with error]</td>
</tr>
<tr>
<td>PC:</td>
<td>Sorry!</td>
<td>Feedback [evaluation-wrong]</td>
</tr>
<tr>
<td></td>
<td>Try again. [advice]</td>
<td>Follow-up</td>
</tr>
<tr>
<td>P 1:</td>
<td>Selects b instead</td>
<td>Follow-up [revised output-correct]</td>
</tr>
<tr>
<td>PC:</td>
<td>Correct.</td>
<td>Feedback [evaluation-correct]</td>
</tr>
<tr>
<td>P 1:</td>
<td>Selects c for 5</td>
<td>Initiating [output-with error]</td>
</tr>
<tr>
<td>PC:</td>
<td>Sorry!</td>
<td>Feedback [evaluation-with error]</td>
</tr>
<tr>
<td></td>
<td>Try again. [advice]</td>
<td>Follow-up</td>
</tr>
<tr>
<td>P 1:</td>
<td>Selects a</td>
<td>Follow-up [revised output-correct]</td>
</tr>
<tr>
<td>PC:</td>
<td>Correct.</td>
<td>Feedback [evaluation-correct]</td>
</tr>
<tr>
<td>P 1:</td>
<td>Selects b for sentence 6</td>
<td>Initiating [output-with error]</td>
</tr>
<tr>
<td>PC:</td>
<td>Sorry!</td>
<td>Feedback [evaluation-correct]</td>
</tr>
<tr>
<td>PC:</td>
<td>Try again. [advice]</td>
<td>Follow-up</td>
</tr>
<tr>
<td>P 1:</td>
<td>Selects a</td>
<td>Follow-up [revised output-correct]</td>
</tr>
<tr>
<td>PC:</td>
<td>Correct.</td>
<td>Feedback [evaluation-correct]</td>
</tr>
</tbody>
</table>

(Participant 1, Camtasia data, page 4)

P 7 asserted, “If I’m wrong, I go to the text and try to figure out why I’m wrong.” (Participant 7, Poppy Unit interview, page 1) and again “I just go back to the text and just try to eliminate the wrong answer and choose the right one” (Participant 7, Poppy Unit interview, page 2). An exploration of the Camtasia data collected as this student performed the Poppy Unit reveals a different scenario. While performing task 2, the student’s reaction in the four occasions when he was given the feedback message ‘wrong’ was to automatically
click on the other alternative. In task 3 of the same unit, he made four errors (questions 5, 6, and 9) to which he reacted by clicking on another option without stopping. What is interesting is that this particular student does employ exploration and analysis of the options and does examine the options in light of the text but he only does that before settling for a choice. Once he checks the answer and receives feedback, he just clicks on another possible answer. As I suspected in my description of the design options (section 3.4.2), an error-specific feedback is needed. It can be that “try again!” does not suggest to the learners to do all the negotiating expected of them.

Therefore, it can be inferred that that he tends not to make any attempt at developing an understanding of the error after receiving the feedback message. It can be that, due to the evaluating and regulating he has done initially, the student does not know what else he could do to reach a correct answer except to make a second best guess. Indeed, all the second attempts the student made were correct, so it can be that he had a second best bet in mind already by the time the feedback is given. Indeed, P 6 drew my attention to the plausibility of this interpretation. P 6, who according to the Camtasia data also engages in the same automatic reaction to negative evaluative feedback on two occasions in task 2 and once in task 3, explains that because she would have worked towards the answer by the time a feedback was given, it is only logical that she should try her next bet. That is, that next bet has already been part of the original hypothesized answer. In response to my prompt that I had suspicions about whether students really go back to the text to verify the error, she pointed out, “…but I get very curious about where and why it is wrong or right” (Participant 6, Poppy Unit interview, page 3). It is interesting to note “get very curious” does not mean it yields an observable action but a mental process. It is worth pondering on this explanation and its implication for pedagogy.

P 4, on the other hand, also asserted in the follow-up interview that he went back to the text to locate the alternative answer. The following exchange gives an idea about how limited our knowledge of what our students actually do will remain if we rely only on verbal report:
FD: ...that's what worries me when we give feedback like that- you hit C and it says, “Sorry! Try again.” Ok, so it’s B- “Sorry! Try again.” And then it must be A.”
P 4: Actually- You recorded that, right?
FD: Yeah.
P 4: I tried that thing, too.
FD: You did this?
P 4: So- it was recorded, hein? (Laughs)
FD: You mean you were doing some of that?
P 4: No, I tried to find the sentence in the text.
FD: So, what did you do? When you hit C and it said, “Sorry! Try again,”
You went back to the text?
P 4: Yeah, I did. I read the text and tried to find why I was wrong.
(Participant 4, Poppy Unit interview, page 4)

This participant’s Camtasia data disconfirmed his claim as far as going back to the text to find out why his answer was wrong. In contrast, it shows that he did refer to the text a number of times before making the choices but once feedback is given, he would click on the next option. This was the case on four occasions in task 2 and four occasions in task 3. In fact, he stopped referring to the text starting from question 6 even to make the preliminary choices in task 3.

Similarly, P 9 reported, “If I click the incorrect answer, I re-read the text and then choose another answer.” (Participant 9, Poppy Unit interview, page 2). A close examination of her Camtasia data only gives confirmation of the contrary. While performing task 2, she automatically clicks on the other option on the seven occasions when she received a negative feedback message. While performing task 3, she reacts in the same way on four occasions and even exhausts all possible hits when dealing with question 4 as if the objective for her was to reach the correct answer rather than process the information in the text.

In light of the data analyzed above it is difficult to understand from a pedagogical point of view, how the students perceived the feedback function to be the most helpful feature of the design. Is it that the essential goal of engaging in reading is to reach the correct answer? It may well be. If that is the case, then it means that the students are not interested in interacting with the text in the way we, as teachers expect them to do. It appears that finishing the task and reaching correct answers was indeed the priority. The interview data
indicate that they were under the impression/illusion that reaching correct answers is an indication of comprehending. Clearly, there is a mismatch between what I, as teacher, expect them to use the feedback function and how they themselves perceived it and used it.

However, things do not seem to go as smoothly with the type of feedback in task 4. Clearly, some students had difficulties processing the message. While P 4 and P 9 seem to adjust well to this type of feedback, P 7 fails to take advantage of the hint. For instance, he dismisses the hint that the antonym of the word ‘initial’ begins with the two letters ‘la’ and instead types ‘end’ as a new attempt. Similarly, P 6 fails to make association between two feedback messages. Clearly, this aspect of CALL design needs to be explored further.

5.3 Students’ Perception of the teaching objective(s) in the two units

In this section, I will report the views students expressed about the two units and point out, when applicable, to differences in their perception of the pedagogical objectives of the units. The standard question addressed to the participants in the follow-up interviews was: “What do you think I was trying to teach you in this unit?” The students perceived that in the Euro Unit the purpose was reading comprehension and vocabulary while in the Poppy Unit the purpose most salient to them was reading while vocabulary was mentioned as a secondary goal. In addition, the participants were sensitive to the choice of topics but were more sensitive to the message of the Poppy Unit. By extension it might be deduced that the topic of the introduction of the Euro in Europe was not framed as an issue affecting people but rather as a business or economic topic.

I will first attempt to pinpoint how the participants translated reading comprehension as a pedagogical purpose in the Euro Unit and the Poppy Unit and then discuss what might be the differences between the ways the participants talked about the same construct. I will display the participants’ statements in table format for easier reference. Subsequently, I will compare and contrast the perceptions across participants and across the units.

When asked to guess what might have been my purpose in the Euro Unit, P 1 replied: “Actually, it is good for reading skills and it’s good to work with vocabulary” (Participant 1, Euro Unit interview, page 1) while in the Poppy Unit follow-up interview, it took more prompting. In his response regarding the Poppy Unit, he seemed to be inferring my
pedagogical objectives on the basis of his interpretation of the types of tasks included in the unit and their sequence:

P 1: ...As a student many students study how any task looks like. They're supposed to start with the main idea and then eh...
FD: You mean the strategies?
P 1: Exactly! The strategies I think most students like the strategies.
FD: That's what we do in 101R!
P 1: Exactly! We need to know how to support the main idea; that there are supporting details and then, may be, another idea with a conclusion that supports it or doesn't support it. Then we need to understand the question and it can be about main idea or the body. So I think your questions were clear.
(Participant 1, Poppy Unit interview, page 3-4)

Another illustration of a case where I believed the respondent was talking of strategies was how P 6 put her answer to my question about what might have been my purpose:

"...I guess to teach the student how to catch or learn meaning of vocabulary in the sentence and to catch main idea or something like that?"
(Participant 6, Euro Unit interview, page 1)

P 4, on the other hand, insisted the Euro Unit was like a test except for the two gap-fill tasks. The following exchange illustrates my inference about how he framed the pedagogical purpose of the Euro Unit:

FD: ...So, what do you think I was trying to teach you?
P 4: I think you were trying to check my knowledge rather than to teach.
FD: Ok. Where exactly did you feel that?
P 4: Well, except for the vocabulary things...They're cool!
(Participant 4, Euro Unit interview, page 2)

When talking about the Poppy Unit, however, this participant found that my focus was the reverse of what he thought I was doing in the Euro Unit:

FD: So what is it really that I was trying to have you do this time?
P 4: Understanding the text.
FD: Comprehension- and vocabulary, no?
P 4: First comprehension and there is focus on vocabulary.
(Participant 4, Poppy Unit, page 5)

Two participants, P 7 and P 9, mentioned reaching correct comprehension as being my objective in the Poppy Unit. What they meant was that by providing feedback about what was wrong, I helped them 'correct' their (mis)understanding of the ideas in the text. The following exchange with P 9 clarifies the situation:

FD: So, after doing the whole unit...what did you think my purpose was?
P 9: Comprehension. (Silence)
FD: So- Remember! You first did this one (click sounds) and then the other tasks. So, what do you think I was trying to do?
P 9: Correct my comprehension.
FD: To check comprehension you mean? I wanted to check whether you understood or not?
P 9: Yeah!
(Participant 9, Poppy Unit interview, page 1)

With regard to the two units, the informative aspect of the passages chosen attracted P 7's attention first but when prompted further, he adjusted his view slightly:

FD: OK. What do you think I was trying to teach through this unit?
P 7: Trying to teach?
FD: Yeah. What was my purpose?
P 7: First give us some information about the Euro but I think the purpose was to have us practice our reading skills- to get us like extract the information from some long paragraph and then answer some particular questions.
FD: Ok. So there was focus on reading- so you think I was focusing on reading skills?
P 7: And vocabulary.
FD: And vocabulary. Good!
(Participant 7, Euro Unit interview, page 1)

When it comes to the Poppy Unit, the follow-up interview data gave a slightly different picture and evidence of heterogeneity in attempts to define the pedagogical purpose of the reading units.
To summarize the views above, I will synthesize the views into table format. A note of caution is worth making at this point of the analysis. The statements as worded in Table 5.1 are not direct quotes but rather inferences made by the researcher and therefore, can acquire an additional interpretive value. The extracts above should provide sufficient warrant for the wording in the statements.

Table 5.1: Students’ interpretation of the teacher’s pedagogical purpose

<table>
<thead>
<tr>
<th></th>
<th>Euro Unit</th>
<th>Poppy Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>P 1</td>
<td>Develop reading skills and vocabulary</td>
<td>Develop question answering strategies and teach vocabulary</td>
</tr>
<tr>
<td>P 4</td>
<td>Check knowledge of content</td>
<td>Get students to understand the text and vocabulary.</td>
</tr>
<tr>
<td>P 6</td>
<td>Develop strategies for reading and learning vocabulary</td>
<td>Help understand the text and solve problems (comprehension and vocabulary)</td>
</tr>
<tr>
<td>P 7</td>
<td>Inform about the Euro and have students practice reading</td>
<td>Help reach correct understanding of the text</td>
</tr>
<tr>
<td>P 9</td>
<td>Help comprehend content</td>
<td>Help reach correct comprehension</td>
</tr>
</tbody>
</table>

The students attributed many purposes to the units, but the Poppy Unit is perceived more as a test than the Euro Unit. It can be due to the outlook of the tasks. They all had the same user interface, which might have added to the ‘standardization effect’, and thus, reminding them of the TOEFL. It can be due to the fact that a score is given in each task. The content aspect of the Euro Unit is emphasized and the vocabulary component in the Poppy Unit is downplayed.
5.4 Students’ views about the units

5.4.1 What students liked most

The data indicate that the students say they liked different features of the units each time. The features they report as being the best do not always coincide with what I consider the strongest points of the design, but some other times there was convergence with my pedagogical goals. I will first present the students’ views as to the strongest and weakest features of the units and then comment on the aspects that I as designer expected that the students notice as opportunities for input or negotiation of meaning.

According to the students’ views in the interview following performance of the Euro Unit, the students liked most the prediction activity (P 4, 6, and 7) and one student really disliked engaging in the prediction activity (P 1), so his views will also be analyzed in the next section. P 9 rather liked task 2, a drop window multiple choice, because she liked the challenge of having to choose from statements. She thought it was a ‘good’ exercise because she had to work really hard on the options given and guess the meaning (P 9, Euro Unit interview, page 1). With regard to the Poppy Unit, the students liked most the way the tasks could be displayed after reading (P 1, 4, and 6) and the immediate feedback function in the comprehension tasks. The feedback function in the Poppy Unit was appreciated across the board as explained earlier (section 4.3.3.1).

The aspects of the units that the students liked least were aspects that they felt gave them a hard time during the performance of the units. For the Euro Unit, there was frequent mention of the multiple choice vocabulary task and the gap-fill exercises. The students did not have much criticism for the Poppy Unit, but task 4 was not perceived to be particularly user-friendly. A close examination of the details the students provided in their responses can shed light as to what the students’ design preferences are generally and, most importantly, what makes a task helpful for them as learners. P 4 and 6 found this activity motivating while P 7 focused more on its role in knowledge building and encouraging guessing before reading. This is what P 4 says about the prediction activity in the Euro Unit:
...the prediction task make some curiosity so if similar sentence from eh...[the prediction activity] yeah. I can understand it easily...present vocabulary so we understand better.

(Participant 4, Euro Unit interview, page 3)

P 6 highlighted the motivating function of the prediction activity and though she did not use the word ‘curiosity’ she implied that it makes what else there is to know about the issue more salient to the reader:

FD: (Click sounds) So, which part of this unit you liked most?
P 6: I liked the prediction activity.
FD: Ok. You liked that one (click sounds). And why did you like it?
P 6: Because it is kind of put motivation to read next section and eh...yeah- it is very good motivation to continue this task because it makes me interested in Euro.
FD: And was it something you heard about before?
P 6: Yeah, I know Euro...but when it is started and how do European people use that money and which countries use that I didn’t know so I was very interested.

(Participant 6, Euro Unit interview, page 2)

The response P 7 illustrates how students who like prediction activities have a tendency to tolerate ambiguity and to enjoy guessing and then checking whether they had made the right guess.

P 7: ...I liked this part. (Prediction activity)
FD: ...It didn’t bother you? The fact that you were just guessing...
P 7: It didn’t bother me.
FD: How is that?
P 7: First I know some of the questions. I know already the answer. Some I didn’t Know- so I can just make a guess and then if I can come back again...and correct the answer, that’s great!

(Participant 7, Euro Unit interview, page 2)

To recapitulate, the participants who liked the prediction activity most justified their inclinations towards this type of pre-reading activity because they believed that it (i) raises curiosity about the reading, (ii) familiarizes them with upcoming vocabulary, (iii) builds vocabulary knowledge to facilitate reading and (iv) allows them to make guesses to be confirmed/disconfirmed while reading. The student who did not like the prediction activity
because he did not think ‘guessing’ was a worthwhile activity. He also did not think it was related to developing reading skills.

The students reported that they liked the Poppy Unit much better. When prompted what aspect of it they liked most, their responses evolved round the feedback function and the simplicity of the interface. As the feedback function has been dealt with amply above, I will just focus on what they reported about the interface. There was unanimity that this unit was easier to navigate and to perform (especially P1, P4, and P6). P4 and P6 liked the fact that the tasks do not pop up along with the reading and P1 liked the way the reading comprehension tasks were layered in separate screens. Only P7 and P9 preferred to see the questions along with the text but highlighted instead how beneficial they found the immediate feedback function to be. P1 was also impressed by the choice of topic and task 4. In fact, this same task gave rise to mixed feelings. Some of the students found it ‘confusing’ or ‘hard’ (P4 and 6), but others were more curious about it during the interview.

P4 and 6 explained the advantage of delaying the display of the tasks is that they can concentrate on the reading passage and that they feel they could read freely and without pressure. P6 clarified her point by contrasting this feature with the way the tasks were presented in the Euro Unit:

P6: ...I think this (the blank task frame) is very good for me because last time we had all the questions from the first time but it makes me very nervous. I thought I had to solve problems so I couldn’t pay attention to the paragraph.
FD: To the text, you mean.
P6: Yeah. But it is empty and white so I feel relaxed and read better.
(Participant 6, Poppy Unit interview, page 2)

From a slightly different perspective, P1 argued: “If you have all the questions together, some people get confused and you lose some time and this is not good. Here you can concentrate question by question” (P1, Poppy Unit interview, page 2). What is interesting is that this student is the only one who brought up time as a task execution factor. He also uses it as an argument in his assessment of task 4. In the exchange below, I was apprehensive as to why he did not see that the time was worth investing:
P 1: …This exercise (task 4) is so good but it takes too much time. This one I did it bad just because of time. The good thing about that too is that it gives you a good guess. Ok you don’t know the word so you guess letter by letter until you get the answer.
FD: And that takes time.
P 1: Yeah. It takes time but eh...
FD: But if you want to learn?
P 1: If you have the time and you want to know more vocabulary- to start like eh…
FD: But why don’t you?
(Participant 1, Poppy Unit interview, page 2)

My last question was not answered, but it seems to me that there is a sign of a mismatch as to the students’ priority while performing a task. He seems to start from a principle that he has to finish the task within a given time frame (or rather as soon as possible). Task completion and negotiation of the answer come across as a contradictory purpose for this student. It is not clear otherwise why time is a factor in this context since as revealed in the Camtasia recording, he exited the unit after attempting only the two first words in that particular task. Similarly, he mentioned the gap-fill exercises in the Euro Unit are “good just because of the feedback” but Camtasia data show he got frustrated in the first exercise and clicked next and when he found it was a similar task, he exited the unit.

Other aspects of the Euro Unit like the vocabulary annotations, the answer key and the delayed feedback were not mentioned by the students.

5.4.2 What students liked least

I mentioned above that the prediction activity in the Euro Unit was popular with three participants but one student (P 1) did not see the benefit of this activity mentioned by the other students. Indeed, he could not see any connection between the prediction activity and the subsequent reading activity nor did he see the point in answering questions about the Euro. Actually, he mentioned later in the interview that he would not have minded it if there was a ‘correct’ or ‘wrong’ type of feedback.
Participant 1: ...it (the prediction activity) depends on luck.
FD: Luck?
Participant 1: Yeah, I don't like luck. You might get it right and you might get it wrong. It depends on luck...Also, it does not depend on your English skills, it depends on your background.
FD: Background? (Click sounds)
Participant 1: So it is not a mistake if you don't know what's it is like this one “what's the name of the currency of a certain country?” It's not your mistake if you don't know. No one knows everything.
(Participant 1, Euro Unit interview, page 2)

Besides his inability to tolerate uncertainty, he also objected to my questions focusing on the features of the Euro banknotes as being childish. He contended that the students already have the background knowledge needed. The exchange below with the student was enlightening and though it might be lengthy, it gives an idea about how the student interpreted the purpose of this activity quite differently from what I had intended:

Participant 1: ...I looked at this [the Euro slides] I think this is eh...I don't know which class you are going to use it with- whether it is grads and undergrads. This is low level.
It's like Kindergarten!
FD: Childish?
Participant 1: (laughing) It's like you know?...If you’re going to create a currency for a country, you will find a famous person on the currency like in the United States.
FD: They will have George Washington.
Participant 1: Here they have the stars. It’s the European Union flag. Yes, this is low level!
FD: OK so- so you felt like asking what I’m doing here, right?
Participant 1: I think you tried to make the whole subject easy- you tried to make it from the start low, low level, but if you tried to use it in class, you have to- like in some classes- you have to have a pre-required level.
FD: So, here you think I’m assuming people don’t know.
Participant 1: It depends if you are going to teach in the Intensive English Program or just a second language.
(Participant 1, Euro Unit interview, page 3)

So to summarize his position, he did not object to predicting as much as not being able to know right away whether the prediction is right or wrong. In other words, he did not think that prediction is part of a guessing game meant to be confirmed or disconfirmed while reading. It is this presumed link that we teachers of reading make but that he as student
could not see. The second objection he had was related to the assumption we make about our learners' existing knowledge as we design materials. He believed that these questions were too simple for students at university level. In any case, the above views in favor or not so much in favor of the prediction activity are further evidence for expecting mismatches in teaching/learning situations. Had the sample been larger, I anticipate we would find other instances of divergence as well as convergence.

Another aspect of the design that some participants liked least in the Euro and Poppy unit alike were the vocabulary multiple choice exercises whether they were in a multiple choice (a, b, c) format or drop window. Other students found the vocabulary check exercises like the gap-fill exercises in the Euro Unit and task 4 (Give the Antonym) in the Poppy Unit difficult. They liked these activities least because they found them more demanding to do. As pointed out earlier (section 5.4.2), the participants had many difficulties making use of the feedback and the help functions in this type of activity.

The reason why P 4 found the comprehension questions in the Euro Unit 'stressful' became clear after a few exchanges and successive prompting as the extract below indicates:

FD: What made it stressful? Is it the fact that it is packed? A lot of writing there, right?
P 4: I don’t think it is because of that. It’s just eh...
FD: You just felt “Oh, I have to answer all these questions!” What if you just had the text and the explanation of words and no tasks to do here?
P 4: It will probably be better! (laughs).
FD: More fun but how about learning English? Did the tasks help you?
P 4: Whether there are questions or not- if someone wants to understand this text [ehem?] If you try to understand the words in the text and check up vocabularies [you don’t need the questions] and you will get the meaning of the text.

(Participant 4, Euro Unit interview, page 3)

P 6 had this to say about the experience of performing task 4 in the Poppy Unit. Her report indicates that the difficulties can be related to task design and/or to failing to make use of the help function:
P 6: ...I had to find the vocabulary all by myself and I couldn't have help.
FD: You mean the word in a sentence?
P 6: I tried first ‘hint’ but there was no answer so?
FD: Did you resort to ‘hint’?
P 6: Yeah, but eh...
FD: So what was the word you tried?
P 6: ‘starting’ ‘beginning’
FD: (Sound of keyboard) OK and it says: “Sorry! Try again” and also “the next correct letter is ‘I’ so your answer must begin with ‘I’
P 6: So what?
FD: Well, you can ask for another hint and it will give you another letter...
P 6: I could not remember ‘last’
(Participant 6, Poppy Unit interview, page 3)

P 4 is another example of someone who did not like task 4 and found it “kind of hard” because he felt there was not any help embedded in the design:

P 4: I’m used to doing the multiple choice problem.
FD: So this one is like a test but you get help, right?
P 4: But if I don’t get any clue then?
FD: So you felt you just had to guess?
P 4: Yeah.
(Participant 4, Poppy Unit interview, page 2)

Later in the interview as I prompted him more about what the source of the difficulty was, it turned out that the problem was with the alternative answer given in the feedback rather than with the question itself:

FD: (Click sounds) And now this is the last task- the one you didn’t like, hein? May be because you didn’t know the word ‘initial’!
P 6: Oh, no! I know the word ‘initial’ but the answer is kind of vague.
FD: You didn’t know the opposite of ‘initial’?
P 6: I just guessed. I think- I think at first there were two different answers.
(Participant 6, Poppy Unit interview, page 4)

What is interesting about the information gathered during the interviews is the fact that the students at times did not see the help provided or found it more confusing than helpful. In the case of P4 above, the problem was to give alternative answers as if there is a problem whenever there is no fixed ‘right’ or ‘wrong’ answer. What we as teachers perceive as additional input may be either missed out or seen as vague. This is another proof that the
participants in the study and the teacher are functioning with two completely different views of feedback; its form and expected function. In the next chapter, I will suggest ways to bridge the gap through learner training and more careful implementation of design options.

5.5 Students’ recommendations for task design improvement

I pointed out earlier in the analysis to a discrepancy between my own preference for the Euro Unit and the students’ clear preference for the Poppy Unit. One would expect that the students will have more suggestions for improvement in relation to the Euro Unit, but the data show that they had more suggestions for the Poppy Unit. Recommendations of what to do to improve the Euro Unit boiled down to cutting down on length (P 6 and P 9) or some graphic design improvements (P 1, P 4, P 7 and P 9). Surprisingly, the students did not suggest introduction of immediate feedback into the Euro Unit and had more suggestions for the Poppy Unit. I will summarize their views under two themes: suggestions related to content and suggestions related to design interface.

5.5.1 Improving content

There appears to be focus on controlling quantity in the Euro Unit while some participants thought that another post-reading task should be added. Among the participants who found the Euro Unit demanding (P 4, P 6, and P 9), only P 6 clearly suggested cutting down the text and number of questions. In response to my prompt at the end of the interview she reaffirmed her position:

P 6: ...the question sentence had better be clear and shorter— and there are too many questions. At least ten questions for the comprehension.
FD: For the comprehension questions? (Click sound) Yeah, here ten. (Click sound) and five for the true or false.
P 6: And here is five. It’s ten and five and another ten.
FD: OK. Yeah?
P 6: I think it’s too many questions.
FD: Too many items?
P 6: Yeah, I think total ten is good.
(Participant 6, Euro Unit interview, page 5)
The participants had a few interesting suggestions to make in the way of improving the Poppy unit. Two students suggested adding a vocabulary check in the form of a gap-fill exercise (P 4 and 7). P 9 suggested adding an open-ended question that would require students to produce language in writing. For P 1 there are many options to elicit output and his ideas as to how to go about doing it was evolving.

P 1: I think next time you can try more than one task...to have the students practice.
FD: Add another task- another fill-in-the blanks?
P 1: No, a question that covers the whole text like why didn’t you relate it to the whole subject with a different task?
FD: Have them (the students) write, for instance?
P 1: Yeah! Can you make the story short?
FD: Summarize?
P 1: Yeah, I think you interviewed all of us so how about doing the same thing?...
FD: Oh, I see what you mean!
P 1: Especially when the student who is making the practice still remembers...
FD: Oh yeah? So, after we do the activity, we sit and talk about it? A speaking activity?
P 1: Oh I don’t know whether the software allows it but how about writing?
FD: Aah!
P 1: So after that give five questions.
FD: I see! So, after that I can link another page (click sounds). Here! After “end of tasks”...
P 1: ...Here after you say “congratulations” add 5 questions just to see whether the students understood everything...OK how about that? “What is your opinion about eh?...?” or “If you were the persons in the story, what would you have done?” And you can leave a blank e-mail.

( Participant 1, Poppy Unit, page 6)

To summarize, the suggestions related to content show that the students come with expectations about additional practice with the language. In other words, they do not seem to take the reading as just a receptive skill but rather, an activity that provides them with input that they can transform into output. They also want to be assured they have learned new vocabulary and be able to confirm it. Although I had the impression in the Camtasia and parts of the interview data that the students did not always see the link between the words included in a task and the reading itself, it can’t be affirmed that all students are insensitive to the connectivity within the units between reading and vocabulary development.
5.5.2 Improving interface

The recommendations the participants made about the interface in the units appear to be informed by the difficulties they encountered while working on the units. In fact, the Camtasia data give a lot of validity to their views below about the design. Two suggestions can be classified as likely to add an element of interactivity.

Increasing the font size in the parts of the units designed with Half Baked Potatoes software; i.e. increasing the font size in the gap-fill exercises of the Euro Unit (P 1, 4, 6, 7 and 9) and the tasks of the Poppy Unit. Below is an extract that explains that the effect of font size is not to be underestimated:

FD: ...if I want to do things differently, what should I do to make things better than that?
P 9: I think the quiz. The word is too small and too small. I don’t understand from the start.
(Participant 9, Euro Unit interview, page 6)

Another valid suggestion that can be seen to facilitate the execution of the comprehension tasks in the Euro Unit is put forth by P 1. He suggested that numbers of lines and paragraphs be added to the text and that the words in the multiple-choice questions be put in bold for easier reference. In his view, if these features are added, students will find it easier to refer to the text since they will know where to go:

P 1: The thing I don’t see here (in task 3) is...when we read a text in a textbook or something we have numbers of paragraphs. I don’t see it here. It’s sometimes helpful...you sometimes don’t know [where to find them?] Oh, I think of this here (vocabulary in task 3) for ‘citizen’ you want the meaning so it’s better to put the number of paragraph and lines, for example, between 1 and 5...
FD: Ok here like on paper, you expect line numbers so that you go straight to it.
P1: Yeah. Then you read the paragraph. You read it a first time and then you focus and answer the question...
(Participant 1, Euro Unit interview, page 4)
Reflecting on the observations made following examination of the Camtasia data, it can be anticipated that assistance with locating the details related to the questions will encourage the students to interact more with the reading passage and do more of the going back and forth that the participants in this study were not doing as often as expected. Another aspect of the design that was considered confusing for some of the participants was the score given following the first attempt and any revised answer afterwards. P 4, 6 and 7 expressed apprehension during the interviews as to why the scores were kept low even after correcting the error. While P 4 and 7 actively sought explanation for this feature during the interview and were surprised that it was the case, only P 6 suggested that an explanation be added to the instruction to warn the student that his/her score will be lowered each time he/she resorts to ‘hint’. Here’s how she put it:

P 6: ...I didn’t know why it was 10% so you better give some example or explanation that you lose points every time you use hint.
FD: Interesting! I didn’t think people would pay special attention to a detail like that. (Participant 6, Poppy Unit interview, page 4)

I noted in the Camtasia data that in many instances the students would go back and refill the box with the alternative (esp. task 4 of the Poppy Unit) but I was not sure why they were doing this. It turns out then that they were hoping to see the score changed. Nevertheless, the suggestions above will certainly make navigation and completion of the activities smoother for the students if taken into consideration and applied to the design of the units.

Students can make suggestions that can, on hindsight, be considered ‘cosmetic’ by the teacher. For example, the suggestion coming from P 7 about adding more graphics and interactivity to the prediction task in the Euro Unit reveal a ‘sound’ rationale based on a view of reader motivation:
FD: OK. If there is one thing I can do to improve this unit, what can it be?
P 7: Yeah. More graphics and eh...
FD: Where at? Which part?
P 7: Like the prediction to get more attention.
FD: Insert what?
P 7: Yeah, more people and pictures eh... and the dollar and the Greece dollar.
FD: Oh, I see what you mean.
P 7: Yeah, make the student more interested about this topic before they do the exercise and hopefully they can do better if they are interested in the topic.
FD: Absolutely!
(Participant 7, Euro Unit interview, page 6)

P 6 wanted to see me add sounds as part of the feedback function in the Poppy Unit, which in her view can add an element of fun to the activity. This is what P 6 had to say:

FD: So to improve this unit, what can I do?
P 6: I think it is very interesting but if you have eh... put sound like if I choose the wrong answer it'll tell me “Oooh!” It’ll be fun I think.
FD: Yeah, I can imagine a room with 11 computers going “Oooh!” (laughs) but good point!
P 6: (laughs) Yeah! And if I choose the correct answer, the computer goes with “congratulations” or something like that.
FD: Or claps! Yeah that’s something to consider.
(Participant 6, Poppy Unit interview, page 5)

5.6 Summary

The different sets of data analyzed above illustrate differences in perspectives. Camtasia data revealed aspects of student performance that they themselves are not aware of. It was possible to see what students do when they are interacting with the computer. The Camtasia data show that the students were not efficient in making full use of the options. It appears that the only aspect that attracted their attention was the feedback feature. While I had reservations about the degree to which it would assist them, I underestimated its impact on the way the students worked. Regardless of the students’ perceptions, it did not achieve the goal I had anticipated. The students saw themselves as reaching the correct answers and felt that they were guided towards comprehending the reading passage.
Judging from the students' responses, there are features of task design that they appreciated like the prediction activity and the multiple-choice format. They valued having to choose among alternatives they considered "close" and "confusing" while they can become frustrated with a task that has a different format. This is an argument for the need to familiarize students with new ways of learning with technology.

Moreover, it was surprising to see the students so much in favor of the Poppy Unit. I believe the Euro Unit provides more varied input and opportunities for practice. It can be that the students found it too demanding to do. Obviously, they thought it was too long since some students recommended that I cut down the length of text and the number of task items. It can be that they found the unit too demanding because they did not have help in the form of feedback. It might be interesting to incorporate a form of immediate feedback in the Euro Unit and test it again. On the other hand, students can have a clear idea of how to enhance aspects of the units. For example, their suggestions to add a post-reading activity reveals they are keen on transforming input into output.

My final comment is that in teaching situations like the ones reported in this study, it is extremely difficult to put ideas into practice. First, the creation of units that can fit the course objective is already a difficult task, technology or not. There are too many issues entangled in the task of designing pedagogically sound CALL materials. The message from tracking the students in this study is that teachers and designers can not anticipate how students will use the materials. The follow-up interview data raised my consciousness level about the need to listen to the students talk about the strategies they employ when working online. There is a sense in this study that the students are not reading intensively. From an electronic literacy perspective (Shezter and Warschauer, 2000), it seems that interest in developing reading skills per se is abandoned in favor of more rapid and extensive reading. The concern in academic reading contexts is to encourage top-down as well as bottom-up processes. Data in this study point to the need to distinguish between these two different reading purposes and provide more guidance within the design so that learners engage in the use of efficient strategies.
I commented sufficiently on the discrepancy between my intentions and the type of effect the units produced. I expected the materials to enhance the reading process, but Camtasia revealed that the students were reading superficially. There is no clear-cut solution to this inevitable mismatch but research that focuses on exploring the students' actions and beliefs about reading hypertext can in this case contribute to bridging the gap. In normal day-to-day activity, teachers peak into what the students are writing, eavesdrop while they are discussing in their groups, but we will never be able to develop a sense of what the students are doing with CALL materials until we track their performance. This chapter illustrated the type of information that can be obtained and how to make sense of it.
CHAPTER 6. CONCLUSION

6.1 Introduction

In this study, a teacher as researcher tried to practice “exploratory teaching” and learn to integrate technology in her own teaching. A group of international students who were taking a reading course participated in the study. I was relatively new to the use and implementation of technology and the students were novice at using the computer for language learning purposes. In the design process, I strived to design reading units that are rooted in views on electronic literacy as well as SLA and reading theories. I also tried to abide by the requirements of a specific reading curriculum. The pedagogical goal underlying the two units was to promote the use of strategies that encourage interactive reading (bottom-up/top-down processing) by focusing learner attention to different levels of importance in the text (esp. main idea, general and specific details, and vocabulary in context). Having had a clear idea of what I wanted to do with the technology, the challenge was to translate the ideas into practice. At the time of design of the two units, the teacher was taking a semester course in technology at Iowa State University and therefore, her knowledge and mastery of the technology was relatively limited. I was more of a bricoleur combining software and wrestling with my ideas and the demands of the situation. Like any teaching materials, the units may not be perfect, but implementing them was a unique opportunity to evaluate them from the learners’ perspective. Besides, giving the students an opportunity to get acquainted with innovative CALL materials and to express their views about them, it was possible to track their procedures and gain insights about the fate of CALL materials once they are made available to learners.

In the previous two chapters, areas of mismatch have been identified following analysis of computer tracking and verbal report data. The analyses of the data point to the need for teachers and CALL designers to reconsider assumptions made about student self-access to materials online. The data provided empirical evidence that the participants in the study overlooked or underused valuable aspects of the design that were meant to provide opportunities for developing reading strategies, facilitating negotiation of meaning and
enhancing their vocabulary. Clearly, self-access did not mean self-learning. In the next two sections, I will discuss implications of the findings for future research and material development in CALL. I will then conclude with suggestions and recommendations for further pedagogically-oriented research.

6.2 Pedagogical implications

Looking back at the experience in this study, there is a need to think about the degree of autonomy that should be given to learners with particular profiles. It can be deduced in light of the students' behavior with the materials that they were functioning with a procedure transferred from their previous experience with learning that were unknown to the teacher. It will be useful first to raise the learners' awareness of the need to negotiate in CALL environments instead of focusing merely on correct/wrong answers and scores. From that perspective, the feedback function used in the Poppy Unit was counterproductive as it encouraged these very product-oriented views of language learning. The purpose of promoting learner autonomy in computer-assisted teaching environments can be better served through the incorporation of a system of communication with learners that promotes independent learning. The fact that the students in the present study depended so heavily on the feedback message to proceed through the materials raises questions about their readiness to be free navigators of hypertext. The question is, "what design options might promote the use of strategies and encourage interactive reading processes?" For a start, in lieu of providing corrective feedback, comments in the form of guidance might be more promising to develop in the students the strategies that will enable them to function in self-access learning environments. For example, instead of the feedback message: "Sorry! Try again," an alternative can be: "The detail you need is in paragraph 6." That way, the students' consciousness can be raised about the need to refer back to the text and interact with the content. It can be a challenge to anticipate all possible student errors and to come up with pre-defined sets of correct answers, but this can be a modest start to guide novice users of e-text. This study shows that unprepared students can employ strategies (e.g. "hit-and-miss") that defeat the pedagogical aims underlying the CALL design.
Moreover, control over the learning process is a teacher prerogative that should not be abandoned in CALL environments. If teachers adopt a laissez faire attitude, they are abandoning their learners. The type of control I have in mind is of the type likely to increase task-induced involvement (Laufer & Hulstijn, 2001, pp. 16-21). That is, to incorporate in the design ways to make certain learning and procedural options unavoidable. Decisions of the type should ideally be informed by knowledge of the students’ general approach to learning, their working styles and their perceptions of task relevance. There is a need to ensure that students make use of the problem-solving strategies when working independently and not just obey to corrective feedback. CALL material designers need to figure out ways to transform the learning experience by building on the students’ previous learning experience.

Learner training may be necessary in the case of the students in this study. Obviously, they are living a transitional period when they are using in their day-to-day academic life more paper-based than electronic texts. Task repetition (Bygate, 1999) can be a way to develop gradually the necessary strategies for reading e-text. The teacher may start with a small-scale reading activity employing a passage containing a few glosses and a few links, but can then increase the complexity of the reading activity by designing comprehension tasks and follow-up activities.

Strategies needed to read e-text efficiently have not been totally identified (Chun, 2001), but teachers can explore them by collecting data from the students as they perform the activities or shortly after. This on-going informal research process will help raise the students’ awareness of the need for particular strategies and inform the teacher of any ‘novel’ sets of strategies applicable to reading e-text. The same type of activity can be repeated and documented, either through direct observation, online questionnaires, think aloud protocols, or learner diaries.

This project was inspired by this view of teaching as an ongoing process of exploration and improvement. Thanks to the experimentation with two units with my ESL students, my awareness has been raised about the need to prepare learners with the skills they need to read hypertext interactively and to use reading e-text as language development resources. It is true that teachers have no means of controlling the learners’ use of online
materials out of the classroom, but they can help develop in their learners the strategies needed for independent use of e-texts. With the right technical support, teachers can manipulate e-texts to make language forms salient or to add more varied content and perspectives through hyperlinks (Spiro et al., 1991; Hubbard, 1996; Mayer, 1997; Mills, 2000). Text manipulation undertaken from a teacher's perspective balances the need for control aimed at establishing ideal conditions for language learning and the need to give learners options and choices that recognize their need for independent use of the materials. As explained by Mills (2000), the learning experience can be enhanced through various text manipulation techniques that allow for comprehensible input to be noticed (Schmidt, 2001) and for learners' output to be controlled by the learners themselves thanks to systems of feedback that lead to self-correction.

The above suggestions for material design and implementation should not deter teachers from developing their own online materials. As argued by Little (1995), there is no learner autonomy without teacher autonomy. Besides having the advantages of learner and teacher fit, "Do-It-Yourself" materials help the CALL teacher acquire the necessary technical skills. For example, these can be small-scale spelling or grammar activities or quizzes. Indeed, teachers should not wait for the perfect teaching course pack or be content with book marking websites. The units used in this study show that it is not necessary to incorporate all cutting-edge technology into a teaching unit. Rather, they are evidence that when there is a will there is a way. If the school is not yet able to buy software, teachers should use "freeware" and "shareware" and experiment with small-scale teaching activities. It is in light of experience with design that teachers can evaluate activities or courseware developed by others. In addition, trying the activities with real students in classroom settings is invaluable experience for teachers to discover for themselves the strengths and/or caveats of courseware. Involvement of teachers in the design, implementation and evaluation of CALL materials is essential to the quality of the learning to result in CALL environments. As Wrigley (1993) put it a while back:

Unless we examine available technology-based materials critically, we risk allowing hardware and software vendors to define literacy for us. (321)
Another option for teachers, who have little time and little support, is to collaborate with other colleagues and research informally whatever they do with technology. They can evaluate a piece of courseware, identify a particular technology problem in their school, experiment with a new software or focus on one student's use of technology. Most research is carried out at universities often in laboratory conditions. This study gives insights about the type of understanding that can be achieved when students working on online materials are tracked. This is how the researcher as teacher in this study hoped to contribute to knowledge in CALL. The research is intended to inspire practicing teachers to incorporate technology into their day-to-day practice and to research their attempts. It is this teacher-generated knowledge that is likely to reconcile the tension between the technologist view of CALL use and the pedagogical.

6.3 limitations of the study

This study used a questionnaire, computer tracking and follow-up interviews. Each of these data collection tools had limitations. It might have been better if a semi-structured interview had been used instead to collect more information about the students' previous experiences with technology in education. There was a need for more information about the students' previous experience as language learners and about their views of reading and literacy. It was not possible, for example, to explore whether the students reacted to the CALL materials in that particular way because of their views of learning language and the place of reading in it or because of lack of experience with reading online.

The student-tracking device used in this study (Camtasia) had a high degree of unobtrusiveness but requires human transcription, which is tedious and time-consuming. This makes it extremely demanding for a lone researcher. Therefore, this factor should be used by researcher working within more flexible time frames. More importantly, since Camtasia records only what takes place on screen, it needs to be supplemented with another external data collection tool. For example, it might be necessary to build into the research design a focused observation protocol (possibly using a video camera) whereby instances of eye-movement reading or off-screen activity can be logged.
The follow-up interview in this study focused on collecting the students' views about the units and any talk about process was rather incidental. It would be a good idea to incorporate another section in the protocol to find out how they usually go about reading electronic text in self-access situations and whether they perceive any difference between the experience of reading traditional text and reading e-text. This additional data can help build a thicker description of the cases.

Finally, it was too ambitious to consider logging data of all students and carrying out follow-up interviews with eleven students in a short time. It would be more manageable to focus from the start on five students using some random sampling procedure, perhaps selecting any student sitting at every second or third computer. Another possibility can be to interview all students first and then use purposeful sampling to include in the sample variables such as previous experience with technology use, literacy experience, proficiency level, attitude to computers, area of specialization, and so on.

6.4 Recommendations for further research

The limitations I pointed out about the present research leave posts for future researchers who are interested in following the same line of enquiry I undertook. I argued in this project for Action Research as a way of teacher development and exploration of teaching in context. I also pointed out that to gain access to the students' stories, it will be necessary to employ qualitative research procedures. The qualitative data analysis techniques used in this research can provide guidance for other researchers as they served well the purposes of the research.

An area of research that should be considered in future CALL research is the type that focuses on process. Of particular interest will be case studies that provide thick description of the processes students undergo over a period of time as they learn to use different types of tasks. The different tasks can deal with a specific construct (e.g. reading for gist) but can have a varying degree of control and choice embedded in them so that researchers could tease out whether materials influence users or the other way around. This type of research can be useful to connect principles of CALL design with practice. As argued by Bygate (1991) with reference to task-based learning in traditional SLA, there is need for case studies
"analogous perhaps to the case studies of trainee doctors, or the way lawyers study past legal cases" (p. 46). The knowledge to be generated from case studies in CALL can have a cumulative effect and build up the badly needed body of theory of teaching/learning in CALL environments.
APPENDIX A. LEARNER PROFILE QUESTIONNAIRE

Learner Profile Questionnaire

This questionnaire is designed to collect information about you and the way you relate to multimedia as a language learning tool. The data you provide will remain confidential and will only be used for research purposes as specified by the research guidelines at Iowa State University. Any further questions can be addressed to the researcher above.

1. Biographical data:
   1.1 Name: ___________________________ Choose a pseudonym: ________________________
   1.2 Gender: ___ Male ___ Female
   1.3 Area of Study: (e.g.: Mechanical Engineering) _____________________________
   1.4 Country of origin: _____________________________

2. Do you own a computer at present? ___ Yes ___ No
   If no, where do you have access to a computer? _____________________________

3. Do you use the computer for any of the following purposes? (Put a check (✓) if you do. More than one is possible)
   ___ 3.1 for word processing
   ___ 3.2 to send/receive e-mail
   ___ 3.3 to surf the internet
   ___ 3.4 to chat
   Other: (please specify): _____________________________

4. Which of the following media do you use? (Put a check (✓) if you do. More than one is possible)
   ___ 4.1 cassette tapes
   ___ 4.2 video tapes
   ___ 4.3 CD-Roms
   ___ 4.4 DVDs
   ___ 4.5 slides
   Other: (Please specify): _____________________________

5. Which of the following language learning resources did you use before? (Put a check (✓) if you do. More than one is possible)
   ___ 5.1 online grammar exercises
   ___ 5.2 online quizzes (tests)
   ___ 5.3 online reading activities
   ___ 5.4 online listening activities
   ___ 5.5 online word puzzles
   ___ 5.6 online song lyrics
   ___ 5.7 online dictionaries
   ___ 5.8 online vocabulary exercises
   ___ 5.9 online grammar analysis
   ___ 5.10 online encyclopedia
6. How do you generally feel when asked to search for information on the web for class? (Put a check (√) if you do. More than one is possible)
   ___ 6.1 excited
   ___ 6.2 nervous
   ___ 6.3 indifferent
   ___ 6.4 interested

7. To what extent do you agree with these statements about using the computer for class work in English language classes? (Put a check (√) in the box as applicable. One answer per column)

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 I can take as much time as I want.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7.2 I can make sure my answers are correct</td>
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<td></td>
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<td>7.3 I can become frustrated and not finish</td>
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<td>7.4 I can do the work anywhere and anytime</td>
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<td>7.5 I can learn language without the teacher</td>
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6. In your opinion, what role can computers play in language learning? (If possible, refer to your own experience and provide specific examples)

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THANK YOU FOR YOUR TIME
## APPENDIX B. CAMTASIA DATA TRANSCRIPT

Data set # 1: The Euro  
Name: Participant 1  
File name: Camdataset1_pcl

<table>
<thead>
<tr>
<th>Time</th>
<th>Participant</th>
<th>Transcript</th>
<th>Inferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC:</td>
<td>Displays activity cover page</td>
<td></td>
<td></td>
</tr>
<tr>
<td>00:12</td>
<td>St:</td>
<td>Moves mouse over content of page</td>
<td>Initiation [input-content]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shows Camtasia pop up window</td>
<td></td>
</tr>
<tr>
<td></td>
<td>St:</td>
<td>Closes window</td>
<td></td>
</tr>
<tr>
<td>00:49</td>
<td>Clicks ‘overview’</td>
<td>Initiation [solicit input]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PC:</td>
<td>Displays overview page</td>
<td>Response [input]</td>
</tr>
<tr>
<td></td>
<td>St:</td>
<td>Moves mouse over description</td>
<td>Exploring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moves mouse down to ‘note’ at the bottom of page</td>
<td>Exploring</td>
</tr>
<tr>
<td>00:26</td>
<td>Clicks ‘prediction activity’</td>
<td>Initiation [solicit input]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PC:</td>
<td>Displays ‘prediction activity’</td>
<td>Response [input]</td>
</tr>
<tr>
<td></td>
<td>St:</td>
<td>Selects ‘yes’ for Q 1</td>
<td>Initiation [output-correct]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moves mouse over statement 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Selects ‘yes’ for Q 2</td>
<td>Initiation [output-correct]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moves mouse over statement 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Selects ‘yes’ for Q 3</td>
<td>Initiation [output-correct]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moves mouse over statement 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Selects ‘yes’ for Q 4</td>
<td>Initiation [output-correct]</td>
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<tr>
<td></td>
<td></td>
<td>Selects ‘no’ for Q 5</td>
<td>Initiation [output-with error]</td>
</tr>
<tr>
<td>03:38</td>
<td>Scrolls down to task 2</td>
<td>Initiation [output-correct]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects ‘the pound’ for Q 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects ‘the euro’ for Q 2</td>
<td>Initiation [output-correct]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moves mouse over statement 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Highlights options</td>
<td></td>
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<tr>
<td></td>
<td>Selects ‘continue..’ for Q 3</td>
<td>Initiation [output-correct]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Highlights options for Q 4</td>
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<td>Time</td>
<td>Action/Interaction Description</td>
<td>Note</td>
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<tr>
<td></td>
<td><strong>Moves up and down options</strong></td>
<td>[exploring]</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Selects 'issue denominations' for Q 4</strong></td>
<td>Initiation [output-correct]</td>
<td></td>
</tr>
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<td></td>
<td><strong>Selects 10 for Q 5</strong></td>
<td>Initiation [output-with error]</td>
<td></td>
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<td></td>
<td><strong>Scrolls back to top of page</strong></td>
<td>+</td>
<td></td>
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<tr>
<td></td>
<td><strong>Places mouse over directions</strong></td>
<td>Planning</td>
<td></td>
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<tr>
<td></td>
<td><strong>(No moves!) (05:33-07:29)</strong></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>07:29</td>
<td>St: <strong>Clicks [next]</strong></td>
<td>Initiation [solicit input]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PC: <strong>Loads images</strong></td>
<td>Response [input]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>St: <strong>Moves mouse over images as they appear</strong></td>
<td>Follow up [exploring]</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Clicks on 5 Euro note</strong></td>
<td>Initiation [attempt at resourcing]</td>
<td></td>
</tr>
<tr>
<td>08:24</td>
<td><strong>Scrolls down (stops until 13:24)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13:24</td>
<td>St: <strong>Clicks [next]</strong></td>
<td>Initiation [solicit input]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PC: <strong>Shows comprehension activity</strong></td>
<td>Response [input]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>St: <strong>Scrolls down</strong></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Scrolls up to top</strong></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Moves mouse over paragraph 1</strong></td>
<td>Follow-up [exploring]</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Clicks on annotated vocabulary word 'billboards'</strong></td>
<td>Initiation [solicit input]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PC: <strong>Shows definition</strong></td>
<td>Response [input]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>St: <strong>Moves mouse over definition</strong></td>
<td>Follow-up [explore input]</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Clicks on word again</strong></td>
<td>Follow-up/+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PC: <strong>Hides definition</strong></td>
<td>Follow-up/+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>St: <strong>Moves mouse over text (paragraph 1 onwards) line by line</strong></td>
<td>Follow-up [exploring input]</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Scrolls down</strong></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>15:49</td>
<td><strong>Paragraph 1, 2, 3 visible</strong></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Clicks on annotated vocabulary word 'denominations' in paragraph 2</strong></td>
<td>Initiation [solicit input]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PC: <strong>Shows definition</strong></td>
<td>Response [input]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>St: <strong>Clicks back on word</strong></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PC: <strong>Hides definition</strong></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Event Description</td>
<td>Notes</td>
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<td>----------</td>
<td>--------------------------------------------</td>
<td>---------------------</td>
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<tr>
<td>16:15</td>
<td>(No move!) (up to 16:54)</td>
<td>(eye movement reading)</td>
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<tr>
<td></td>
<td>Scrolls down to the level of paragraph 4</td>
<td></td>
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<tr>
<td></td>
<td>Moves mouse onto left scroll bar</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(No moves!) (17:04-18:42)</td>
<td>+</td>
<td></td>
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<td></td>
<td>Clicks and scrolls down text</td>
<td>+</td>
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<tr>
<td></td>
<td>Moves down to paragraph 5</td>
<td>Follow-up [exploring]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scrolls down to paragraph 6</td>
<td>Follow-up [exploring]</td>
<td></td>
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<tr>
<td></td>
<td>Scrolls down</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>20:28</td>
<td>Scrolls down to the bottom of the page (paragraph 7)</td>
<td>Follow-up [exploring]</td>
<td></td>
</tr>
<tr>
<td>21:17</td>
<td>Scrolls down task bar</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Places mouse over task 1</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moves mouse over statements</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects 4 for task 1</td>
<td>Initiation [output-with error]</td>
<td></td>
</tr>
<tr>
<td>22:07</td>
<td>Scrolls down to task 2</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects F for 1</td>
<td>Initiation [output-correct]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects T for 2</td>
<td>Initiation [output-correct]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects T for 3</td>
<td>Initiation [output-correct]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Revises 3 (F instead)</td>
<td>Follow-up [revised output-with error]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects T for 4</td>
<td>Initiation [output-with error]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects T for 5</td>
<td>Initiation [output-with error]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects T for 6</td>
<td>Initiation [output-correct]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Places mouse over box T for 7</td>
<td>Initiation [output-correct]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moves mouse over box F</td>
<td>Follow-up [evaluating]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scrolls down text</td>
<td>Follow-up [exploring]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moves mouse over three last lines of paragraph 4</td>
<td>Follow-up [exploring]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moves back to 7</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects F</td>
<td>Initiation</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Actions</td>
<td></td>
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<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25:28</td>
<td>Moves to task 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects “be experimenting…” for 1 Initiation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects “12 national banks…” for 2 Initiation</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Scrolls down and back up to 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects “to recognize…” for 3 Initiation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects “front-load…” for 4 Initiation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects “being transparent…” for 5 Initiation</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Highlights options</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29:24</td>
<td>Scrolls down to task 4</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Moves mouse over question</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Selects a for 1 Initiation</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Selects b for 2 Initiation</td>
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<tr>
<td></td>
<td>Selects a for 3 Initiation</td>
<td></td>
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<tr>
<td></td>
<td>Scrolls down task</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects a for 4 Initiation</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Selects b for 5 Initiation</td>
<td></td>
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<tr>
<td></td>
<td>Selects b for 6 Initiation</td>
<td></td>
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<tr>
<td></td>
<td>Scrolls down</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects a for 7 (31:38-31-53)</td>
<td></td>
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<tr>
<td></td>
<td>Scrolls down</td>
<td></td>
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<tr>
<td></td>
<td>Selects c for 8 Initiation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects b for 9 Initiation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Action</td>
<td>Feedback</td>
<td></td>
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<td>-------</td>
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</tr>
<tr>
<td>33:16</td>
<td>Clicks [check answers]</td>
<td>Initiation [soliciting Feedback]</td>
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<td>PC:</td>
<td>Display answer key</td>
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<tr>
<td>35:57</td>
<td>Clicks [back to comprehension activity]</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>St:</td>
<td>Clicks [next]</td>
<td>Initiation [solicit input]</td>
<td></td>
</tr>
<tr>
<td>PC:</td>
<td>Displays gap fill exercise: Dialogue 1</td>
<td>Response [input]</td>
<td></td>
</tr>
<tr>
<td>St:</td>
<td>Places mouse over question</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moves mouse over dialogue</td>
<td>Follow-up [exploring input]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Types 'exchange' in blank 1</td>
<td>Initiation [output-with error]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Types 'currency' in blank 2</td>
<td>Initiation [output-with error]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Types 'coins' in blank 3</td>
<td>Initiation [output-with error]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deletes 'coins'</td>
<td>Follow-up [revision]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Types 'twenties' instead</td>
<td>Initiation [revised output-correct]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clicks 'check'</td>
<td>Response [solicit feedback]</td>
<td></td>
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<tr>
<td>PC:</td>
<td>Your score is 25%</td>
<td>Feedback [evaluation-score]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Some of your answers are incorrect</td>
<td>Follow-up [evaluation-comment]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Incorrect words in your answer are left unchanged.</td>
<td>Feedback [evaluation-hint]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Correct word ‘twenties’ in bold and embedded in text.</td>
<td>Follow-up [evaluation-hint]</td>
<td></td>
</tr>
<tr>
<td>St:</td>
<td>Moves mouse over ‘exchange’ in blank 1</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deletes 'exchange'</td>
<td>Initiation [revision]</td>
<td></td>
</tr>
<tr>
<td>Action</td>
<td>Type</td>
<td></td>
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<td>--------------------------------------------</td>
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<td></td>
</tr>
<tr>
<td>Types in ‘Euro’ instead</td>
<td>Initiation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deletes ‘Euro’ from blank 1</td>
<td>Follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types in ‘coins’</td>
<td>Follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highlights ‘coins’</td>
<td>Follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deletes ‘coins’</td>
<td>Follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types in ‘euro’</td>
<td>Initiation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clicks ‘check’</td>
<td>Initiation</td>
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<td></td>
</tr>
<tr>
<td>PC: Your score is 25%</td>
<td>Response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some of your answers are incorrect</td>
<td>Follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect words in your answer are left</td>
<td>Follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct word ‘twenties’ in bold and</td>
<td>Follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>St: Deletes ‘exchange’ from blank 1</td>
<td>Initiation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highlights ‘currency’ in list of words</td>
<td>Follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highlights ‘coins’ in list of words given</td>
<td>Follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clicks ‘check’</td>
<td>Initiation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC: Your score is 25%</td>
<td>Response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some of your answers are incorrect</td>
<td>Follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect words in your answer are left</td>
<td>Follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct word ‘twenties’ in bold and</td>
<td>Follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:19 St: Clicks ⇒ (next)</td>
<td>Initiation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC: Displays gap fill exercise: Dialogue 2</td>
<td>Response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>St: Types ‘currency’ in blank 1</td>
<td>Initiation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC:</td>
<td>Clicks ‘check’</td>
<td>Initiation [solicit feedback]</td>
<td></td>
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</tr>
<tr>
<td>St:</td>
<td>Your score is 0%</td>
<td>Feedback [evaluation-score]</td>
<td></td>
</tr>
<tr>
<td>PC:</td>
<td>Clicks ‘next’</td>
<td>Initiation [solicit input]</td>
<td></td>
</tr>
<tr>
<td>St:</td>
<td>Displays last page “congratulations…”</td>
<td>Response [signal end of unit]</td>
<td></td>
</tr>
<tr>
<td>St:</td>
<td>Clicks dialogue window</td>
<td>Planning</td>
<td></td>
</tr>
<tr>
<td>Drags window to the side (making unit cover page visible)</td>
<td>Organizing</td>
<td></td>
<td></td>
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<tr>
<td>Clicks on ‘comprehension activity’ in navigation bar</td>
<td>Initiation [solicit input]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42:29 PC:</td>
<td>Displays comprehension activity</td>
<td>Response [input]</td>
<td></td>
</tr>
<tr>
<td>St:</td>
<td>Scrolls down to task 4</td>
<td>Follow-up [selects input]</td>
<td></td>
</tr>
<tr>
<td>Clicks a for 1</td>
<td>Follow-up [Edit output-correct]</td>
<td></td>
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<tr>
<td>Clicks a for 2</td>
<td>“ “ “ “</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clicks c for 3</td>
<td>“ “ “ “</td>
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<td></td>
</tr>
<tr>
<td>Clicks c for 4</td>
<td>“ “ “ “</td>
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<td></td>
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<tr>
<td>Clicks b for 5</td>
<td>“ “ “ “</td>
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<tr>
<td>Clicks b for 6</td>
<td>“ “ “ “</td>
<td></td>
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<tr>
<td>Clicks a for 7</td>
<td>“ “ “ “</td>
<td></td>
<td></td>
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<tr>
<td>Clicks c for 8</td>
<td>“ “ “ “</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clicks b for 9</td>
<td>“ “ “ “</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clicks b for 10</td>
<td>“ “ “ “</td>
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</tr>
<tr>
<td>Scrolls down text</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clicks [next]</td>
<td>Initiate [solicit input]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display gap-fill exercise: Dialogue 1</td>
<td>Response [input]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closes gap-fill exercise window</td>
<td>Follow-up [exits]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closes Teaching Unit window</td>
<td>Follow-up [exits]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stops Camtasia recording</td>
<td>+</td>
<td></td>
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</tr>
</tbody>
</table>
### APPENDIX C. CLASS SESSION TRANSCRIPT

**Class Session 1: The Euro**  
**Date & Time:** Feb. 17, 2001  
**File name:** transcript_S1

<table>
<thead>
<tr>
<th>Participant</th>
<th>Transcription</th>
</tr>
</thead>
<tbody>
<tr>
<td>T:</td>
<td>I’ll be taping this session as a back up just for me to remember what is happening. So it will not record you and you will not be speaking. (To colleague assisting) We need to set Camtasia. Right click and record.</td>
</tr>
<tr>
<td>C:</td>
<td>OK</td>
</tr>
<tr>
<td>T:</td>
<td>(sound of door closing and a student coming in) OK there’s a computer here. OK please don’t start-just one sec. Thank you! There you go. You can now work. It’s fine. (Walks towards another student) Wait a bit. Oh, you changed everything in those three clicks.</td>
</tr>
<tr>
<td>St:</td>
<td>Oh! (laughs)</td>
</tr>
<tr>
<td>T:</td>
<td>Just a bit of patience, OK? (click sound) There you go. (louder) Please don’t start (click sounds) I’ll give you the worksheet in just one second.</td>
</tr>
<tr>
<td>St:</td>
<td>What’s wrong with the er…</td>
</tr>
<tr>
<td>T:</td>
<td>Uhm? (to all) You have a pen or a pencil to write with? If you don’t, we can give you one.</td>
</tr>
<tr>
<td>St:</td>
<td>OK don’t rush or anything-work at your own speed.</td>
</tr>
<tr>
<td>T:</td>
<td>Is it OK? Camtasia not recording-</td>
</tr>
<tr>
<td>St:</td>
<td>I did set it up. Try again. Is it recording? OK!</td>
</tr>
<tr>
<td>St:</td>
<td>What do I put here?</td>
</tr>
<tr>
<td>T:</td>
<td>Participant? That’s you. Your name. Indicate what computer you’re working on-(to student who has just come in) Oh, I’m sorry, did you bring the consent letter?</td>
</tr>
<tr>
<td>St:</td>
<td>No!</td>
</tr>
<tr>
<td>T:</td>
<td>OK I’ll print you one- Don’t worry! Take your time! There’s no rush. Just write your name and the PC # and that sheet is to write your answers and for me to verify after. (louder to the whole class) If you have any problems, you can ask me for help. You can start (noticing students have not started) You can start you guys! Follow the worksheet. It should help you.</td>
</tr>
<tr>
<td>St:</td>
<td>I want print out another one-of this.</td>
</tr>
<tr>
<td>T:</td>
<td>The handout? OK I will. (To colleague helping) I need to print another consent letter. (Click sounds followed by sound of printer running)</td>
</tr>
<tr>
<td>St (PC11)</td>
<td>What is ‘currency’?</td>
</tr>
<tr>
<td>T:</td>
<td>You have a problem understanding ‘currency’?</td>
</tr>
<tr>
<td>St:</td>
<td>Yeah</td>
</tr>
<tr>
<td>T:</td>
<td>That’s money</td>
</tr>
<tr>
<td>St:</td>
<td>Oh! Yes, Ok.</td>
</tr>
<tr>
<td>St (PC12)</td>
<td>Do we have to write here too?</td>
</tr>
<tr>
<td>T:</td>
<td>Yeah.</td>
</tr>
<tr>
<td>St (PC8)</td>
<td>I have already done it. There are 5 questions and here only 4</td>
</tr>
<tr>
<td>T:</td>
<td>Oh! Just add 5. I forgot to put 5. Thanks. (.43)</td>
</tr>
</tbody>
</table>
St (PC 2): I write down here?

T: Yeah, so that after you finish the tasks you can double check the answers whether you guessed right or not. OK? (walking towards student) Yes, Wael.

St (PC1): Number 5?

T: Yeah, just add 5. Write it there. (.17)

St (PC): Number 5?

T: Just add 5

St (PC): Where's number 5?

T: Oh just add 5 and write it. (to colleague) You're not able to work?

C: You asked them to write answers on the worksheet? That simplifies the process.

T: Yeah, that's a possibility!

St: That's another question?

T: Yeah, just add 5. (to colleague) Somehow I skipped number 5. I don't know why. May be I was trying to squeeze everything in one page. (.19)

St (PC1): Faiza, what do you mean here? Just counting?

T: Oh! How many denominations are there? One?

St: (counts aloud) 2, 3, 4, 5, 6

T: For example, they don't have a 1000 Euro note!

St: Yeah. (.44)

St (PC 7): I don't understand here. What color?

T: Is there any difference in color?

St: Just what color are these. I see! OK.

T: (to colleague in the lab) I like this activity!

St (PC 9): I write this question?

T: OK. You finished task 2?

St: (points to question in worksheet)

T: Oh! You add number 5. I'm sorry! You read this. Then it tells you 'click next'

St: Oh, OK! (.42)

T: (to St working on PC) Are you doing OK?

St: Yeah.

T: Ok. You can now see samples of the currency. You click and you'll see the currency. OK? You see what it is? It's the currency used in Europe now to replace- OK? You just have to do these questions. OK? (Walks away)

T: (to st PC who raised his hand) How zit goin’?

St: Number 5?

T: Yeah, just add 5.

St (PC): (Having trouble with the definitions) This one?

T: Yeah, click? Double click (sound of double click) There you go! (making sure students are not having problems with annotated words) Did you try these?

St (PC): No.

T: Hold on! Let me show you. OK? (reading directions) You may resort to the
explanations. Click twice to view the explanation and click once to hide it.
Did it work?

St: Uhmm? Yeah.
T: So, if you want to—You don’t need it?
St: No.
T: Oh! OK. (to another student) You’re PC 2. You write er…-
St: What?
T: Sorry! I’m disturbing you. (.30)
St: I click?
T: Double click?
St: Oh? (.3:25)
(mouse click sounds and teacher getting up and starting to walk around)
T: Is everything fine?
St: Yeah.
T: Good. (.1:00)
(to another student) Is it OK?
St (PC 5) After reading this, I do this task?
T: Yeah you can write the answers so that when you change page you can still check whether you had the answers right.
St: Uhm! (3:06)
T: If you need any help—if you have any problems, you can always raise your hand and I’ll help you. (.3:10)
T: Which ones you’re having problems with?
St: The old eh…? (.1:25)
T: Having problems?
St (PC 8) (unintelligible)
T: Ahan. (.4:01)
T: (To a student walking away) Have you finished?
St (PC 2) Yeah.
T: Did you have a chance to revise these? (prediction questions)
St: Yeah. Do I have to change it? (pointing to worksheet)
T: No, no just for you.
(whispering to another student) Did you sign up for an interview?
St: No.
T: What time can you come Thursday? Some people signed up for 3:00
St: Earlier.
T: Two?
St: Thursday at 2:00? OK two.
T: Let me double check. There’s someone at 2:15. I can send him an e-mail. Do you want to take two o’clock?
St: Because I have to work. I have class till 2:00 (walks away)
T: Oh your pen! Thank you so much!
St (PC 9) OK. I finished.
<table>
<thead>
<tr>
<th>T</th>
<th>OK Excellent!</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(to another student) Is everything working fine?</td>
</tr>
<tr>
<td>St (PC  )</td>
<td>Yeah. Good. (.28) (turn tape over to Side B)</td>
</tr>
<tr>
<td>St (PC1)</td>
<td>Faiza? I have to fill in here?</td>
</tr>
<tr>
<td>T</td>
<td>And the words are there. (weird sharp noise made by computer. Sound of mouse clicks and keyboard) Oh! I'll go get Denny.</td>
</tr>
<tr>
<td></td>
<td>(Sound of lab door opening)</td>
</tr>
<tr>
<td>T</td>
<td>I saved the file and then it made a real strange noise and then gave the pop up window with ‘end task’ and then this message in red.</td>
</tr>
<tr>
<td>D</td>
<td>What’s that?</td>
</tr>
<tr>
<td>T</td>
<td>That came up after I had saved and wanted to log off 312 temp but it was saved.</td>
</tr>
<tr>
<td>D</td>
<td>It was there? Hope it is fine. I’ve never seen a message like that but it saved fine for you?</td>
</tr>
<tr>
<td>T</td>
<td>Yeah. (.35)</td>
</tr>
<tr>
<td>D</td>
<td>I’m not sure what that is actually! Network messages don’t come up like that.</td>
</tr>
<tr>
<td>T</td>
<td>Yeah, a special one just to scare me!</td>
</tr>
<tr>
<td>D</td>
<td>Yeah! If you get it again, let me know and I’ll write it down and try to find out.</td>
</tr>
<tr>
<td>T</td>
<td>Yeah, thanks. So far so good.</td>
</tr>
<tr>
<td></td>
<td>(to colleague) As I was trying to log off 312 temp, it (PC2) I saved one. That was after I finished. It said ‘end task’ and then made a strange noise- after I had saved. Strange!</td>
</tr>
<tr>
<td>T</td>
<td>(to student PC 11) Did you want to get rid of this? (definition box still showing)</td>
</tr>
<tr>
<td>St:</td>
<td>Click?</td>
</tr>
<tr>
<td>T:</td>
<td>Yeah, click on any other highlighted word</td>
</tr>
<tr>
<td>St:</td>
<td>OK! (.29)</td>
</tr>
<tr>
<td>T:</td>
<td>(to student PC ) Did you finish?</td>
</tr>
<tr>
<td>St (PC4)</td>
<td>Yeah.</td>
</tr>
<tr>
<td>T:</td>
<td>Where is your worksheet? Did you revise your answers? Were your predictions correct?</td>
</tr>
<tr>
<td>St:</td>
<td>Yeah. (laughs)</td>
</tr>
<tr>
<td>T:</td>
<td>Ok I just have to save your data. Oh man! (in reaction to pop window)</td>
</tr>
<tr>
<td></td>
<td>(to student) I guess that's it. Thank you.</td>
</tr>
<tr>
<td>St:</td>
<td>Can I check my e-mail</td>
</tr>
<tr>
<td>T:</td>
<td>Yeah. Sure.</td>
</tr>
<tr>
<td>T:</td>
<td>(To another student) Did you check your score?</td>
</tr>
<tr>
<td>St (PC 7)</td>
<td>Yeah.</td>
</tr>
<tr>
<td>T:</td>
<td>100% Excellent! Ok go on, next.</td>
</tr>
<tr>
<td>St:</td>
<td>Do I need to do anything on this?</td>
</tr>
<tr>
<td>T:</td>
<td>No, thanks.</td>
</tr>
<tr>
<td></td>
<td>(to another student) You're next?</td>
</tr>
<tr>
<td>St (PC1)</td>
<td>No, I'm done.</td>
</tr>
</tbody>
</table>
T: You finished the whole thing?
St: I just close?
T: Yeah. That’s fine. Thanks.
St: If you need anything, just tell me.
T: OK, OK. (.31)

(to students left) Don’t forget to sign up for an interview, please. (.56)
St (PC 9): Excuse me, can I use one program here?
T: When a computer is free, you can. You want to check your e-mail?
St: No, Word.
T: OK come on up. I’ll let you use this one (clicks and keyboard sound). It’s very slow! Here, it’s Word. I’ll tell you what to do when you’re ready to print. This printer is not working.
St: I finished?
T: That’s it. I just need to save your data. You can sign up for an interview.
St (PC 6): When? (looking into the agenda)
T: So Thursday or Friday?
St: Thursday?
T: Oh I have to teach. Sunny?
St: OK Friday.
T: Friday
St (PC7) We will come here?
T: Yeah, here or anywhere we can find a computer.
T: (sigh)
St: Excuse me.
T: You want to log in for an interview? Thursday, Friday or Saturday?
St: Thursday.
T: Ok somebody is coming Thursday morning so from 10:00 to 11:00 I have time.
St: Thursday, Friday or Saturday?
T: If you can come Sunday. It’s OK, too. (click and keyboard sounds. Computer gives message ‘insert zip disk’)
C: Where do you want to save it? Do you have a zip disk?
T: You can’t save it on E. The zip disk takes only 100MB. No don’t cancel. If you cancel, we’ll lose it forever.
C: Oh really?
T: Yap. So Denny is going to help perhaps. The others worked. Not this one. I don’t know what happened to this one. It has only the small screen (ding sound) It doesn’t allow you to do anything (ding sound and click)
C: Because it’s busy.
T: Busy doing what? Because instead of giving me this window, it doesn’t. It gives me that! So there are going to be problems.
C: And these?
T: These are fine.
<table>
<thead>
<tr>
<th>St P C11</th>
<th>I can't understand</th>
</tr>
</thead>
<tbody>
<tr>
<td>T:</td>
<td>These words</td>
</tr>
<tr>
<td>St:</td>
<td>Ah! These words?</td>
</tr>
<tr>
<td>T:</td>
<td>Let's try this. Let's try a zip disk. I guess it won't work but-</td>
</tr>
<tr>
<td>C:</td>
<td>We can give it a try.</td>
</tr>
<tr>
<td>T:</td>
<td>Because it's a big file- Oh! I can change field to private space. Yeah! (laughs) Ah! Sometimes I'm completely- you know? (sound of keyboard) PC 1 Ok. But for this one, I don't know why we don't have the right screen size (sound of zip disk being ejected)</td>
</tr>
<tr>
<td>St PC 11</td>
<td>How can I finish?</td>
</tr>
<tr>
<td>T:</td>
<td>You finished everything?</td>
</tr>
<tr>
<td>St:</td>
<td>Yeah, finished.</td>
</tr>
<tr>
<td>T:</td>
<td>Let's see. Ooops! No another one. You're not finished.</td>
</tr>
<tr>
<td>St:</td>
<td>Aha!</td>
</tr>
<tr>
<td>T:</td>
<td>(keyboard and click sounds) I don't know what's going on! Unfortunately, it's going to be a small screen. I don't know.</td>
</tr>
<tr>
<td></td>
<td>(to student walking towards teacher) You've finished. Congratulations! Thank you.</td>
</tr>
</tbody>
</table>
APPENDIX D. HUMAN SUBJECTS REVIEW FORM

OFFICE USE ONLY

<table>
<thead>
<tr>
<th>Key Personnel Training:</th>
<th>Completed</th>
<th>Incomplete*</th>
<th>IRB Approval Date:</th>
<th>IRB Expiration Date:</th>
</tr>
</thead>
</table>

Iowa State University
Human Subjects Review Form
(Please type this form)

1. Title of Project: "The Integration of CALL in an ESL Context: Reconciling Agendas."

2. I agree to provide the proper surveillance of this project to insure that the rights and welfare of the human subjects are protected. I will report any adverse reactions to the committee. Additions to or changes in research procedures after the project has been approved will be submitted to the committee for review. I agree that all key personnel involved in conducting human subjects research will receive training in the protection of human subjects. Access to the 45 CFR 46, Belmont Report, and ISU’s Federal Wide Assurance is available to all PI’s via the WWW. http://grants-svr.admin.iastate.edu/VPR/humansubjects.html. I agree to request renewal of approval for any project continuing more than one year.

Faiza Derbel
Typed name of principal investigator.

English
Department
515 292 9287 fderbel@iastate.edu
Phone number and email

2a. Principal investigator
☐ Faculty ☐ Staff ☐ Postdoctoral ☒ Graduate Student ☐ Undergraduate Student

3. Typed name of co-principal investigator(s)

n/a

3a. Co-Principal investigator(s) (check all that apply)
☐ Faculty ☐ Staff ☐ Postdoctoral ☒ Graduate Student ☐ Undergraduate Student

3b. Typed name of major professor or supervisor (if not a co-principal investigator)

Professor Dan Douglas
02/05/02

4. Typed names of other key personnel who will directly interact with human subjects.

5. Project (check all that apply)
☐ Research ☒ Thesis or dissertation ☐ Class project ☐ Independent Study (490, 590, Honors project)

6. Number of subjects (complete all that apply)

# adults, non-students 11 # ISU students # minors under 14 # minors 14-17 # other (explain)

7. Status of project submission through Office of Sponsored Programs Administration (check one)
☐ Has been submitted ☐ Will be submitted ☒ Will not be submitted

7a. Funding Source: n/a
8. Brief description of proposed research involving human subjects: (See instructions, item 8.
(Include one copy of the complete proposal if submitting to a Federal sponsor.)

n/a

9. Informed Consent:  ☑ Signed informed consent will be obtained. (Attach a copy of your form.)
☐ Modified informed consent will be obtained. (See instructions, item 9.)

10. Confidentiality of Data: Describe below the methods you will use to ensure the confidentiality of data obtained. (See instructions, item 10.)

Pseudonyms will be used. Participants will suggest one. If left blank, researcher will assign a pseudonym so that names will not be identified. Any detail in the interview data that might indicate their identity/name will be omitted from the transcript (especially if quoted). The researcher intends to provide copies of the interview transcripts for the participants to revise or indicate parts of data they do not wish the researcher to use.

11. Will subjects in the research be placed at risk or incur discomfort? Describe any risks to the subjects and precautions that will be taken to minimize them. (The concept of risk goes beyond physical risk and includes risks to subjects' dignity and self-respect as well as psychological or emotional risk. See instructions, item 11.)

Although it must be anticipated and recognized that the participants might feel that the researcher is intruding by asking for personal views - an instance of discomfort/emotional risk - every possible means will be used to make them at ease and to assure them that the researcher is assessing her own materials and her own decisions rather than making judgements about the participants. The researcher will assure them that she will welcome their comments and that the goal is to search for alternatives rather than 'wrong' or 'right' answers.

12. CHECK ALL of the following that apply to your research:
☐ A. Medical clearance necessary before subjects can participate
☐ B. Administration of substances (foods, drugs, etc.) to subjects
☐ C. Physical exercise or conditioning for subjects
☐ D. Samples (blood, tissue, etc.) from subjects
☐ E. Administration of infectious agents or recombinant DNA
☐ F. Application of external stimuli
☐ G. Application of noxious or potentially noxious stimuli
☐ H. Deception of subjects
☐ I. Subjects under 14 years of age and/or
☐ Subjects 14-17 years of age
☐ J. Subjects in institutions (nursing homes, mental health facilities, prisons, etc.)
☐ K. Pregnant women
☐ L. Research must be approved by another institution or agency (attach letters of approval)

If you checked any of the items in 12, please complete the following in the space below (include any attachments):

Items A-G Describe the procedures and note the proposed safety precautions.

Items D-E The principal investigator should send a copy of this form to Environmental Health and Safety, 118 Agronomy Lab for review.

Item H Describe how subjects will be deceived; justify the deception; indicate the debriefing procedure, including the timing and information to be presented to subjects.

Item I For subjects under the age of 14, indicate how informed consent will be obtained from parents or legally authorized representatives as well as from subjects.
Items J-K  Explain what actions would be taken to insure minimal risk.

Item L  Specify the agency or institution that must approve the project. If subjects in any outside agency or institution are involved, approval must be obtained prior to beginning the research, and the letter of approval should be filed.
APPENDIX E. POST-READING ACTIVITY INTERVIEW PROTOCOL

1. Views of the teaching unit
1.1 How did you find the unit generally?
   Possible variation: What do you think of the unit you've just done?
   Possible follow up questions: What do you mean 'interesting'/'good'/'fun'?
1.2 What was the designer of this unit trying to teach you?
1.3 Which part of the unit did you enjoy most/least? Explain?
1.4 In your opinion, which part of the unit can be omitted? Why?
1.5 Did you feel there was some logical order to the tasks?
   Possible follow up: Explain how there was/wasn't a particular sequence to it.

2. Views on specific parts of the teaching unit
2.1 Can you guess why there was a pre-reading activity in the unit?
2.2 Did you find the pre-reading activity of any help?
   Possible follow up: What did you learn from it?
2.3 What do you think is the relation between the pre-reading activity and the
   "comprehension tasks" after it?
2.4 Can you imagine doing the "comprehension tasks" without the prediction activity?
   Possible Follow up: Explain/why do you say that?
2.5 How helpful did you find the questions in the "prediction activity"?
   Possible follow up: How did they help? Why weren't they helpful to you?
2.6 How did you find the "comprehension tasks"? Explain/in what way?
2.7 How did you find the definitions provided with the text?
   Possible follow up: were they helpful? Did they bother you?
2.8 Did the tasks help you focus on the text? In what way? (e.g. general ideas Vs. specific
details)
2.9 When you finished the "comprehension tasks", did you feel you wanted to do more
   tasks? Explain.
2.10 What was the designer trying to have you focus on through the comprehension tasks?
   Possible follow up: Was it vocabulary, grammar, the writer’s ideas, etc.
2.11 What did you personally want to focus on?
2.12 How did you find the Post-reading task?
   Possible follow up: What else did you learn from it?
2.13 As a result of this study, I will be revising the design of the unit, do you have any
   suggestions for improving this unit? (Prompt on design and implementation)
2.14 Would you say online teaching units similar to this one should be used more often?
   Explain
"The Euro"

A Reading Unit

Overview

As part of this teaching unit you will be introduced to some of the issues surrounding the introduction of a single currency in Europe. The unit is made up of the following components:

- Prediction Task: It is designed to help you develop an idea about money in Europe and mainly to visualize the new currency.
- Reading Comprehension Tasks: This is the core of the unit. It includes a reading passage accompanied by a series of tasks designed to help you focus mainly on general and specific details as well as vocabulary in context.
- Check (dialogue 1 and dialogue 2): These are two fill-in-the-blanks exercises meant to help you assess your command of key words covered in the reading.

Note: This unit and the tasks associated with it are subject to copyright and should not be used for commercial purposes. However, fellow teachers of ESL/ELI wherever they may be are encouraged to implement this unit in their own classrooms. I would be interested in their comments and suggestions.
EU: The Euro — Clock Ticking to 1 January* (Part 1)
By Mark Baker

In less than four months, the 300 million citizens in the 12 member euro-zone will begin the process of switching over to the common euro currency. The European Central Bank, in charge of coordinating the currency launch, has started a publicity campaign in print media and on television and billboards. But already, unscrupulous elements are taking advantage of the information void. In a special three-part series on the introduction of the euro, RFE/RL correspondents Mark Baker and Breifne O'Brien look at what exactly will happen on 1 January 2002.

Prague, 13 September 2001 (RFE/RL) — It's being called the biggest currency reform in history. In less than four months, the 300 million people living in the 12 countries that make up the European Union's so-called 'eurozone' will begin the process of switching from their national currencies to using the common euro currency. Beginning 1 January and lasting until the end of February 2002, citizens in most euro-zone countries will be able to use both national currencies and euros for transactions in shops and stores. At the end of February, national denominations will no longer be accepted — although central banks will continue to exchange national currencies for euros for several years to come.

The Frankfurt-based European Central Bank (ECB), is in charge of coordinating the massive undertaking. Arch Heusgen, the director of the ECB's public affairs department, tells RFE/RL that the switchover — 'avoiding the monetary policies of 12 separate countries and involving 12 individual central banks — is the largest on record'. He cannot imagine — 'let's say if you consider the area and the period with which the switchover will be implemented — I think it is the largest currency reform. Naturally, I mean if you compare it to China or India you may have had bigger amounts, but clearly this is implemented is exceptional'.

The euro has been in existence for more than two years, but its use has been restricted to banks and corporations for virtual transactions. Until the beginning of this month, white

---

**Comprehension Tasks**

**Task 1:** Which of the following statements expresses best the main idea in the text? Put a check in the appropriate box.

- An experiment with the introduction of the Euro in a number of European countries
- The possible difficulties with the changeover to the Euro and the role of the European Central Bank in its implementation
- The fate of national currencies in countries outside of the EU
- Concerns over the future of the Euro after January 1, 2002
- Ways to recognize and inspect Euro bills and coins

**Task 2:** Referring to the text, decide whether the statements are 'true' or 'false'. Go on to the next task when you finish.

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The switchover to the Euro is going to be the largest monetary reform in this century.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>2. A two-year experiment at the level of national banks and corporations has just been completed.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>3. The European Central Bank is in charge of coordinating the massive undertaking.</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>4. Citizens in most euro-zone countries will be able to use both national currencies and euros for transactions in shops and stores.</td>
<td>True</td>
<td>False</td>
</tr>
</tbody>
</table>
In less than four months, the 300 million citizens in the 12-nation euro-zone will begin the process of switching over to the common euro currency. The European Central Bank, in charge of coordinating the currency launch, has started a publicity campaign in print media and on television and billboards. But already, unscrupulous elements are taking advantage of the information void. In a special three-part series on the introduction of the euro, RB/RL correspondents Mark Baker and BreifNi O'Suilleabhain look at what exactly will happen on 1 January 2002.

Prague, 13 September 2001 (RB/RL) – It’s being called the biggest currency reform in history. In less than four months, the 300 million people living in the 12 countries that make up the European Union’s so-called “currencies” will begin the process of switching from their national currencies to using the common euro currency. Beginning 1 January and lasting until the end of February 2002, citizens in most euro-zone countries will be able to use both national currencies and euros for transactions in shops and stores. At the end of February, national denominations will no longer be accepted — although central banks will continue to exchange national currencies for euros for several years to come.

The Frankfurt-based European Central Bank, or ECB, is in charge of coordinating the massive undertaking. Antti Heinen, the director of the ECB’s banknote department, tells RB/RL that the switchover — coordinating the monetary policies of 12 separate countries and involving 12 individual central banks — is the largest on record. "No one could imagine — let’s say if you consider the area and the period with which the switchover will be implemented — that it’s the largest currency reform. Naturally, I mean may be in China or in India you may have had bigger amounts, but clearly the way this is implemented it exceptional."

The euro has been in existence for more than two years, but its use has been restricted to banks and corporations for virtual transactions. Until the beginning of next month, when Euro Notes and coins will be available in shops, the switchover will be slow and painful. But it is already causing considerable problems among those who are not prepared for the changeover.

1. The twelve EU countries will:
   - select

2. The switchover is a complicated task because:
   - select

3. The ECB will have too much power
   - select

4. National banks will have to be closed down
   - select

5. Many currencies are involved
   - select

6. Manufacturers of ATM machines will need to figure out how to:
   - select

Task 4: In this exercise you will be required to guess the meaning of some words and expressions as they occur in the text. Focus is on the words and expressions in italics. Click in the appropriate box on the left.

1. The ECB will continue to exchange national currencies for euros for several years to come.
   - a) many years from now
   - b) depending on the circumstances
   - c) two or three years ago

Exchange Euro cash currency denominations into currency coins/investments
Dialogue 2

Fill in the gaps using the words provided, then check your answers. Use each word only once.

currency informing campaign circulation informing counterfeiting confusing advertisements

Why did the Euro seem to be put into circulation?
Eclair: Yes, it's going to be difficult.
Fleur: On paper? And why this?
Eclair: Nobody has a clue, but the currency is supposed to look like this.
Fleur: Isn't the European Central Bank working on the result?
Eclair: Right. They'd better get it going soon.

Congratulations !!!!!

You have now completed the teaching unit.

Thank you for trying it out.

Please send comments to fderbel1@jstate.edu
Couple working to weaken opium’s grip

Clark University graduate Robert J. Bouvier likes to joke that he and his wife, Ioana, met over opium. Their initial meeting wasn’t quite that exotic. The two share a deep understanding of the grim influence opium cultivation has on the lives of villagers in a northeastern region of Myanmar, formerly Burma. Mr. Bouvier and his Romanian-born bride met in 1999 at Clark after he returned from a six-month stay in Myanmar. Both received master’s degrees this year from Clark in geographic information systems and international development. The couple took time out from their wedding preparations Thursday to discuss the opium market in Myanmar and the steps that need to be taken to change the region’s economy.

If it were not for the need to grow a crop easily exchanged for food, Mr. Bouvier said, men in the Wa Special Zone of Myanmar would not become addicted to the opiate, and some women and girls would not have to turn to prostitution and sweatshops to survive.

“The Wa area accounts for 10 percent of all illicit opium on the world market,” Mr. Bouvier said.

Opium is an addictive drug prepared from the juice of unripe seed capsules of the opium poppy, Papaver somniferum, which has grayish-green leaves and large white or purple flowers. Powerful painkillers, such as morphine and codeine, are derived from opium. Of the approximately 5,500 households in the Wa zone, about 2,513...
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Refer to the text and guess the meaning of the words and expressions. These are in bold in the text.

1. Bouvier and his wife share a deep understanding of the grim influence opium cultivation has on the lives of villagers:
   - serious
   - annoying
   - difficult

2. Morphine and codeine are derived from opium:
   - cited
   - extracted
   - cultivated

* Myanmar is bordered by Laos, Thailand, China and...
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