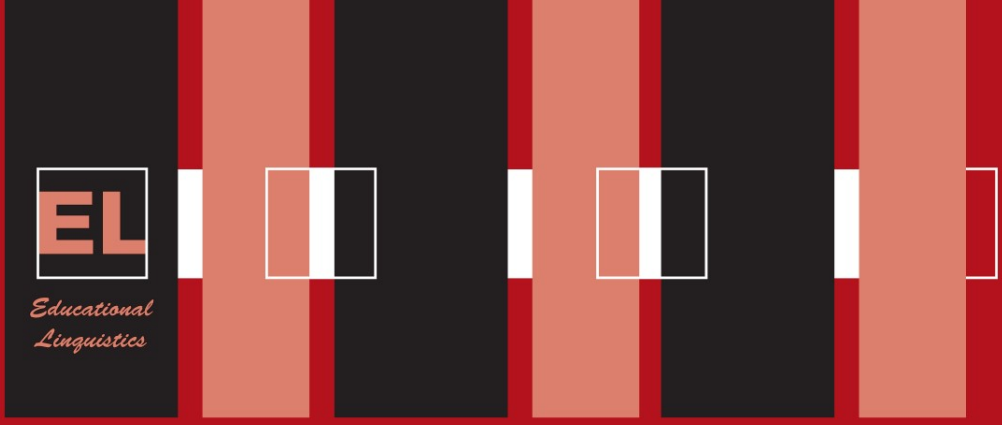


Information Technology in Languages for Specific Purposes

Issues and Prospects

Edited by
Elisabet Arnó Macià
Antonia Soler Cervera
Carmen Rueda Ramos

Springer

Information Technology in Languages for Specific Purposes

Issues and Prospects

Educational Linguistics

Volume 7

General Editor:
Leo van Lier
Monterey Institute of International Studies, U.S.A.

Editorial Board:
Marilda C. Cavalcanti
Universidade Estadual de Campinas, Brazil
Hilary Janks
University of the Witwatersrand, South Africa
Claire Kramsch
University of California, Berkeley, U.S.A.
Alastair Pennycook
University of Technology, Sydney, Australia

The *Educational Linguistics* book series focuses on work that is: innovative, trans-disciplinary, contextualized and critical.

In our compartmentalized world of diverse academic fields and disciplines there is a constant tendency to specialize more and more. In academic institutions, at conferences, in journals, and in publications the crossing of disciplinary boundaries is often discouraged.

This series is based on the idea that there is a need for studies that break barriers. It is dedicated to innovative studies of language use and language learning in educational settings worldwide. It provides a forum for work that crosses traditional boundaries between theory and practice, between micro and macro, and between native, second and foreign language education. The series also promotes critical work that aims to challenge current practices and offers practical, substantive improvements.

The titles published in this series are listed at the end of this volume.

Elisabet Arnó Macià
Antonia Soler Cervera
Carmen Rueda Ramos
Editors

Information Technology in Languages for Specific Purposes

Issues and Prospects

Springer

Editors:
Elisabet Arnó Macià, Antonia Soler Cervera, Carmen Rueda Ramos
Universitat Politècnica de Catalunya, Barcelona, Spain

Library of Congress Cataloging-in-Publication Data

A C.I.P. Catalogue record for this book is available
from the Library of Congress.

ISBN 10: 0-387-28595-4 ISBN 13: 9780387285955 Printed on acid-free paper.
e-ISBN 10: 0-387-28624-1 eISBN 13: 9780387286242

Library of Congress Control Number: 2005933092

© 2006 Springer Science+Business Media, Inc.
All rights reserved. This work may not be translated or copied in whole or in part without the written permission of the publisher (Springer Science+Business Media, Inc., 233 Spring Street, New York, NY 10013, USA), except for brief excerpts in connection with reviews or scholarly analysis. Use in connection with any form of information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now know or hereafter developed is forbidden.
The use in this publication of trade names, trademarks, service marks and similar terms, even if the are not identified as such, is not to be taken as an expression of opinion as to whether or not they are subject to proprietary rights.

Printed in the United States of America.

9 8 7 6 5 4 3 2 1 SPIN 11393788

springeronline.com

Dedication

This book is dedicated to our "better halves", Vicenç, Rafa, and Luis, for their patience when they have had to do without "the other half".

Contents

Contributing Authors

Christine Appel	*Dublin City University, Dublin, Ireland*
Elisabet Arnó	*Universitat Politècnica de Catalunya, Barcelona, Spain*
M. Rosario Caballero	*Universidad de Castilla-La Mancha, Ciudad Real, Spain*
Ying Ying Cheng	*Fortune Institute of Technology, Kaohsiung, Taiwan*
Claudia Devaux	*The Guli Institute, San Francisco, USA*
Inmaculada Fortanet	*Universitat Jaume I, Castelló de la Plana, Spain*
Roger Gilabert	*Universitat Ramon Llull, Barcelona, Spain*
M. Isabel González	*Universidad de Zaragoza, Zaragoza, Spain*
Deborah Healey	*Oregon State University, Corvallis, OR, USA*
Virginia Hussin	*University of South Australia, Adelaide, Australia*
David Lasagabaster	*Universidad del País Vasco, Vitoria-Gasteiz, Spain*
María José Luzón	*Universidad de Zaragoza, Zaragoza, Spain*
Lourdes Melcion	*University of Surrey-Roehampton, London, UK*
Renate Otterbach	*University of San Francisco, San Francisco, USA*
Jordi Piqué	*Universitat de València, València, Spain*
Santiago Posteguillo	*Universitat Jaume I, Castelló de la Plana, Spain*
Vassiliki Rizomilioti	*University of Patras, Patras, Greece*
Carmen Rueda	*Universitat Politècnica de Catalunya, Barcelona, Spain*
M. Noelia Ruiz	*Universitat Jaume I, Castelló de la Plana, Spain*
Mike Scott	*University of Liverpool, Liverpool, UK*
Juan Manuel Sierra	*Universidad del País Vasco, Vitoria-Gasteiz, Spain*
Antonia Soler	*Universitat Politècnica de Catalunya, Barcelona, Spain*
John M. Swales	*University of Michigan, Ann Arbor, MI, USA*
Ruth Trinder	*Vienna University of Economics and Business Administration, Vienna, Austria*

Foreword

I first used the Internet in fall 1993, as a Fulbright Scholar at Charles University in Prague. I immediately recognized that the Internet would radically transform second language teaching and learning, and within a year had written my first book on the topic, *E-Mail for English Teaching.* The book galvanized a wave of growing interest in the relationship of the Internet to language learning, and was soon followed by many more books on the topic by applied linguists or educators. This volume, though, represents one of the first that specifically analyzes the relationship of new technologies to the teaching of languages for specific purposes (LSP), and, in doing so, makes an important contribution.

The overall impact of information and communication technology (ICT) on second language learning can be summarized in two ways, both of which have special significance for teaching LSP. First, ICT has transformed the *context* of language learning. The stunning growth of the Internet—resulting in 24 trillion email messages sent in 2005, and more than 600 billion Web pages and 50 million blogs online in the same year—has helped make possible the development of English as the world's first global language. English is no longer the sole possession of a few colonial countries, but rather is now the unofficial lingua franca of the world. Increasingly, universities and businesses are using English as a main language of communication, even if they are located in countries where English was formerly considered a foreign language, such as Sweden, the Netherlands, or Egypt. And professionals in a wide variety of fields throughout the world, whether or not they use English in face-to-face communication regularly, use English on a daily basis online. It is no exaggeration that the languages for specific purposes field owes its current prominence to the development of the Internet and the correspondingly enhanced need to use English for

specific purposes by people throughout the world. Of course, as the editors of this volume point out, the field of LSP is broader than the field of English for Specific Purposes, and while this book addresses largely the latter, much of it will be relevant to those of interest in teaching other languages. And indeed, over time, with the rise in global prominence of languages such as Chinese, Spanish, and Arabic, the teaching of diverse languages for specific purposes will increase. For now, though, we are entering an era in which the educated populace of much of the world will require some knowledge of English for either academic or occupational purposes—and the development and diffusion of ICT is largely responsible for this expanding role of English.

ICT has also changed *how* people learn languages. The primary challenge of second language learning has always been to allow people sufficient contact with the target language and its users to foster an immersive experience. It is for this reason that study abroad programs have long been so popular for second language learning. Promoting this kind of immersive experience has always been a more difficult challenge in the area of LSP, as learners must enter into not just a general linguistic community (e.g., of English speakers) but rather a highly specialized one (e.g., of English-speaking mechanical engineers). The Internet provides a vast and valuable repertoire of authentic material and potential interlocutors for language analysis, practice, and learning. With the Internet, even those studying language for a very narrow and specific purpose can likely find relevant target language materials, as well as an interactive community to engage with.

In our 2000 edited collection, *Network-Based Language Teaching: Theory and Practice*, Richard Kern and I interpreted the significance of this changing terrain of second language use and study. We described the historical turn from a structural approach to language learning (based on study of abstract grammatical rules) to a communicative approach (based on practical communication and development of interlanguage) to what we termed a sociocognitive approach (based on attention to language form in the context of authentic language use). In our delineation of a sociocognitive approach, we posited that meaning is found not so much in the mind of the individual learner, but rather in the interaction between interlocutors, writers, and readers, constrained by interpretive rules of the relevant discourse community.

In *Information Technology in Languages for Specific Purposes: Issues and Prospects*, Arnó, Soler and Rueda, and their contributors have further advanced the field of network-based language teaching and research by examining how computer-mediated resources and communication can be used to draw attention to language form in the context of authentic language

use *for specific purposes*. Given the natural match between ICT and LSP, it is surprising that relatively little has been published in this area. This volume helps rectify that. The conference the volume was based on brought together a diverse range of scholars from Europe, North America, Asia, and Oceania. The well-edited collection of their papers covers the broad range of relevant topics on the issue, from corpus-based learning, to computer-mediated communication, to dictionary development, to autonomous learning, and the papers are thoughtfully framed and analyzed in valuable introductory and concluding chapters. I am very pleased to see the discussion of such a wide range of technology-based LSP projects from around the world brought together in a single volume, and view this book as making an outstanding contribution to the analysis of ICT use in language learning.

Mark Warschauer
University of California, Irvine
July, 31 2005

Acknowledgments

The editors of this volume would like to thank all the participants at the 6th International Conference on Languages for Specific Purposes (CILFE 6), who contributed to a lively debate on the topic of IT in LSP. This book would not have been possible without the professionalism of the authors of the chapters. We are particularly indebted to them for having supported and encouraged this project from the very beginning and for their patience with the editing process.

Our special thanks are also due to our board of external reviewers for their insightful and relevant suggestions: Rafael Alejo (Universidad de Extremadura), Lurdes Armengol (Universitat de Lleida), Ana Bocanegra (Universidad de Cádiz), Amparo García Carbonell (Universitat Politècnica de València), Mar Gutiérrez-Colon (Universitat Rovira i Virgili), Deborah Healey (Oregon State University), Enric Llurda (Universitat de Lleida), Carme Muñoz (Universitat de Barcelona), Jordi Piqué (Universitat de València), Santiago Posteguillo (Universitat Jaume I de Castelló), Elsa Tragant (Universitat de Barcelona), and Frances Watts (Universitat Politècnica de València). We would like to extend our gratitude to the editorial team at Springer, and especially to Professor Leo Van Lier, General Editor of the Educational Linguistics Series, for his advice and support. Thanks are also due to Cristina Mallafré for her help with the formatting of the manuscript.

Jordi Piqué deserves a special mention, not only for his active participation in the book, both as a contributor and as a reviewer, but for his friendship, generosity and whole-hearted support ever since we started working in the field of LSP. His constant guidance and good advice encouraged us to embark on this journey.

INTRODUCTION

Chapter 1

THE ROLE OF INFORMATION TECHNOLOGY IN LANGUAGES FOR SPECIFIC PURPOSES: SOME CENTRAL ISSUES

Elisabet Arnó Macià, Antonia Soler Cervera, Carmen Rueda Ramos
Universitat Politècnica de Catalunya (Barcelona, Spain)

> *Science and technology multiply around us. To an increasing extent they dictate the languages in which we speak and think. Either we use those languages, or we remain mute.*
>
> J.G. Ballard, 1974 Introduction to the French edition of *Crash*, 1973 (Columbia).

1. IT IN LSP: BACKGROUND AND APPROACHES

In the last years, we have witnessed significant advances in technology, which have not only changed our world but also become part of modern life. And like any other aspect of our lives, our work in the field of Languages for Specific Purposes (LSP) has also been transformed by technology, especially by the use of computers in our daily tasks as teachers and researchers. Technology is not viewed as an optional resource, something that can be dispensed with, but it is a reality. For some time, there has been a great deal of discussion as to whether and how we should integrate information technology (IT) into language teaching, yet at present the focus is shifting towards making the most of this technology, since its presence cannot be

ignored. Following this trend, we were particularly interested in reflecting on how technology has changed our practice and, especially, how it can be exploited to take full advantage of its potential, both for teaching and research applications, which form an integral part of LSP practice.

As this volume reflects a wide range of LSP situations, it is necessary first to define what we mean by LSP or ESP (English for Specific Purposes), as it is often referred to as. We follow Hutchinson & Waters (1987: 19) in that it does not refer to "a product", but rather to "an approach to language learning which is based on learner need". A more specific definition, which can provide a comprehensive framework for understanding the different contexts depicted in this volume, is that developed by Dudley-Evans & St. John (1998), which is in turn based on an earlier definition by Strevens (1988), expressed in terms of absolute and variable characteristics.

Absolute characteristics:

- ESP is designed to meet specific needs of the learner;
- ESP makes use of the underlying methodology and activities of the disciplines it serves;
- ESP is centred on the language (grammar, lexis, register), skills, discourse and genres appropriate to these activities.

Variable characteristics:

- ESP may be related to or designed for specific disciplines;
- ESP may use, in specific teaching situations, a different methodology from that of general English;
- ESP is likely to be designed for adult learners, either at a tertiary level institution or in a professional work situation. It could, however, be used for learners at secondary school level;
- ESP is generally designed for intermediate or advanced students. Most ESP courses assume basic knowledge of the language system, but it can be used with beginners.

(Dudley-Evans & St. John, 1998: 4-5)

Later in this chapter we will return to this definition, to examine in more detail the variety of LSP situations presented in this book.

Within the general framework of LSP described above, the role of information technology can be approached from different perspectives. On the one hand, as regards the applications of technology in language learning, we can draw on the large number of research studies and pedagogic resources that are being published in the field of IT in English Language Teaching (ELT). These include, for example, Warschauer & Healey's (1998) review article on the stages of computer-assisted language learning (CALL),

Chapelle's (2001, 2003) work on the use of computers to foster language learning, Warschauer & Kern's (2000) collection of articles on network-based language teaching, and, from a practical perspective, Warschauer et al. (2000), who make specific proposals for integrating the Internet into language teaching. On the other hand, in the field of LSP, more and more attention is being paid to the features of academic and professional discourse. A considerable body of research is being published, among which recent works such as Flowerdew & Peacock (2001) stand out, with a state-of-the-art review of current concerns for researchers and teachers in the field of English for Academic Purposes (EAP), or Flowerdew (2002) with a collection of studies on academic discourse, as well as the widespread journal *English for Specific Purposes*. In our most immediate context, there have also been valuable contributions that have influenced our view of the field. As for the use of IT in language teaching, Trenchs (2001) presents a series of proposals covering self-access centres, virtual environments, simulations, corpora, and the Internet. In relation to LSP research, works such as Piqué & Viera (1997) or Fortanet et al. (1998) deserve special attention as well as *Ibérica*, the journal of the European Association of Languages for Specific Purposes.

2. AIMS AND SCOPE OF THE VOLUME

Given this growing body of research in both areas, we decided to create a space for fellow researchers and teachers to discuss and exchange views, studies, and materials focusing on IT in LSP. This motivation led us to organize the 6th International Conference on Languages for Specific Purposes (*Congrés Internacional de Llengües per a Finalitats Específiques, CILFE 6*) as a monographic event around the topic "The Role of Information Technology in LSP Research and Pedagogy", held at Universitat Politècnica de Catalunya at Vilanova i la Geltrú (Barcelona, Spain) in January 2003, a conference which inspired the present volume. All the chapters in this book were based on selected papers and keynote lectures given during the conference.

The purpose of this volume is to offer an overview of an ample variety of applications of IT in the field of LSP. It is addressed to a wide audience that includes LSP teachers and researchers, although the contents may also be relevant to applied linguists working in other fields. This book contains research studies as well as educational experiences and proposals, presented from different perspectives and backgrounds (both geographical and cultural), all of which are theoretically grounded and with a clear and sound rationale. Thus, the reader will find a variety of educational projects and

research studies situated in specific educational contexts and in particular geographical locations. Although not intended for generalization, we believe they are valuable technology-based educational solutions that can offer new insight and reflections that may help readers create their own tools and carry out further research. For this reason, the book focuses on central topics that have aroused the interest of LSP professionals. In turn, this thematic selection has helped us organize the chapters into thematically-related sections covering the main areas of research and practice in the field.

The selection of articles for this volume was mainly based on two criteria. First, we included reviews of areas of active research, to offer reference material for other specialists, as well as specific research studies on topics of general interest. Second, we incorporated discussions of current approaches, accounts of learning experiences, and the development of practical applications of IT in LSP. With this selection we aimed at encouraging readers to reflect on the role of IT in LSP, to pursue new research studies, and to incorporate approaches and experiences into their own teaching practice. As a whole, the chapters of this book are pervaded by an integrative view of technology, which is not considered to be separate from LSP teaching and research. Information technology, as Chapelle (2003) points out, is an essential part of the applied linguist's work, rather than a corollary which is added to existing resources and contents, in that it is a tool which enables us to achieve goals that go beyond the use of technology itself. "Technology-based language teaching and research", she further notes, "is not a departure from applied linguistics. It is a continuation—the 21st century version of what applied linguists do" (30). Similarly, van Lier (2002: 50) advocates for the role of technology, not "as an alternative to classroom teaching, or as replacing the teacher, but as a tool that facilitates meaningful and challenging classroom work".

What all the chapters in this book have in common is that they deal with the appropriate use of technology to satisfy the particular demands related to different LSP situations. They are not presented, however, as *ad hoc* solutions to practical problems; quite on the contrary, they involve a more general reflection which can provide new insights into the application of IT in LSP. With this perspective in mind, the present volume aims at showing a wide range of LSP situations, according to the extended definition mentioned above (Dudley-Evans & St. John, 1998). It is noticeable that although the term LSP is used throughout, given the international dimension of the volume—with contributors from different countries and several projects involving cross-cultural issues—the target language in almost all cases is English, which is not surprising considering the preponderance of English as the international language of communication. In fact, LSP has its origins as ESP (and in many cases the term ESP is still used), when English

became the language of industry and commerce with the US leading role after World War II (see e.g. Hutchinson & Waters, 1987; Robinson, 1991; and Dudley-Evans & St. John, 1998).

Thus, throughout the volume the reader will find studies focusing on the language and genres used both in specific disciplines and across disciplines within the same academic setting. Some of the chapters also deal with teaching situations in which students share a specific discipline and even, in some cases, with highly specified needs. A common division that is made in LSP (or ESP) is also present in this book, namely English for Academic Purposes (EAP) as opposed to English for Occupational Purposes (EOP). The area of EAP has received special attention on the part of researchers and teachers over the last few years and this book reflects this trend, with chapters devoted to EAP both within a single discipline (that is, English for Specific Academic Purposes, or ESAP) and across disciplines (that is, English for General Academic Purposes, or EGAP). However, both of the above classifications, EAP and EOP, often tend to overlap, such as in English for Engineering or Business English, with university language courses that address students' academic and professional needs related to their discipline. All these varied situations are dealt with in this volume, thus showing a wide range of contexts in which English is used for clearly identified needs, and technology plays a key role in improving these research and teaching situations.

According to the view presented above, this book covers two main strands, pedagogy and research. As for the first, technology and LSP teaching, contributions focus on some central themes in technology and language learning, which for quite a while have attracted the attention of researchers in the field of ELT and deserve further exploration with regard to their application in LSP settings. The chapters dealing with pedagogical aspects of IT in LSP, which include proposals, experiences and research studies, can be situated within the latest trends in CALL applications, which in turn reflect a parallel evolution of technology and theories of language education. CALL has undergone an important transformation over the last decades. Since it started to become popular in the 1960s and 1970s, with drill-type exercises based on a behaviourist paradigm, it has gone through three developmental stages, according to the changing pedagogical theories: "behaviourist CALL", "communicative CALL" and "integrative CALL" (Warschauer & Healey, 1998). Similarly, Kern & Warschauer (2000) describe the evolution of CALL in terms of the roles that have been assigned to the computer, using metaphors for computer-based activities. Thus, with the closed grammar exercises of the structural approach, the computer was seen as "a tutor" (i.e. "tutorial metaphor"). Then, with the advent of cognitive approaches, computer-based activities were designed from the

perspective of a "construction metaphor", whereby the learner engaged in problem-solving activities to "teach" the computer, as if it were a pupil. Later, and from a socio-cognitive paradigm, the computer has come to be considered a tool to achieve broader goals, as a tool for communication or organizing information, for example (i.e. "toolbox metaphor"). Nowadays, technology is integrated in regular classroom practice, progressively reducing the traditional separation between the classroom and the computer lab.

Recently, the focus of CALL has centred on the learning potential offered by computer-mediated communication, with applications such as collaborative learning, the use of virtual environments, Internet utilities, and online courses, among many others. As Kern & Warschauer (2000: 1) point out "CALL has come of age" with the opportunities offered by computer networks. In fact, these authors make a distinction between NBLT (network-based language teaching) and CALL. Although NBLT is part of CALL, the latter is usually associated with the use of computers with self-contained material, whereas NBLT focuses on human-to-human communication in which the computer is a tool:

> [Network-based language teaching] is a constellation of ways by which students communicate via computer networks and interpret and construct on-line texts and multimedia documents, all as part of a process of steadily increasing engagement in new discourse communities. (17)

Computer-mediated communication (CMC) has an important role in this book. Some chapters concentrate specifically on this particular aspect. They examine its potential for learning, as CMC offers students the possibility of planning their writing and paying attention to language use, thus integrating the dimensions of process and product (see e.g. Warschauer, 2002a). In other chapters, even though it is not the main focus, CMC is at the core of the pedagogical applications described. Some of the studies in this book could be included within what Kern et al. (2004) call the "second wave of online language learning". Beginning a few years ago, this second wave embraces a broader view of online learning which focuses on cross-cultural concerns, identity, social discourses, and long-distance collaboration, with an emphasis on the interplay between the intervening contextual factors (see discussion in Kern et al., 2004).

The chapters dealing with CALL embrace a wide variety of applications, mainly related to the use of the Internet, as well as multimedia and hypermedia. Thus, Internet applications discussed in this book include communication through e-mail and forum discussions, the creation and delivery of online courses (see e.g. White, 2003), different types of virtual environments, as well as the use of the World Wide Web. The rationale

underlying all of these applications is to provide students with tools to make the most of the Internet for its learning potential. These pedagogical proposals are presented in contextualized, meaningful situations relevant to different types of LSP students. In line with the integrative view of technology mentioned above, these computer-based tools form an essential part of their activity, as students need to use these learning instruments for achieving higher educational goals. In this sense, such applications, rooted in sound theoretical frameworks of language education, aim at enabling students to develop different types of cognitive, metacognitive and social strategies, to familiarise them with the electronic literacies (see, for example, the discussion in Warschauer, 2002a) they need in order to succeed in their field of study, and even to transform their view of learning so as to become more active and autonomous. In other words, there is a special emphasis on learner centredness, which is manifested in many different ways: students become the protagonists of the learning process, learner autonomy is promoted, students' perspectives and attitudes are taken into account, and learning applications provide scaffolding adjusted to the students' particular needs, to name a few examples.

Going beyond the effectiveness of the learning tools discussed, some of the projects and proposals are presented from the perspective of different geographical and cultural settings, thus seeking to contribute to the reduction of the "digital divide". By "digital divide" we understand the gap that exists between those who have access to information and technology and those who do not, which mainly refers to the Internet. Although a fairly recent term, the notion of "digital divide" derives from an older concept based on the idea that knowledge and information are power, and the different technologies—first telephony, then computers, and finally the Internet—are the means to access information, thus widening the breach between the privileged and the underprivileged, i.e. the "haves" and "have-nots" (see e.g. Compaine, 2001). Among the factors that contribute to establishing the digital divide, Castells (2001) mentions the technological dimension and the knowledge dimension; the latter, which may not be so apparent, refers to the ability to make the most of the technology. The digital divide should not be regarded in simplistic terms; as Warschauer (2003) points out, it is not a "binary" distinction between the "haves" and "have-nots" but a complex situation that is not easily resolved by simply providing the technology. This broader view is reflected in the projects and experiences in this book. For each of them, contextual and cultural factors have been carefully considered in order to bridge this divide and thus achieve an efficient use of technology (not as an end, but as a means). To describe this view, it is particularly relevant to refer to the point made by Warschauer (2003) that, instead of using the metaphor of the "fire model" of technological innovation (i.e. that

technology will lead to development as a fire provides warmth), it is more appropriate to use the "clothing model" (i.e. it also provides warmth, while it is adjusted to individual needs). This idea is in keeping with one of the views of technology mentioned above, namely that technology per se does not bring about innovation; rather, it is an instrument to achieve higher goals.

From the perspective of LSP teachers and learners, information technology plays a key role in developing strategies for effective communication, both in academic and professional settings. In this ever-changing and fast-paced world, the demands and skills associated with professional practices need to be integrated into the teaching of academic and professional communication. As a result, we consider the professional communicator as an information manager, who needs technology as a tool for communication as much as for his or her own professional practice. These communicative practices in the workplace include, for example, accessing computer networks and databases to search for and share information, as well as using the emerging electronic genres that combine features of written and spoken language. In the case of LSP students, in particular, technology becomes the gateway to their future profession as it allows them to get immersed in authentic materials related to their discipline and to communicate with others, thus helping them become familiar with the genres and practices of the discourse community (see Warschauer, 2002b).

A prominent feature of IT in LSP pedagogy is the fostering of learner autonomy. Technology and autonomy have, for a long time, been related. Many CALL applications have attempted to help students become more autonomous, and there has been a great deal of discussion as to the role of technology in the development of learner autonomy (see e.g. Benson, 2001). The concept of autonomy has evolved, just as the technology itself has evolved, and has led to a reappraisal of what it means to be autonomous and how technology can help. By autonomy we do not mean working individually with the computer using stored programmes but developing the necessary skills and strategies for selecting information, working with it, and sharing it with other people, which is all the more necessary in such an increasingly networked society with an overload of information. An interesting aspect that deserves special attention within LSP is how to develop learner autonomy in higher education. In this volume, particular emphasis is placed on the learner making decisions about the process, the opportunities technology offers for developing an autonomous behaviour and, at the same time, the skills that are required from learners to integrate technology in the learning process, whether in a classroom-based or distance course (see e.g. Arnó et al., 2003; Soler et al., 2005).

The second main strand of this book has to do with the use of technology in LSP research. Technology has propelled corpus-based studies, which have

in turn evolved along with technological developments. As computers have allowed us to compile different types and large amounts of corpora, together with tools for their analysis, a large number of studies have been carried out in both oral and written discourse in recent years. Particularly relevant to this volume are specialised corpora, which allow the study of academic and professional genres and thus gain a better understanding of the practices of the discourse community. The concept of genre analysis (see Swales, 1990) lies at the very core of this discipline. In addition to the study of written genres, over the last years more and more attention is being paid to oral genres, with special emphasis on the features of spoken language and the notion of communicative purpose.

The analysis of specialised corpora has shown differences across disciplines as well as across genres. From the results of these studies, important implications have been derived in teaching languages for academic purposes and to help specialists succeed in the discourse community. The role of technology has proved to be crucial in the study of specific genres. Technological tools have been developed for the analysis of large corpora, with applications like *WordSmith Tools* (Scott, 1996) and notions like "key words" (Scott, 2002), which are intended to help readers grasp the main idea of a text. Finally, another related application of technology in LSP can be found in the field of lexicography, with the development of specialized dictionaries. In this volume, a whole section has been devoted to the analysis of corpora of written and spoken discourse, while another section of the volume deals with aspects of specialized terminology and the use of technology for its analysis.

3. ORGANIZATION OF THE VOLUME

Given that IT has played a major role in LSP teaching and research and that both activities are inextricably linked, throughout the book we have sought to keep a balance between teaching and research, with most of the chapters having this double orientation. Our aim is to offer the reader a wide-ranging collection of articles with some of the latest research and teaching projects on key topics relevant to IT in LSP. The chapters have been organized into five different thematic sections. Thus, part one is devoted to corpus-based studies, with research papers which not only look into prominent features of academic spoken and written English but can also give rise to pedagogic implications for the teaching of English for Academic Purposes. In the first chapter of this section, John Swales, on the basis of a previous article on the Michigan Corpus of Academic Spoken English (MICASE) (Swales, 2002), reviews the principles for its creation and

reflects on the potential of such specialized corpora as well as on the challenges that linguists face when working with corpora. Especially focusing on the relationship between research and pedagogy mentioned before, he proposes some teaching materials for EAP students which engage learners as discourse analysts. In the next chapter, also based on the MICASE project, Inmaculada Fortanet analyses the use of the pronouns "I" and "You" in spoken academic English. This study, using both quantitative and qualitative methods, looks at frequency, functions and referents of these pronouns. Finally, in the last chapter of this section, Vassiliki Rizomilioti focuses on academic written discourse, with the analysis of epistemic modality in a corpus of specialized journal articles belonging to humanities and science disciplines.

The second part of the volume deals with computer-mediated communication and the possibilities it opens up for LSP teaching. The first chapter in this section, by Christine Appel and Roger Gilabert, reports on a collaborative project between LSP students in Dublin and Barcelona. Through a specific tailor-made virtual environment called "Electronic Tandem Resources", both groups of students took part in a tandem e-mail exchange. The authors study the effects of using a task-based approach on the students' production. In the next chapter, Virginia Hussin describes a virtual environment designed to cater for the specific needs of nursing and business students, with emphasis on developing skills for successful cross-cultural communication in the workplace. This project has been designed to meet the specific needs of the target students, taking into account the cultural and geographical features of an Australian university. The following chapter, by M. del Rosario Caballero and M. Noelia Ruiz, outlines the development of a multimedia learning environment designed to foster learner autonomy in an LSP context, which allows students to make decisions about the learning process by choosing their own learning paths, according to their individual learning profiles. Learners can create these routes by establishing a dialogue with the system. Through the interaction between the student and the machine, learners can take the initiative and maximise the opportunities for personalising their individual work.

Part three is devoted to exploring specific technology-based projects in different educational settings. The two projects described in this section reflect the adaptation of technology in very diverse societal, cultural and economic backgrounds and, at the same time, the collaboration among institutions of the United States and other countries. The two chapters in this section describe an appropriate use of technology for enhancing learning and collaboration and thus contribute to bridging the "digital divide". Claudia Devaux, Renate Otterbach and Ying Ying Cheng present the collaborative effort of three institutions—from China, United States, and Taiwan,

respectively—to help Asian LSP students transform their view of learning in order to become more active and autonomous, with the help of IT resources. On the other hand, Deborah Healey presents the "Tunisia Oregon Project", which aims at helping Tunisian language educators make the most of the Internet for both their teaching practice and their own professional development. In her chapter, Healey shows how collaboration and the effective use of low-cost technological resources may become powerful enabling tools for Tunisian teachers.

In part four, the chapters focus on the use of technology to promote learner autonomy in higher education. Within an EAP context, David Lasagabaster and Juan Manuel Sierra report on a study that seeks to gather university students' views on the use of different types of CALL programs in a self-access centre. The ultimate goal of their study is to incorporate students' perspectives as autonomous learners into the design of more effective CALL applications. In the next chapter, María José Luzón and María Isabel González reflect on the potential of the Internet as a source of materials for the development of learner autonomy in an ESP context. The authors stress the WebQuest as an especially appropriate format for teachers to design activities that can help their students become more autonomous. The last chapter in this section, by Ruth Trinder, discusses an e-learning project, consisting of a web-delivered course combined with classroom-based sessions. The article analyses the considerations that course designers have taken into account to develop the Online English Mentor, a virtual environment intended to foster ESP students' learner autonomy.

The chapters in part five cover aspects related to terminology and lexis, applied to the teaching and translation of specialised languages. In the first chapter, Jordi Piqué-Angordans, Santiago Posteguillo, and Lourdes Melcion present the development of a bilingual dictionary of Computing that uses technology in two ways: as the area of specialisation and as the means for its development. As for the former, the authors discuss the considerations for translating neologisms in the ever-changing field of computing. As for the latter, they deal with the process of creating a bilingual dictionary using corpora and other technological tools. The second chapter, by Mike Scott, the creator of *WordSmith Tools*, explores the concept of "key words" and their associations, stressing their use as an aid in reading comprehension. The author suggests that this concept can be applied to the development of learning activities for LSP students and provides some examples.

Although no single volume can provide a thorough coverage of such a vast area as the role of IT in LSP, this collection of articles gives us an overview of some central issues of current interest. It is our hope that this joint effort, carried out by LSP teachers and researchers, can help other colleagues "speak" the newer languages of technology, instead of

"remain[ing] mute" (to borrow Ballard's words from the quote at the beginning of this chapter). In a globalised and networked world, technology should help us reach out to other parts of the world to share and exchange common interests and concerns, from the perspective of different cultural backgrounds, languages, and even the "specific purposes" for which each one of us uses technology today.

REFERENCES

Arnó, E., C. Rueda, A. Soler and C. Barahona (2003). Developing learner autonomy through a virtual EAP course at university. *BELLS: Barcelona English Language and Literature Studies* 12. Available at <http://www.publicacions.ub.es/revistes/bells12/articulos.asp?codart=92>

Benson, P. (2001). *Teaching and Researching Autonomy in Language Learning.* Harlow, Essex: Longman.

Castells, M. (2001). *La Galaxia Internet: Reflexiones sobre Internet, Empresa y Sociedad.* (Translated by R. Quintana, *The Internet Galaxy: Reflections about the Internet, Business, and Society*). Barcelona: Plaza y Janés.

Chapelle, C.A. (2001). *Computer Applications in Second Language Acquisition: Foundations for Teaching, Testing, and Research.* Cambridge: Cambridge University Press.

Chapelle, C.A. (2003). *English Language Learning and Technology: Lectures on Applied Linguistics in the Age of Information and Communication Technology.* Amsterdam: John Benjamins Publishing.

Compaine, B.M. (2001). *The Digital Divide: Facing a Crisis or Creating a Myth.* Cambridge, MA.: The MIT Press.

Dudley-Evans, T. and M. St. John (1998). *Developments in English for Specific Purposes: A Multidisciplinary Approach.* Cambridge: Cambridge University Press.

Flowerdew, J. (ed.) (2002). *Academic Discourse.* London: Longman.

Flowerdew, J. and M. Peacock (eds.) (2001). *Research Perspectives on English for Academic Purposes.* Cambridge: Cambridge University Press.

Fortanet, I., S. Posteguillo, J.C. Palmer and J.F. Coll (eds.) (1998). *Genre Studies in English for Academic Purposes.* Castelló de la Plana: Publicacions de la Universitat Jaume I.

Hutchinson, T. and A. Waters (1987). *English for Specific Purposes.* Cambridge: Cambridge University Press.

Kern, R., P. Ware and M. Warschauer (2004). Crossing frontiers: New directions in online pedagogy and research. *Annual Review of Applied Linguistics* 24, 243-260.

Kern, R. and M. Warschauer (2000). Theory and practice of network-based language teaching. In M. Warschauer and R. Kern (eds.) *Network-based Language Teaching: Concepts and Practice.* New York: Cambridge University Press. 1-19.

Piqué, J. and D.J. Viera (eds.) (1997). *Applied Languages: Theory and Practice in ESP.* València: Publicacions de la Universitat de València.

Robinson, P. (1991). *ESP Today: A Practitioner's Guide.* Hemel Hempstead, UK: Prentice Hall International.

Scott, M. (1996). *WordSmith Tools.* Oxford: Oxford University Press.

Scott, M. (2002). Picturing the key words of a very large corpus and their lexical upshots or getting at *The Guardian's* view of the world. In B. Kettemann and G. Marko (eds.) *Teaching and Learning by Doing Corpus Analysis*. Amsterdam: Rodopi. 43-50.

Soler, A., C. Rueda and E. Arnó (2005). Students' profile as autonomous learners in an Internet-based EAP course. *Ibérica: Journal of the European Association of Languages for Specific Purposes* 9, 53-78.

Strevens, P. (1988). ESP after twenty years: A re-appraisal. In M. Tickoo (ed.) *ESP: State of the Art*. Singapore: SEAMEO Regional Language Centre. 1-13.

Swales, J.M. (1990). *Genre Analysis*. Cambridge: Cambridge University Press.

Swales, J.M. (2002). Integrated and fragmented worlds: EAP materials and corpus linguistics. In Flowerdew, J. (ed.) *Academic Discourse*. London: Longman. 150-164.

Trenchs, M. (ed.) (2001). *Nuevas tecnologías para la didáctica y el autoaprendizaje de lenguas*. Lleida: Editorial Milenio.

Van Lier, L. (2002). A tale of two computer classrooms. The ecology of project-based language learning. In J.H. Leather and J. Van Dam (eds.) *Ecology of Language Acquisition*. New York: Kluwer Academic Publishers. 49-63.

Warschauer, M. (2002a). A developmental perspective on technology in language education. *TESOL Quarterly*, 36 (3), 453-475.

Warschauer, M. (2002b). Networking into academic discourse. *Journal of English for Academic Purposes*, 1 (1), 45-58. Available at <http://www.gse.uci.edu/markw/networking.html>

Warschauer, M. (2003). Demystifying the digital divide. *Scientific American*. August, 2003.

Warschauer, M. and D. Healey (1998). Computers and language learning: An overview. *Language Teaching* 31, 57-71.

Warschauer, M. and R. Kern (eds.) (2000). *Network-based Language Teaching: Concepts and Practice*. Cambridge: Cambridge University Press.

Warschauer, M., H. Shetzer and C. Meloni (2000). *Internet for English Teaching*. Alexandria, VA: TESOL Inc.

White, C. (2003). *Language Learning in Distance Education*. Cambridge: Cambridge University Press.

PART I. CORPUS-BASED STUDIES

Chapter 2

CORPUS LINGUISTICS AND ENGLISH FOR ACADEMIC PURPOSES

John M. Swales
The University of Michigan (Ann Arbor, MI, USA)

1. INTRODUCTION

Rather than representing a leading edge of technological applications, I am very much part of that majority of university language teachers who sometimes feel that they are being left further and further behind in the current race to develop LSP-related technologies. Indeed, like many readers of this volume, I remain an LSP teacher, an LSP materials writer, an observer of the academic scene as it variously unfolds in diverse departments and colleges, and an applied discourse analyst of academic and research text and talk. However, since 1997 I have been closely involved with the Michigan Corpus of Academic Spoken English (or MICASE), and my experiences with corpus linguistics constitute the main focus of this article. The chapter is structured as follows. In Section 2, I discuss the advantages of small specialized corpora for LSP purposes, and summarize and evaluate the present status and future prospects of the MICASE project. Section 3 provides an update on an earlier paper (Swales, 2002) originally written in 2000 that examined the advantages and disadvantages of corpus-linguistic work for LSP practitioners. With that as background, I then offer in Section 4 a fragment of what a MICASE-derived grammar of academic speech might look like. In the penultimate section, I discuss some actual teaching materials

based on academic speech data, and after that, offer a few brief closing comments.

2. SPECIALIZED CORPORA AND THE MICASE PROJECT

The 1990s can be seen as the era of large under-differentiated corpora, such as the Bank of English and the British National Corpus. While such corpora continue to have important roles in lexicography, in natural language processing research, and in general grammatical descriptions of whole languages, their immediate use as more specialized resources may be limited. In effect, bigger may not always be better, and size may not win all. Indeed, there are signs that the first decade of this new century will well turn out to be the decade of the small specialized corpus. As Lee notes,

> a small specialized corpus has the advantage of more homogeneity across the texts or transcripts in a corpus, which in turn makes the corpus more suitable for genre-based investigations or analyses that can take into account interactional, pragmatic and contextual features in addition to the purely linguistic ones (2001: 37).

As evidence of this trend, we have already seen the emergence and employment of relatively small circumscribed corpora, such as Luzón's collection of medical research articles (2000) or Granger's (1998) corpus of non-native speaker writing.

One of these small corpora is MICASE, available through the web at www.hti.umich.edu/m/micase. This corpus has a number of distinctive features. First, since this is a corpus of transcribed speech it was expensive to put together, and we realized early on that, whatever the fee or license structure might eventually be arrived at, Michigan's English Language Institute would never recoup more than a small fraction of the cost of its investment. The project group thus decided to make it freely available "academicware". Second, after discussions with a statistical consultant, we decided to focus our efforts on only the University of Michigan. As the consultant commented, "You have already got a lot of variables to cope with; don't make it even more complicated". Third, we made a principled decision to not exclude non-native speakers of English (who in fact represent about 15% of all words spoken). In today's increasingly anglophone and increasingly globalized and internationalized research world, the NS-NNS distinction is increasingly hard to maintain (Swales, 2004).

Fourth, we wanted to cover as many disciplines as possible—and the University of Michigan has 19 separate colleges or schools. This ambition has been broadly obtained, even though coverage from professional schools such as business and medicine has turned out to be weaker than planned. Apart from this horizontal dimension, as it were, we were particularly interested in achieving good vertical coverage. In other words, the corpus design was structured in such a way as to include not only undergraduate lectures, but also many other types of speech-events (see Table 1). We also took to heart the comment Michael McCarthy made when he visited Michigan soon after the project began: "Don't only focus on what's easy to get; go for the harder stuff too".

The eventual outcome was 152 speech-events, consisting of around 200 hours of academic speech totaling some 1.7 million words. The speech-events themselves are shown below, preceded by the numbers of each type collected:

Table 1. Breakdown of MICASE speech-events.

31	Large lectures (40+ students)
31	Small lectures (under 40 students)
12	Colloquia (or invited talks; often called "seminars" elsewhere)
11	Student presentation sessions (as part of lecture courses)
9	Discussion sessions (as support of large lecture courses)
8	Advanced, specialized graduate courses (aka "seminars")
8	Student study group sessions (working on homework, etc)
8	Lab sessions (as part of science courses)
8	Office hour sessions (i.e. individual faculty-student meetings)
6	Meetings (4 of research groups; 2 administrative)
5	Advising sessions (discussing possible courses, careers, etc)
4	PhD dissertation defenses
3	Tutorials
3	Interviews
2	Tours (One of the campus; one of the Museum of Art)
2	Service encounters (1 in a Library; 1 in the Science Learning Ctr)

In fact, the MICASE project is not finished and we are currently well embarked on Phase Two. This includes part-of-speech tagging, lemmatization of the vocabulary stock, further manual pragmatic mark-up, and a grammar of academic speech focussing on its distinctive features. If a major grant application is successful, we will also be able to offer the immediate linking of sound file moments to transcripted elements, and a much improved web interface.

One of the fundamental reasons for undertaking the MICASE project was that our understanding of the nature of academic and research speech is much sketchier than that of academic and research prose. Indeed, five years

ago, one of our foundational questions was whether academic speech was "more like" scholarly prose and research writing, or whether it is "more like" everyday conversation. On the one hand, do the pedagogic and intellectual purposes such speech shares with research writing push it toward academic prose? In Halliday's terms, do field and tenor overcome mode? Or, on the other hand, do the interactive nature of speech settings, the immediate sense of audience, and the on-line-processing character of our spoken utterances push academic speaking toward ordinary spoken interaction? Again in Halliday's terms, does mode predominate over field and tenor?

Five years later, and after many partial investigations into the MICASE corpus, the answer to that originally rather naïve question is pretty clear; in general, academic speech is close to ordinary conversation and distant from academic prose. Some of the emerging characteristics of academic speech can be summarized as follows. Such speech employs a much greater use of narrative elements, such as anecdotes and stories and biographical accounts of research activities (see also Rowley-Jolivet, 1999; and Thompson, 2002). Speakers make much greater use of visuals of all kinds than writers. In speech there is much greater stylistic homogeneity across disciplines than in, say, research paper writing. There are several factors that contribute to this lessening of disciplinary variation. One is the pervasive informality (the commonest noun in MICASE is *thing*); a second is that, although visuals vary greatly across disciplines, the *ways* in which they are referred to and discussed seem quite stable ("on the left you can see..."; "over here is the original data"); and a third is the fact that references to the work of others are not realized through the different conventions that separate broad disciplinary areas (such as the presence or absence of superscript numbers), but by talking about what people have done.

Obviously, the interactive nature of many academic speech-events (perhaps especially in the US) leads to much sign-posting of what is to come and, more generally, to a higher level of reflexive metadiscourse (Mauranen, 2001). One clear manifestation of this is that discourse markers do not always come singly (as discourse analytic research would suggest), but can come in fixed doublets or triplets. One of the commonest of these last is the run of "okay so now", which is used by primary speakers to signal the closing of one episode and the opening of the next (Swales & Malcewski, 2001). As in research writing, there is considerable hedging, but it is more likely to take the form of mitigators such as "just" (Lindemann & Mauranen, 2001) and "sorta"/"kinda" (Poos & Simpson, 2002); in addition, there is above average use of the "wobbly" modals *might*, *would* and *could*.

More generally, academic and research speech countenances apologies, admissions to uncertainties and mistakes and confessions in ways that are very rare in research writing. More surprisingly perhaps, the data from the

University of Michigan shows very little of that stereotypic "vicious" academic argument; rather, the general tone is consensual and facilitatory rather than critical and antagonistic. Within this register, humor clearly plays an important role in "defusing" potentially difficult moments as well as in increasing the engagement of the interactants. According to Dyer & Keller-Cohen (2000), demotic elements in academic speech (such as confessions and anecdotes) also go some way to mitigate the power inequalities between, say, lecturers and students.

We could summarize the main differences by saying that we tend to find a *closed style* in research prose, but an *open style* in research talk. All that said, it is not the case that academic speech is exactly the same as casual conversation. One of the remaining differences is that academic speech contains a considerable amount of technical lexis embedded into a loosely co-ordinated sentence structure and surrounded by heavy employment of deictic elements. Other differences include a relatively lighter use of idiom and metaphor, and a level of evaluation that is somewhat less than casual conversation, where of course hyperbole and exaggeration are highly characteristic rhetorical devices. Finally, there are some effects that derive from the didactic nature of many of the interactions, such as the illustrating and glossing of technical terms as they are being introduced.

3. CORPUS LINGUISTICS—A PERSONAL STORY

As a result of the MICASE project, in the 1998-2000 period my research and pedagogical interests took a new turn. I became more interested in studying academic speech than previously, and I began to gain experience in using the *WordSmith Tools* concordancing package (Scott, 1996). At the end of this period, I reflected on this experience in a chapter in the *Academic Discourse* volume edited by Flowerdew and eventually published in 2002. I there argued that the relationship between corpus work and more traditional genre-based EAP approaches could turn out to be more complex—and perhaps more conflicted—than had been generally acknowledged.

As I saw it then, there were four main issues. First, while genre analysts in the 1990s had developed a rich socio-rhetorical conception of genre, corpus linguists had not taken the concept of genre seriously. Second, the procedural differences between the top-down approach adopted by most discourse analysts and the constrained bottom-up approach of corpus linguists were hard to reconcile. Third, there was a strong *incidentalist* tendency in corpus work that made it hard to see how these small pieces of the puzzle could be assembled to form a general picture. As I wrote at that time, "Certainly, accumulations of such incidental findings provide little in

the way of a *platform* from which to launch corpus-based pedagogical enterprises" (2002: 151). Fourth, the existence of so many corporist options causes many initially promising lines of inquiry to turn out to be either false leads or dead ends. For hard-pressed EAP practitioners, the amount of trial-and-error involved can result in corpus investigations becoming rather time-ineffective.

If I was in 2000 frustrated by my inability to use MICASE (and Hyland's corpus of 80 research articles) to *discover* interesting things about these two registers, I had no doubt that they were excellent for *validating* or *invalidating* statements found in grammar books, or for *finding examples* of phraseological patterns. So, just recently, a member of my undergraduate class asked a question about whether the verb *need* was a full verb or a modal auxiliary. A quick look at the 35 speech-events in the MICASE research sub-corpus showed only four instances of *needn't* but 25 instances using the "do" form. On the other hand, Hyland's RA corpus showed the opposite tendency for writing—22 examples of *need not* but only three using the "do" form. I could go to the next class with a useful answer to the student's question.

Nowadays, these concerns and criticisms (including self-criticisms) have lessened somewhat. On the first issue of genre, there has been a growing rapprochement of attitudes. One important example of this is Lee's construction of an index for the British National Corpus along genre lines. As he says, "It is envisaged that this resource will allow linguists, language teachers, and other users to easily navigate through or scan the huge BNC jungle more easily, to quickly ascertain what is there (and how much) and to make informed selections from the mass of texts available" (2001: 37). The top-down and bottom-up differences have also narrowed (at least for me) because the MICASE web-interface allows immediate access to whole utterances and to whole transcripts. (The third issue of incidentalism will be discussed in the next section.) The trial-and-error issue (number 4) also seems less serious today. Stubbs (p.c.) has convinced me that the "dead ends" problem is no more a feature of corpus linguistics than it is of any other inductive method of proceeding. In fact, it is likely that it only *seems* to be worse with concordancing software because our hopes for outcomes with scrolling and sorting are higher than when simply staring at individual texts and transcripts.

There remain, of course, some difficulties. One is the lack of context in corpus linguistics, which instead has to rely on co-text and inter-text ("repeated occurrences, often a very large number, of similar patterns across different independent texts", Stubbs, 2001: 157). For example, a recorded lecture from a course is stripped of all the lectures that have preceded it and which inevitably have had some contextual effect on the chosen speech-

event. Finally, on a more practical level, there is the problem of how best we can bring concordance lines (especially in speech) into LSP classes consisting of non-language specialists, and how best we can deal with this kind of data to advance the language proficiencies of our students.

4. TOWARD A GRAMMAR—THE CASE OF SUBJECT-INITIAL ELLIPSIS

A doctoral candidate in Dentistry, Ting Wang from China, came to see me to discuss her PowerPoint slides for an upcoming prospectus defense. At one point, referring to one of these slides, she said, "looks kinda busy". This is an example of "subject-initial ellipsis" (henceforth SIE), as opposed to the full form, "this one looks kinda busy". This kind of ellipsis, especially in utterance-initial contexts, is generally thought to be a pervasive feature of English conversation, particularly in casual conversation among intimates and strangers (Wolfson, 1988). The comprehensive Longman Grammar (Biber et al., 1999) deals with this at length in its final chapter entitled "The Grammar of Conversation". *Inter alia*, its authors note that it seems more common in British English than in American English. Their main illustration is as follows:

> One example of this trend is the occurrence of *Depends*... (with ellipsis) as contrasted with *It depends*... . In the BrE conversational subcorpus, almost 60 per cent of these constructions had ellipsis of the subject, compared with only about 30 per cent with ellipsis in the AmE subcorpus. (p.1106)

So let us first consider the case of "depends", since it has already been mentioned. In the MICASE research sub-corpus of 36 speech-events, there are 50 instances of *depends*, 29 of which have a pronoun (e.g. "it") or a demonstrative (e.g. "that/this") subject. However, there are only 5 (some 15%) with elliptic or "missing" subjects. Here is an example:

would you be able to communicate with like sign language?
depends on the aphasia

So far then the data for *depend* suggests that SIE can occur in research speech, but less frequently than in ordinary conversation. In order to get a broader picture, we can turn to a number of other verb forms that have some propensity to drop subjects in speech (especially for empty "it"). In Table 2, Column 1 refers to the number of total occurrences in the sub-corpus;

Column 2, the number with SIE; and Column 3, the percentages of SIE utterances.

Table 2. Percentages of SIE with selected verb forms.

Verb	*Tokens*	*SIE Tokens*	*SIE %*
looks	74	6	8.1
turns out	50	4	8.0
sounds	42	2	4.7
got	c.450	8	1.7
seems	140	2	1.4
wanna	c.300	2	0.7

Examples:
looks a lot better
it might work. turns out though it doesn't
sounds good. I like it
got any ideas about that?
seems a bit ironic to me
might wanna back it up a little

The above figures underline the fact that SIE is not a generally prevalent feature of research speech (in which, we should note, there are very few undergraduate speakers). This is confirmed by the absence of tokens like "heard the latest?", "hope it goes well" and "good to see you again", and very few instances of other adjectival uses such as "sorry that I forgot this" or "ready to move on?".

The situation is, however, somewhat different with quantifiers, such as *nothing*, *anything* or *any*. For example, the phrase *anything else* is more likely to have omitted subjects (and verbs):

okay, anything else on that?
okay, anything else about television violence?

in contrast to full forms such as:

does anyone else wanna tease anything else out of that poem?

The canonical case of SIE in research speech occurs with the formulaic phrase "any questions?". In the MICASE sub-corpus, 75% of occurrences used the SIE form, with the remaining quarter having full forms such as "Do you have any questions?". With other nouns, the figures are lower, but SIE remains relatively common:

okay any experiences you want to share?
any last minute thoughts on this particular search?
any any sense of how long it takes for rediversification?

However, SIE is much more likely to be used in these contexts by the primary speakers than by the (mostly) listening participants. One exception is the last of the previous examples ("any any sense...?"), and it may be significant that the questioner here was a senior faculty member in a colloquium.

This preliminary excursion into the grammar of research speech (as represented by the SIE v. non-SIE issue) begins to allow the outline of a grammar to emerge. The excursion itself, I believe, brings home a number of lessons. Most generally, the observant practitioner can use a corpus as successfully to note what does not occur as note what does; in effect, searching for absence may be as relevant and as rewarding as searching for presence. In this particular database, sentence-initial ellipsis (outside of the highly formulaic speaker check-interrogation "any questions on that?") is comparatively infrequent. Its relative rarity can be partly ascribed to the scarcity of those short opening and closing sequences that are much more characteristic of "daily life"—all those occurrences of "glad to meet you", "sorry I'm a bit late", "had a haircut, I see", etc. Its modest occurrence can also be attributed to Wolfson's "Bulge Theory", i.e. spoken discourse tends to be succinct between those who are very close or very distant, but elaborated among acquaintances or in cases where less powerful speakers address more powerful ones. So a graduate student, on meeting her famous head of department in the corridor, would be unlikely to say "got a minute?" but rather something of the order of "Excuse me, I'm just wondering if you could spare me a couple of minutes as I've got a small problem that I'm having difficulty in solving".

However, the limited employment of SIE is well worth bringing to the attention of international students and other interested parties. First, as the immediately previous example attests, SIE is a useful vehicle for raising consciousness about variations in formality and politeness. Second, discussions on productive uses can usefully be directed to what might be appropriate with friends and peers (including in e-mails) but less appropriate for others. Recollect for example, the dentistry student at the beginning of this section who used an SIE in self-criticism, as opposed to other-criticism. But the final word here should belong to a newly-arrived Japanese student who heard me speak on the SIE topic. Then he observed something like the following: "That is very interesting. I have always thought when listening to English speakers that I was not hearing all the words at the beginning of sentences. Now I know that they may not have been there in the first place".

5. A PEDAGOGICAL APPLICATION

In this section I offer a modified version of a discoursal-analytic example of teaching materials derived from MICASE and being developed by Sheryl Leicher, myself and others. It deals with a phenomenon that seems common among Michigan undergraduates and junior graduates—complaining about their instructor!

Review and—if possible—act out this dialog

Math study group members complaining about their homework assignment.

Nick: Male senior undergrad
Jane: Female senior undergrad
Amy: Female senior undergrad

Setting: Nesbitt Lounge, East Hall

1. Jane: Alright...Why did she give multiple parts for every single problem we have?
2. Amy: She wanted to torture us.
3. Nick: I think it's cuz like, that last time I don't think we did a lot on the homework, if I remember right.
4. Jane: I really like how she says this problem set contains a total of four problems. It's like no, four times two plus one problems.
5. Nick: Yeah why does she tell us it contains four problems?
6. Jane: Oh I can't see 'em. Oh the printer chewed off, just cut off number four. So, maybe that's why she puts it at the top just in case.
7. Nick: Yeah that is a little quirk. She's trying to trick us into thinking like oh...
8. Jane: Yeah she's like "Oh that's not bad this problem set only has four problems in it." Yeah, whatever.
9. Amy: And there's like two parts for three of 'em.
10. Nick: Alright, so, oh my gosh so this has three parts.
11. Jane: For all of 'em?
12. Amy: Two parts for all of 'em?
13. Jane: Yeah. And number two has three parts.
14. Nick: This has three parts.
15. Amy: Oh you've got to be kidding.
16. Nick: Well at least we only have to do two of the five parts on fourteen. No, this won't necessarily be that hard.

17. Jane: Did you say two of the five parts on fourteen?
18. Nick: Yeah we only have to do one and two out of five.
19. Jane: Oh, alright.
20. Nick: And on fifteen we only have to do two of, well one out of four but its number two. Why don't we...Fourteen's gonna be easy let's start there. It really is gonna be easy.
21. Jane: Oh yeah alright <Reading: *Find the image of the point...*>

Worksheet for math study group extract

Now do the following—if possible work with a partner.

GENERAL QUESTIONS

1. Would you say this extract is an example of "academic speech"? What are the pros and cons of labeling it so?
2. The given title is "complaining about their homework assignment". This is obviously true on one level. But how else might you describe it? If it is "complaining", what is its underlying purpose or function?
3. The two main speakers are Nick and Jane. How similar or different might their attitudes be to the tasks on hand? What evidence can you bring to support your viewpoint?
4. If you had to divide this extract into two parts, at which turn would you say the second part begins, and why?

SPECIFIC QUESTIONS

5. Jane, in Turn 1, opens the episode by asking a question. Does she really expect an informative answer?
6. She gets two responses. Which one might she prefer, and why?
7. How would you characterize Jane's "I really like..." opening statement in Turn 4?
8. What does Nick's question in Turn 5 tell us?
9. At the end of Turn 8, Jane comments, "Yeah, whatever". How would you explain this use of *whatever* to a newly-arrived international student?
10. In Turn 15, Amy says, "Oh, you've got to be kidding". What other expressions would have got her point across?

COMMENTARY

1. When I first tried this out with an undergraduate class, 23 out of 24 participants were of the firm opinion that this episode was *not* an example of academic speech. The reasons they gave included: "too much slang", "not on an academic topic", and "not concerned with the transmission of knowledge". Subsequent exposures, however, suggest a different view, participants pointing out that a study group is an academic grouping, the episode takes place on campus, and the three students are talking about an academic assignment. And there is doubtless no more "slang" in this extract than in many lectures.
2. Some of the expressions that come to mind are "whining" and "pissing and moaning", a more academic version being "commiserating with each other". The underlying purpose of this activity is to build rapport among the group; a way of recognizing that "we're all in the same boat" in an "us versus them" scenario. Note how the instructor is always referred to as "she"—as some kind of opponent. According to Boxer & Pickering (1995), this kind of complaining is often misunderstood by international students and mis-presented by their ESL instructors.
3. Nick is the "can-do" member of the group; Jane is the main "piss-and-moaner".
4. Nearly everybody so far has opted for Turn 16, when Nick turns the conversation back to actually doing the homework.
5. No, she expects sympathy.
6. Jane clearly prefers Amy's response, which is the complaining one, rather than Nick's attempt to justify the instructor.
7. This is clearly sarcastic. Note that an international student might take it literally and so lose track of the dialogue.
8. It tells us that Nick is now on board, and is on "the same page" as the two women.
9. This kind of *whatever* is used mainly by younger Americans. It is typically dismissive. In this example, it communicates "I don't agree, *whatever* she says" or perhaps "what she says doesn't make any sense". There are 732 examples of *whatever* in MICASE; you might like to look at a selection of them to see how common this dismissive use of *whatever* actually is.
10. How about "you must be joking" or "you can't be serious"?

At this point, you might want to re-read (or re-enact) the dialog, as you should now have a deeper understanding of the situation.

ROLE PLAYS

Imagine there is a fourth member of the study group.

- In Role Play A, the fourth member immediately joins in the complaining and so establishes his or her membership of the embattled group. Act this out.

- In Role Play B, the fourth member is much like Nick, but he is even more concerned to justify the instructor and actually do the homework. Act this out.

6. CLOSING COMMENTS

In this chapter I have attempted to profile the Michigan Corpus of Academic Spoken English as a contemporary instance of a small specialized corpus designed to be made freely available for students, teachers, materials writers and researchers. In effect, the MICASE project offers a time capsule of academic speech at a single large university at the end of the 20th century. As I hope to have made clear, this particular corpus offers exciting descriptive and applied opportunities, if only because academic and research speech is still poorly understood. We know that there are quite a number of people around the world who are using MICASE in their investigations—people in countries like Spain, Canada, Brazil, Taiwan and Finland. I hope others will join this international effort and let us know in Michigan that they have done so. Indeed, the MICASE team is trying to set up a better infrastructure to facilitate these endeavors.

In the third section of this chapter, I tried to communicate something of my own successes and failures with a concordance-line approach to understanding academic speech. Let me give a final mini-illustration. One of the relatively common verbs in MICASE is *feel*, which is only rarely used in its "I feel sick" sense, but rather has a more epistemic meaning. Although the overall uses of the verb *feel* escape me at the time of writing, especially in comparison to the hugely frequent verb *think*, there is a small sub-set about which I think (feel?) I can say something. The prepositional verb *feel about* is primarily interrogative (60+% of the cases):

what do you guys feel about including in the intro, maybe stereotypes...
how do you feel about, um, the meaning of the metaphor...
how do you feel about the decision to run any picture?
and how do you feel about that?

My sense here—peering through a glass darkly—is that this choice of verb potentially allows participants in the interaction (primarily students) a wider range of responses than the choice of the "straight" epistemic verb *think* would permit. However, the situation is complicated by the fact that these questions are sometimes rhetorical rather than invitational, and at other times they are part of a run of questions designed to engender an audience response. As ESP responds to the increasing use of English for conferences, and the increasing movement of academics across the face of the globe, this kind of small-scale question (*think* versus *feel*) is just one of many similar ones that will increasingly engage our attention in the years ahead.

REFERENCES

Biber, D., Johansson, S., Leech, G., Conrad, S. and E. Finegan (1999). *Longman Grammar of Spoken and Written English.* Harlow: Pearson Education.

Boxer, D. and L. Pickering (1995). Problems in the presentation of speech acts in ELT materials: The case of complaints. *ELT Journal* 49, 44-58.

Dyer, J. and D. Keller-Cohen (2000). The discursive connection of professional self through narratives of personal experience. *Discourse Studies* 2, 283-304.

Granger, S. (ed.) (1998). *Learner English on Computer.* London: Longman.

Lee, D.Y.W. (2001). Genres, registers, text-types, domains, and styles: Clarifying the concepts and navigating a path through the BNC jungle. *Language Learning and Technology* 5, 37-72.

Lindemann, S. and A. Mauranen (2001). It's just real messy: The occurrence and function of *just* in a corpus of academic speech. *English for Specific Purposes* 20, 459-476.

Luzón, M.J. (2000). Collocation frameworks in medical research papers: A genre-based study. *English for Specific Purposes* 19, 63-86.

Mauranen, A. (2001). Reflexive academic talk: Observations from MICASE. In R.C. Simpson and J. M. Swales (eds.) *Corpus Linguistics in North America: Selections from the 1999 Symposium.* Ann Arbor, MI: The University of Michigan Press. 165-178.

Poos, D. and R.C. Simpson (2002). Cross-disciplinary comparisons of hedging: Some findings from the Michigan Corpus of Academic Spoken English. In R. Reppen, S.M. Fitzmaurice and D. Biber (eds.) *Using Corpora to Explore Language Variation.* Amsterdam: Benjamins. 3-23.

Rowley-Jolivet, E. (1999). The pivotal role of conference papers in the network of scientific communication. *ASP* 23-26, 179-196.

Scott, M. (1996). *Wordsmith Tools.* Oxford: Oxford University Press.

Stubbs, M. (2001). Text, corpora, and problems of interpretation: A response to Widdowson. *Applied Linguistics* 22, 149-172.

Swales, J.M. (2002). Integrated and fragmented worlds: EAP materials and corpus linguistics. In J. Flowerdew (ed.) *Academic Discourse.* Harlow: Longman. 150-164.

Swales, J.M. (2004). *Research Genres: Explorations and Applications.* Cambridge: Cambridge University Press.

Swales, J.M. and B. Malcewski (1999). Discourse management and new episode flags in MICASE. In R.C. Simpson and J.M. Swales (eds.) *Corpus Linguistics in North America: Selections from the 1999 Symposium.* Ann Arbor, MI: University of Michigan Press. 145-164.

Thompson, S. (2002). As the story unfolds: The uses of narrative in research presentations. In E. Ventola, C. Shalom and S. Thompson (eds.) *The Language of Conferencing*. Frankfurt: Peter Lang. 147-167.

Wolfson, N. (1988). The bulge: A theory of speech behavior and social distance. In J. Fine (ed.) *Second Language Discourse: A Textbook of Current Research.* Norwood, NJ: Ablex. 21-38.

Chapter 3

INTERACTION IN ACADEMIC SPOKEN ENGLISH: THE USE OF 'I' AND 'YOU' IN THE MICASE

Inmaculada Fortanet Gómez
Universitat Jaume I (Castelló de la Plana, Spain)

1. INTRODUCTION

Research on academic spoken English started a few years ago, mainly to provide teaching materials for the courses addressed to postgraduate international students in the United States (Rounds, 1987; Strodt-Lopez, 1987). However, this need has recently extended to new contexts, since English as the language of instruction in higher education is gaining importance in countries where it has traditionally been taught as a foreign language. Lectures are one of the most important speech events in universities all over the world. This is the reason why they have recently drawn the attention of discourse analysts. The use of corpora in this type of research may be of help to describe a large number of similar speech events.

1.1 Corpora in English

Analysing the language of a corpus is nothing new. For many years linguists have collected corpora 'ad hoc' for their studies and, on many occasions, they still do so. As an example, the following two studies from the field of spoken academic English were based on corpora compiled

specifically for the occasion. Del Lungo Camiciotti (2002) used a corpus of six lectures for her study about interpersonal discourse with a historical perspective, whereas Crawford Camiciottoli (2003) analysed discourse structuring based on a sample of five lectures given by native and non-native lecturers to an audience of Italian students. However, these 'ad hoc' corpora are frequently very small, since collecting and transcribing samples of discourse is hard and time consuming. As a consequence, many researchers have difficulties in reaching conclusions that can be generalised as features of a genre with such reduced corpora.

Sidney Greenbaum was the first linguist who introduced the idea of a mega-corpus in the late 1980s, but it was not until the 1990s that this idea was developed, taking advantage of the technological advances of computing (Kennedy, 1998). Among the resulting corpora, the following can be mentioned[1]: COBUILD project (Bank of English), BNC (British National Corpus), ICE (International Corpus of English), CIC (Cambridge International Corpus), and ANC (American National Corpus) which is being developed at the moment.

There is no doubt that corpora are contributing to the research and teaching of the English language, especially as a basis for the creation of new dictionaries, course books, and vocabulary and grammar books. However, mega-corpora may not be very useful for the research of specific genres or specific settings, since they usually involve a great variety of texts and situations, but very few samples of each type. For this reason, more specific corpora have been compiled. One of these specific corpora is the MICASE (Michigan Corpus of Academic Spoken English) (Simpson et al., 1999), which includes approximately 1.7 m. words focusing on contemporary university speech within the microcosm of the University of Michigan. Due to the increasing internationalisation of students and the introduction of English as language of instruction for students with other mother tongues, spoken academic English has become one of the most important fields of study in EAP research.

1.2 Doing research with the MICASE: the use of the pronouns 'I' and 'you'

Pronouns, together with demonstratives, give reference points for the reader or hearer to understand a speech event. Personal pronouns are by far more common in spoken English, mainly in conversation (Biber et al., 1999). The preference for the use of some pronouns over some others has been related to the consideration of positive or negative politeness. Brown

and Levinson (1994) claim that the use of 'we', including both writer or speaker and reader or hearer can involve positive politeness, in contrast to the use of 'I' or 'you'. Kamio (2001) also considers the use of 'we' as meaning a higher closeness between the speaker and the hearer than the use of 'you' or 'they'. However, it is not only the choice of pronoun, but also the context in which it is used, that can give enough information to the hearer to know the degree of closeness meant by the speaker. Regarding the roles and points of view of the participants in academic language, Tang and John (1999) focus on the referent of the first person, in a study of postgraduate students' academic writing. Following Cherry (1988), they distinguish three different roles adopted by a writer producing a piece of writing, which can be the referent of 'I' in different contexts:

- Societal role: identities inherent in a person (mother, father, son, daughter, American, etc.).

- Discourse role: identities that a person acquires by participating in a particular discourse community (lawyer or client in a legal discourse community, teacher or student in an educational environment, etc.).

- Genre role: specific to a particular genre within the discourse community (writer as a guide through the essay or the architect of the essay).

In his study of 'I' in academic writing, Ivanic (1997) also identified several identities that can be behind a personal pronoun:

- 'I' as a representative: people in general, members of the same discourse community;
- 'I' as guide through the essay;
- 'I' as the architect of the essay;
- 'I' as re-counter of the research process;
- 'I' as the opinion holder (1st person + mental processes of cognition);
- 'I' as the originator of ideas.

Some specific research has been carried out regarding the use of personal 'pronouns' in academic spoken English. Rounds (1987) defined the referents and discourse contexts for three personal pronouns, 'we', 'I', and 'you'.

Table 1. Reference and discourse contexts of personal pronouns (Rounds, 1987).

Referent	Pronoun	Discourse Contexts
Teacher	I, we	Reporting previous remarks; announcing future actions
Students	You, we	Referring to student responsibility; admonishments
Students and teacher	I, you, we	Working with specific examples; announcing future actions
Mathematicians and teacher	I, we	Naming; defining
Anyone who does calculus	I, you, we	Working with mathematical procedures

As can be seen in Table 1, the referents could be the teacher ('I' and 'we'); the students ('you' and 'we'); the students and teacher ('I', 'you', and 'we'); experts in the field of research, including the teacher, in this case mathematicians, ('I' and 'we'); or anyone who works in this field ('I', 'you', and 'we').

According to Rounds, the discourse contexts of these pronouns only refer to textual metadiscourse, that is, the teacher uses pronouns when s/he speaks about the class or the subject matter, in order to structure the discourse or give it a frame in a larger context, such as the entire course (Hyland, 1998). Results of previous research (Fortanet, 2004) seemed to prove that there is a wider range of discourse functions for the pronoun 'we' in lectures, and not only those observed by Rounds. In order to complete these results, further research was needed with the aim of establishing the discourse functions of 'I' and 'you'.

In this same line, the use of personal pronouns in lecture discourse was the object of research of a study by Morell (2001). Her results showed that "there is a greater proportion in the use of 'you' and 'we' in the interactive lecture, whereas 'I' is used more in the non-interactive lecture". The results of the present research may confirm or contradict these results. We must bear in mind, however, that Morell's corpus consisted of just two lectures, one considered expository and the other one participatory.

Very few of the contributions to the use of pronouns in academic English have been carried out using a corpus of spoken academic English, and none of them using a large electronic corpus. Therefore, there seems to be no reason to expect coincidences between those results and the results of the present research.

Previous research focused on the use of the pronoun 'we', since it was considered the most frequent pronoun in a previous study by Rounds (1987). However, by searching the MICASE, I found out that 'I' and 'you' are used more often than 'we' in today's academic English. 'I' and 'you' are the

pronouns used in conversation for the interaction between speaker and hearer. For this reason, further research was conducted in order to find out how often 'I' and 'you' are used in spoken academic English and on the main discourse functions of these pronouns. The hypothesis is that there is a direct relationship between the use of these pronouns and the presence of interactive discourse in lectures.

2. METHOD

The Michigan Corpus of Academic Spoken English (MICASE) was used for this research. Using MICASE as a general corpus (Corpus A) for the quantitative research, I searched for the number of occurrences of 'I' and 'you' with the tools provided on the MICASE Internet website, followed by more restricted searches of speech events with interactional/dialogue and monologic/lecture primary discourse modes. However, I also wanted to carry out a qualitative research in order to find out the referents and discourse functions of the pronouns 'I' and 'you' in lectures. For this purpose five lectures were selected, which formed Corpus B. The selected lectures were:

1. Intro Anthropology Lecture. 11,335 words, 2 speakers, 400 students. Primary discourse mode: monologic.
2. Behaviour Theory Management Lecture. 13,993 words. 33 speakers, 60 students. Primary discourse mode: mixed.
3. Medical Anthropology Lecture. 11,732 words. 5 speakers, 60 students. Primary discourse mode: monologic.
4. Media Impact in Communication Lecture. 9,431 words. 13 speakers, 55 students. Primary discourse mode: monologic.
5. Graduate Macroeconomics Lecture. 8,038 words. 7 speakers, 55 students. Primary discourse mode: monologic.

Corpus B was used for the qualitative research, which required a thorough reading of the texts. The aim of the research was to find out:

- The frequency in the use of the pronouns 'I' and 'you' and its relationship to interaction;
- The most common referents of these pronouns; and
- The discourse functions they have in American lectures.

3. RESULTS

3.1 Frequency

Firstly, the whole MICASE was searched. Then, Corpus A was divided into interactional/dialogue and monologic/lecture speech events considering their primary discourse mode, and a new search was conducted for 'I' and 'you'. After obtaining the results, I realized that the comparison did not show actual data, since the results of 'you' included both those functioning as subject and those with other functions. In order to solve this problem, in the qualitative research of Corpus B, which will be presented later, a number of occurrences of 'you' were excluded, since their syntactic function was not subject. The percentage of 'you's excluded ranged from 4.6% to 20%. I estimated 10% as the mean and decided to subtract this percentage from the results obtained in Corpus A. Table 2 summarizes these results:

Table 2. Use of the pronouns 'I' and 'you' in the MICASE (Corpus A).

		I	YOU
MICASE		44,308	41,320
	INTERACTIONAL / DIALOGUE	24,804	20,467
	MONOLOGIC / LECTURE	8,924	11,450

As can be seen, there is a very slight variation in the number of occurrences of 'I' and 'you' appearing in the MICASE, though the number of 'I's is superior to that of 'you's. When the corpus is divided in interactional/dialogue and monologic/lecture, 'I' is more frequent than 'you' in interactional/dialogue, with a difference of approximately 4,000 occurrences; whereas 'you' is more often found in monologic/lecture with a difference of nearly 2,500 occurrences.

In order to introduce the qualitative research, the number and frequency of the occurrences (x per thousand words) of 'I' and 'you' in Corpus B was estimated. Table 3 shows the results:

Table 3. Number and frequency of the pronouns 'I' and 'you' in Corpus B.

	I		YOU	
	Number	Percentage	Number	Percentage
LECTURE 1	94	8.3	221	19.5
LECTURE 2	228	16	362	29
LECTURE 3	154	13	169	14.5
LECTURE 4	84	8.9	202	21.5
LECTURE 5	146	18.2	62	7.7

These results show similar percentages for Lecture 1 and Lecture 4. In both lectures the percentage of 'you' ostensibly exceeds that of 'I'. In Lecture 3, the use of 'I' and 'you' seems to be very similar. In Lecture 2 both percentages are very high, especially the percentage for 'you'. However, the most surprising result is that of Lecture 5 since, contrary to what was observed in the other four lectures, in Lecture 5 the percentage of 'I' is not only higher than that of 'you' but more than doubles it.

Since some of the reviewed researchers had found a correlation between the use of 'I' and 'you' with the mode of discourse, this characteristic was taken into consideration in the five lectures of Corpus B. As detailed in the Method section, the primary discourse mode of Lectures 1, 3, 4 and 5 was monologic, and the compilers of the MICASE had considered Lecture 2 as mixed. In all lectures it was found that more than one speaker participated, ranging the number of participants from 2 to 33. Hence, I decided to analyse the percentage of text spoken by the lecturer and by other speakers. Table 4 shows the results.

Table 4. Percentage of text spoken by the lecturer and by other speakers.

	Lecturer	Other participants
LECTURE 1	98%	2%
LECTURE 2	54%	46%
LECTURE 3	93%	7%
LECTURE 4	95%	5%
LECTURE 5	98%	2%

My hypothesis was that since participation of other speakers presupposes more interaction, the more interaction, the greater use of the pronouns 'I' and 'you', especially the latter. The first part of the hypothesis proved to be correct, since Lecture 2, described by the MICASE as mixed discourse mode, was the one with a higher participation of other speakers (almost 50% of the text). This was reflected in Table 3 with a higher percentage of 'I' and 'you'. It seemed, at first sight, also to provide an explanation for the "anomalous" low use of 'you' in Lecture 5, since the percentage of transcribed text spoken by other participants was very low in this lecture. However, the same percentage of text spoken by other participants was found for Lecture 1, and the results in the use of 'I' and 'you' were completely different. A deeper qualitative study was needed.

3.2 Referents and discourse functions

Before dealing with the referents and discourse functions of 'I' and 'you', it should be pointed out that two pragmatic markers were found recurrently with 'I' and with 'you': "I mean" and "you know". I have considered them as pragmatic markers following Erman's definition (Erman, 2001: 1339):

> They are exclusively functional in that they do not directly partake in the propositional content of the utterance in question, but occur 'outside' the syntactic structure.

"I mean" was found, as a pragmatic marker, 45 times in the transcripts, about 6% of all occurrences of 'I'. The use of "you know" is much more frequent, with 177 occurrences, and it accounts for about 17% of all occurrences of 'you'. It is interesting to notice, though, that the speakers in Lecture 5 do not use "you know" at all, and "I mean" appears just twice. Due to their function as pragmatic markers, and to the grammaticalization of the joint use of the pronoun and the verb, the referents and discourse functions of these pragmatic markers are not analysed. Since referents and discourse functions are closely related, next I present the results together, first for the pronoun 'I', and then for 'you'.

3.2.1 Referents and discourse functions of 'I'

The referents and discourse functions of 'I' are summarized in Table 5. As expected, the only possible referent of 'I' is the speaker. However, a distinction has been made between the fixed speaker, usually the lecturer, and a changing speaker, who participates in dialogue and reported speech and who usually needs to identify him or herself.

Table 5. Referents and discourse functions of 'I'.

REFERENT	DISCOURSE FUNCTION	L1	L2	L3	L4	L5
Fixed speaker (usually lecturer)	Metadiscourse	37	20	29	33	63
	Attitude	19	91	57	40	38
	Subject of anecdotes	12	22	9	1	--
	Hypothetical 'I' as an example	--	29	--	--	33
Changing speaker	Identification in dialogue	8	9	18	2	9
	Identification of other voices in reported speech	8	41	27	5	1

There is a clear predominance of the use of 'I' in the monologue of the lecturer, though lectures 2 and 3 also show a frequent use when there is a

situation of dialogue, that is, when the speaker may change depending on who takes the turn to speak, as in

(1) S1: **i** thought it was on there. <P:12> and just for fun **i**'ll collect these and **i**'ll analyze them and **i**'ll let you know what what you what you all said but you can keep yours when **i**, (give you) the answers...
SU-F: **i** have a question (can you tell here) what you know this is from because **i** think my public health professor would like it a lot [Lecture 3]

The second situation in which a change in the referent of 'I' can be accounted for is in reported speech, as in

(2) now you're Brenda Cooper right? And you're trying to figure out what **i** gonna do to change stuff in Florida? [Lecture 2]

In this example, 'I' refers to Brenda Cooper who, in a hypothetical situation, asks herself what she is going to do to change things in Florida.

In relation with the discourse functions of 'I', in the previous literature review it was observed by several researchers that a speaker can play several roles when s/he speaks, depending on the perspective from which s/he speaks. Since the corpus under study is academic English in a classroom setting, it would only be logical to suppose that the main function of the pronoun 'I' is that of a lecturer organising the explanation of a lesson to his or her students, that is, the function of textual metadiscourse. As is illustrated in Table 5, this is true for Lecture 1 and 5, though in Lectures 2, 3 and 4 it is a speaker showing his or her attitude that is most commonly found.

With the discourse function of metadiscourse, it is frequent to find 'I' followed by verbs such as: *talk, say, tell, mention, describe, show, announce, introduce, ask, point*; and expressions such as

(3) why **i i** chose this study [Lecture 3]

'I' is also very usually found with the function of showing attitudes. The speaker presents him- or herself not as a lecturer who has a superior knowledge, but as a human being who likes or dislikes, wishes, and doubts or is certain about things. The verbs most commonly found accompanying 'I' with these functions are: *think, want, mean, wonder, need*; modal verbs, and expressions such as

(4) **i** wish **i** had these slides [Lecture 1]

A third discourse function of 'I' is that of subject of an anecdote. In an anecdote, the lecturer or another participant explains a past experience related to the topic of the class. Anecdotes were studied by Strodt-Lopez, who affirmed that they are used by "American university professors to achieve specific content-oriented and interactional goals" (Strodt-Lopez,

1987: 194). This function, which is very common in Lecture 2, is non-existent in Lecture 5. For example in Lecture 2, it is students who explain past experiences in previous courses.

(5) **i** didn't get all As and, uh like **i**, did poorly in a lot of classes [Lecture 2]

In dialogue, the function of 'I' is identifying the speaker. Very often, 'I' is the first word uttered by a new speaker. Most of these occurrences, as said above when dealing with reference, are spoken by participants different to the lecturer, such as the following example of students' contributions:

(6) S5: **i** don't actually have a question
SU-M: um, **i** didn't either [Lecture 1]

Reported speech is very commonly found in some lectures. As stated by Myers (1999: 376), "speakers in many situations report the utterances of others, and use all possible mixtures of their own and other voices, and rely on listeners to follow". The functions of reported speech are very complex and it is not the aim of this research to define them. I can only report on the frequency in the use of 'I' in reported speech in some lectures, such as Lecture 2, where, as can be seen in Table 5, 41 occurrences of 'I' can be found with this function. E.g.

(7) Cole who attended the University of Michigan recalls his choice of a major. in my first literature course in college, **i** thought **i**'d written a damn good paper on Homer's Odyssey. **i** got a C-minus on my sixth paper and **i** got an A-minus, and **i** was so proud of myself [Lecture 2]

An indication that the lecturer is reading is introduced as a clue for the listener to make him or her realise this is reported written language. After a short introduction, the reported speaker starts identifying himself as 'I'.

Finally, there is another function of 'I' in Corpus B that can only be found in Lectures 2 and 5, in which the speaker presents a hypothetical situation by offering him- or herself as an example. E.g.

(8) **i** could have a ten percent return if **i** invested my money over there. cuz the dollar is gonna lose value, [Lecture 5]

3.2.2 Referents and discourse functions of 'you'

Table 6 shows the referents and discourse functions of 'you'. Two referents have been found: the hearer and an indefinite referent which includes both the hearer and the speaker as well as other persons.

Table 6. Referents and discourse functions of 'you'.

REFERENTS		DISCOURSE FUNCTIONS	L1	L2	L3	L4	L5
HEARER	audience (plural)	Metadiscourse	37	89	22	23	11
	interlocutor in dialogue (usually singular)	Addressing the hearer	12	91	27	20	5
	interlocutor in reported speech (usually singular)		3	17	22	8	--
IMPERSONAL 'YOU'	they	Certain approximation speaker/ hearer	148	125	63	70	46
	people						
	we	Certain distancing speaker/ hearer					
	I						

The usual referent for 'you' is the hearer. However, the question of when it is plural and when singular comes up. This question can only be answered by knowing the context, and even so, sometimes it is ambiguous, maybe purposefully. In the corpus of this research, 'you' has a plural referent when it is the audience that the speaker means by 'you'. It has a singular referent, the hearer, when it is found in dialogue and it may have a plural or singular referent in reported speech, though the most usual referent in this context is singular.

There is a third possible referent, impersonal 'you', which is left undetermined by the speaker. However, in the present research four "hidden" referents were found for this impersonal 'you', depending on the context:

'they' when the referent is a group of people identified by the context. E.g.

(9) **you** can take care of camels, **you** can take care of cattle, **you** can take care of sheep goats [Lecture 1]

In this example the impersonal 'you' could be substituted by 'they' meaning the Samburu group of people, which is the topic of the lecture.

'people', when the subject is indefinite. E.g.

(10) if **you** come to the screen thinking, that all African-Americans are poor or criminals when **you** watch the Cosby show [Lecture 4]

In this example, both occurrences of 'you' could have been substituted by 'people' (or 'people' and 'they', to avoid repetition) without any change in the meaning.

'we', when it could easily be substituted by this pronoun without variation in meaning. E.g.

(11) but what **you** have at Michigan especially is that people actively seek out the absolute easiest class in the school [Lecture 2]

Both lecturer and audience are at the University of Michigan; hence, 'we' would also be possible here.

'I', when nobody else but the speaker can be the referent. E.g.

(12) but the transcript of these meetings were was really quite interesting because **you** can recognize even without the title [Lecture 3]

The speaker here refers to a book he has read and forgot to bring to the class. It is only the lecturer who has read the book; hence, 'you' could be substituted by 'I' without changing the meaning.

With reference to the discourse functions of 'you', the most expected referent of 'you' is the audience of the lecture. It is very frequent in Corpus B, and the discourse function of 'you' with this referent is always metadiscursive. In the following example, the lecturer gives instructions to the students on how they must write an assignment. He is organising the different parts of the course.

(13) **you** can respond to the questions as questions or **you** could write your essay just responding to three questions [Lecture 2]

In reported speech all the functions explained for the pronoun 'you' are possible, though the most frequent one is to address the hearer, just the same as in dialogue. The speaker plays a different role either keeping the same identity or adopting another one. The hearer in reported speech of this kind very rarely coincides with the one in the lecture. E.g.

(14) a little bit by saying gosh you know [...] now it's too late to get me out so **you**'ve got to deliver me here [Lecture 3]

In this example, the speaker (the lecturer) adopts a new identity—or a new role, following Tang and John (1999)—that of a woman in labour. The identity of the hearer (you) changes, as a requirement of the new context, to that of a nurse.

The function of 'you' in dialogue is also to address the hearer, where the hearer can be the whole audience or part of it, as in

(15) SU-M: are you gonna be (xx)

SU-1: (um) yeah um let's see i have a meeting tomorrow ten fifteen um do **you** wanna meet before (or after?) [Lecture 3]

However, it is possible to find questions addressed by the lecturer directly to the students and answered by them using impersonal 'you', avoiding in this way personal involvement.

(16) S1: : if we do the paperwork what happens...? Mary?

S32 **you** keep, **you** keep Atlanta happy, with your, progress. [Lecture 2]

The teacher asks the students to imagine a hypothetical situation and, after an explanation, asks them what they would do. Although s/he asks students directly by their name, they reply with an evasive impersonal 'you'.

The main reason for the use of impersonal 'you', much more frequent than 'you' with the hearer as a referent, may seem at first sight to avoid involvement, and thus increase the distance between the speaker and the hearer. However, I think this can be true for the uses of impersonal 'you' that could have been substituted by 'we' or 'I'. On the other hand, when the alternative could only be 'they' or 'people', 'you' does not seem to increase the distance but, on the contrary, it tends to reduce it since in some way 'you' causes a greater involvement of the hearer. In the following examples from Lecture 1, 'you' has been substituted by 'we' and 'they' to see the change of nuance.

(17a) in the West, wealth is measured by how much we consume, the house **you** live in, the car **you** drive, the clothes **you** wear

(17b) in the West, wealth is measured by how much we consume, the house **we** live in, the car **we** drive, the clothes **we** wear

(18a) to be a forager because **you**'re sc- constantly scrounging about, trying to get the basics that **you** need

(18b) to be a forager because **they**'re sc- constantly scrounging about, trying to get the basics that **they** need

In example (17) the use of impersonal 'you' creates some distance between the speaker and the audience; notice that the first clause includes 'we', and then the speaker shifts to 'you'. The use of 'we' in all the clauses would mean a situation shared by speaker and audience.

On the contrary, in example (18) 'you' seems to contribute to a closer involvement of the audience with the real subject, the "foragers", and the situation; whereas 'they' creates a distance.

4. DISCUSSION AND CONCLUSIONS

The results of this study have shown that in the MICASE there is no noticeable difference in the frequency of the use of 'I' and 'you', though 'I' is still more frequent than 'you'. When Corpus A was divided in interactional/dialogue and monologic/lecture modes of discourse, the former showed a considerable higher frequency of 'I', whereas 'you' had a greater presence in the latter. These results seem to contradict those of Morell (2001), which were presented in the Introduction. She stated that 'you' was more commonly found in interactive lectures, whereas 'I' was preferred in non-interactive lectures. The results of the present research using a much larger corpus seem to support the opposite tendency.

In order to learn more about the correlation between interaction and use of pronouns, the percentage of text spoken by the lecturer and by other speakers was estimated. These results, together with the classification of discourse modes and the number of participants in each lecture, provided with the MICASE, showed that Lecture 2 had the highest level of interaction. This resulted in a higher number of occurrences of both pronouns under study. However, the level of interaction did not seem to have any effect on the difference in occurrences of 'you' and 'I' in Corpus B. All lectures showed a higher percentage of 'you' than of 'I'. The exception to this tendency was Lecture 5, which, in spite of being almost 100% monologic, had a greater use of 'I' than of 'you'.

Regarding the referents and discourse functions of 'I', the lecturer seems to keep the floor in most of the occurrences of 'I' with functions such as:

metadiscourse,
expression of attitude towards the other participants or to the subject matter,
subject of anecdotes,
hypothetical 'I' as an example.

The referent of 'I' may also be a changing speaker who has to identify himself when taking his turn to speak in dialogue and reported speech.

'You' can have two different referents: the hearer and an, in principle, indefinite 'you'. The hearer, as a referent, is plural when 'you' refers to the audience and usually singular when it is found in dialogue and reported speech. With the audience as referent, 'you' has a metadiscursive function and is used to address the hearer in dialogue and reported speech. Metadiscourse is the only function shared by both pronouns, but it is not the most frequent for 'you' in any lecture, and only three of the five lectures of Corpus B have textual metadiscourse as the main discourse function of 'I'.

The impersonal 'you' can have four hidden referents: 'they', 'people', 'we' or 'I'. With the former two, the discourse function seems to cause a certain approximation of speaker and hearer, whereas with 'we' and 'I' the effect is the opposite, that is, to cause a distancing between the speaker and the hearer.

There was one question that remained unanswered after the quantitative search: why Lecture 5, despite being almost 100% monologic, shows a percentage of 'I' higher than that of 'you'. Lecture 5 displays several characteristics which are different from the rest of the lectures. There is a very scarce use of the pragmatic markers "you know" and "I mean", very common in the other lectures. There are neither anecdotes nor reported speech. For the discourse function of metadiscourse, there is a clear preference for the pronoun 'I', contrary to what happens in the other four lectures; and there is an anomalous low use of impersonal 'you'. For all these reasons, Lecture 5 does not seem to follow the general pattern, found in all the other lectures and supported by the quantitative search. I think that the reason for these results can be found in a different teaching style of the lecturer, which is supported by the fact that it is the only lecture in Corpus B that is addressed to graduate students.

In conclusion, it can be stated that interaction in lectures is related to a higher frequency in the use of the pronouns 'I' and 'you'. Monologic language in the MICASE shows a tendency to use 'you' more frequently than 'I'. This is due to a clear preference of impersonal 'you' in lectures, which can be used by the speaker both for approximating and for increasing the distance between the speaker and the hearer. On the other hand, dialogic academic language shows a preference for 'I', since speakers need to identify themselves, their ideas, opinions and attitudes in their contributions to the discourse.

In the study conducted, I have tried to find out which were the uses of the pronouns 'I' and 'you' in a large electronic corpus of American academic English. Two studies were carried out: one quantitative, using the whole large corpus and the search tools provided in the MICASE web site; and one qualitative, using a sub-corpus of five lectures which was carried out by means of a thorough analysis of the language in these transcripts. Both studies are complementary; the first one posed several questions that could only be answered with the results of the second study. On the other hand, the results of the second study needed the data obtained in the first one to get support in order to be generalised.

However, even large corpora have limitations. MICASE contains American academic language. The results obtained from this corpus may not be coincident with those that can be obtained from corpora of other varieties of English in other countries. Further research will be needed in order to

have enough evidence to generalise the conclusions of this study to academic lectures in English, in general, or in order to compare the language of lectures in several countries.

ACKNOWLEDGMENTS

I would like to thank the English Language Institute at the University of Michigan for the MICASE, the first large corpus of academic spoken English available and free for all researchers through the Internet. Their great effort and generosity have made research on academic spoken English accessible to the whole world.

NOTES

[1] To learn more about mega-corpora, see http:/lingo.lancs.ac.uk/devotedto/corpora/corpora.htm

REFERENCES

Biber, D., S. Johansson, G. Leech, S. Conrad, E. Finnegan (1999). *Longman Grammar of Spoken and Written English.* London: Longman.

Brown, P. and S. C. Levinson (1994). *Politeness.* 1st edition 1978. Cambridge: Cambridge University Press.

Cherry, R.D. (1988). Ethos versus persona: Self-representation in written discourse. *Written Communication,* 5 (3), 251-276.

Crawford Camiciottoli, B. (2003). Interactive discourse structuring in L2 guest lectures: Some insights from a comparative corpus-based study. *Journal of English for Academic Purposes,* 3 (1), 39-54.

Del Lungo Camiciotti, G. (2002). The negotiation of academic knowledge in nineteenth-century lectures on economics. In M. Gotti, D. Heller and M. Dossena (eds.) *Conflict and Negotiation in Specialized Texts.* Bern: Peter Lang. 319-334.

Erman, B. (2001). Pragmatic markers revisited with a focus on 'you know' in adult and adolescent talk. *Journal of Pragmatics* 33, 1337-1359.

Fortanet, I. (2004). The use of 'we' in university lectures: Reference and function. *English for Specific Purposes,* 23 (1), 45-66.

Hyland, K. (1998). *Hedging in Scientific Research Articles.* Amsterdam: John Benjamins Publishing Company.

Ivanic, R. (1997). *Writing and Identity: The Discoursal Construction of Identity in Academic Writing.* Amsterdam: John Benjamins Publishing Company.

Kamio, A. (2001). English generic *we*, *you*, and *they*: An analysis in terms of territory of information. *Journal of Pragmatics* 33, 1111-1124.

Kennedy, G. (1998). *An Introduction to Corpus Linguistics.* London: Addison Wesley Longman.

Morell, M.T. (2001). The role of discourse markers and personal pronouns in lecture discourse. In A.I. Moreno and V. Colwell (eds.) *Recent Perspectives on Discourse*. Asociación Española de Lingüística Aplicada. León: Secretariado de Publicaciones y Medios Audiovisuales. CD-Rom.

Myers, G. (1999). Functions of reported speech in group discussions. *Applied Linguistics*, 20 (3), 376-401.

Rounds, P. (1987). Multifunctional personal pronoun use in educational settings. *English for Specific Purposes*, 6 (1), 13-29.

Simpson, R.C., S.L. Briggs, J. Ovens and J.M. Swales (2002). *The Michigan Corpus of Academic Spoken English*. Ann Arbor, MI: The Regents of the University of Michigan. Available at <http://www.lsa.umich.edu/eli/micase/micase.htm>

Strodt-Lopez, B. (1987). Personal anecdotes in university classes. *Anthropological Linguistics*, 29 (2), 194-269.

Tang, R. and S. John (1999). The 'I' in identity: Exploring writer identity in student academic writing through the first person pronoun. *English for Specific Purposes*, 18 (1), 23-39.

Chapter 4

EXPLORING EPISTEMIC MODALITY IN ACADEMIC DISCOURSE USING CORPORA

Vassiliki Rizomilioti
University of Patras (Patras, Greece)

1. INTRODUCTION

Epistemic modality, an area of major importance in academic discourse, has been increasingly an object of research over the last decades. Research related to academic writing has dealt with modal verbs in science, e.g. Huddleston (1971), Sieler (1983) and Butler (1990), as well as with 'hedging', which includes the ways of being fuzzy and avoiding committing oneself to the truth of a proposition, e.g. Salager-Meyer (1992, 1994), Hyland (1996), Markannen & Shroeder (1997), and Hyland (1998 a, b). The literature available deals mainly with hedging in medical academic writing, or science in general, rather than the humanities (with the exception of Simpson, 1990 and Piqué et al., 2002), and involves the academic research article, and less frequently other genres, such as clinical reports (Salager-Meyer, 1992). Furthermore, with few exceptions (e.g. Hyland, 1996, 1998 a, b), it has involved a number of texts rather than a corpus in an electronic form.

This chapter examines three small, purpose-built corpora from three disciplines, namely Biology, Literary Criticism and Archaeology. While the former two represent science and the humanities respectively, the latter combines elements of both, thus covering the middle ground. The genre

examined is the published research article, which is the major vehicle for the construction of knowledge. The type and amount of epistemic modality it encodes is of crucial importance, as it affects the way claims are to be interpreted and used.

The aim of this study is to search for similarities and differences across the three disciplinary areas in this genre in terms of the expression of the certainty-uncertainty continuum and the reasons for them. It is hypothesized that there will be substantial differences across the disciplines represented by the three corpora. In the following sections there will be a brief review of the theoretical background, which will be followed by the methodology, results and discussion.

2. DEFINITION AND EXPONENTS OF EPISTEMIC MODALITY

The term epistemic modality derives from the Greek word 'episteme', which means 'knowledge' and refers to 'matters of knowledge, belief or opinion rather than fact' (Lyons, 1977: 793). Traditionally, exponents of epistemic modality were confined to modal auxiliaries, and therefore, most of the earlier work dealt with their analysis, e.g. Palmer (1979, 1986) and Coates (1983). Halliday (1985), however, opens new avenues in the study of modality through his framework of interpersonal metaphor, which is one of the two types of grammatical metaphor, the other being the ideational one. Halliday (1985: 333) identifies a congruent, and a non-congruent, or metaphorical mode, although he admits that it is not always possible to define a metaphorical representation of modality. He considers congruent the forms that involve choices within the clause, i.e. modal auxiliaries and adverbs, and non-congruent choices, i.e. those involving projected clauses. He attributes the metaphorical status of the clause to the fact that the proposition is in the projected rather than in the projecting clause, and as evidence he offers the tag referring to the projected clause e.g. *I think it's going to rain, isn't it?* (ibid).

More recently there has been a tendency to take an even more extended view of epistemic modality, which covers other parts of speech as well. More specifically, writers such as Perkins (1983), Hermeren, (1978), Holmes (1982, 1983, 1988), Biber & Finegan (1988, 1989), Hunston (1994) and Hyland (1998 a, b) see modality as including, in addition to modal auxiliaries, epistemic adverbs and lexical verbs, epistemic adjectives, as well as epistemic nominal expressions.

This study takes as a working definition of epistemic modality the one offered by Coates (1995: 55): 'epistemic modality is concerned with the

speaker's assumptions, or assessment of possibilities, and, in most cases, it indicates the speaker's confidence or lack of confidence in the truth of the proposition expressed'. According to this definition, epistemic modality involves the expression of both reduced and emphasised certainty. It fails, however, to mention that the unmarked, categorical, encoding of confidence or certainty (e.g. expressed by the verb to be) is not included under this term.

The present study looks at both the expression of uncertainty and more or less marked certainty. More specifically, it examines "Downtoners", adopting the term from Holmes (1982: 18), who defines them as 'lexical devices used to signal the speaker's lack of confidence, or to assert something tentatively' and 'weaken or reduce their force' (ibid). The extended view of modality adopted (see section 4 for examples from the three corpora) includes modal auxiliaries (i.e. *must, should, could, may, might*); epistemic lexical verbs (e.g. *think, consider, indicate*); epistemic adverbs (e.g. *probably, perhaps)*; epistemic adjectives (e.g. *probable, possible*) and epistemic nouns (e.g. *indication, suggestion*) (see Appendix 1 for the list of the epistemic exponents included in this study, and Appendix 2 for the most frequent devices found in the three corpora).

As mentioned above, this study also examines two types of certainty, that is, the more emphatic type, i.e. "Boosters", adopted from Holmes (1982: 18), who defines them as 'lexical devices used to express strong conviction', which 'strengthen or increase the illocutionary force of utterances', and the less emphatic one "Indicators of Certainty". The former category, in this account, unlike in that of Holmes', which includes all types of marked certainty, is taken to consist of epistemic adverbs, e.g. *obviously,* and adjectives, e.g. *clear* (see section 4 for examples from the corpora). Indicators of Certainty are taken to consist of epistemic lexical verbs, such as *show* and *demonstrate*, and epistemic nouns, such as *finding* and *conclusion.*

The reason for distinguishing two types of marked certainty is that they perform different functions. While Boosters are used primarily for rhetorical purposes, rather than to express certainty, Indicators of Certainty are used to express a high degree of confidence, especially in the context of the interpretation of results, as shown in Rizomilioti (2003: 268). The fact that Boosters of certainty do not normally intend to add to the certainty of a claim can be seen in that they can be omitted without a change in the degree of certainty expressed. Indicators of Certainty, on the other hand, which are used to denote certainty, although they could be replaced by verbs or nouns of a lower degree of certainty, cannot be omitted, as they constitute an integral part of the clause.

3. EPISTEMIC MODALITY AND HEDGING

As the term hedging has been widely used in the relatively recent literature, and in order to see if comparability with the present work is possible, it is considered appropriate to clarify at this point what this term denotes as compared with epistemic modality as it is used in the present study.

The first major difference between the two terms, seen above in Coates' definition, is that epistemic modality includes additionally the expression of certainty or confidence. Hedging, on the other hand, which is viewed as consisting of different parameters in the various existing accounts, in addition to the epistemic devices examined in this study, is considered to include the following: 'approximators', such as *somewhat* and *a number of, if* clauses, use of the passive voice, avoidance of first person singular and attribution to unnamed sources. Furthermore, it contains the expression of usuality, which is indicated by certain modals e.g. *may,* or by verbs such as *tend.* A number of accounts of hedging also mention personal stance markers, whose function is to denote commitment or detachment, such as *according to, in my opinion* or *to my mind.* Finally, according to Hyland (1996: 272), it includes also 'discourse-based' hedges, such as 'referencing to limiting experimental conditions' and 'admission to lack of knowledge', e.g. 'we do not know whether.../viewed in this way the concept...becomes obsolete'.

Taking into account the various exponents of hedging in the literature and the epistemic devices of epistemic modality examined in the present study, we can say that comparability between studies adopting the former and studies, such as the present one, adopting the latter is possible only to a certain extent.

4. CORPORA AND METHODOLOGY

This is a corpus-linguistic study based on the concordances yielded by three corpora of approximately 200,000 words each. The three corpora include scanned research articles selected from major journals (see Appendix 3) with the help of subject specialists in the three disciplines. The articles were taken from five different journals and the selection was made according to a number of criteria. i.e. the writers had to be native-speakers of English, the journals had to be representative of the field in terms of content (including a variety of topics), style, and country of publication and as recent as possible. In the Biology Corpus, both experimental and theoretical articles were included (at random, the former constitute the majority though), and in

the Literary Criticism Corpus, both traditional and modern journals were selected. In the case of the Archaeology Corpus, both excavation and non-excavation articles (published by Departments of Archaeology or Classics) were included in equal measure. As two of these journals, i.e. *Hesperia* and *Proceedings of the Prehistoric Society*, publish a large number of excavation articles, unlike the other three, they were used as the main source of this type of articles. Therefore, a total of a larger number of words were taken from these journals than from the rest (see Appendix 3). Both British and American journals were chosen, and a number of the articles also came from writers based in Australian and Canadian universities. An effort was made to include women writers as well.

The concordances containing the lexical items under examination were produced by means of the concordancer 'Microconcord'. In order to obtain the lexical items to be searched, the lists provided by other research were consulted, e.g. Holmes (1982), Perkins (1983), Biber & Finegan (1988), and Hyland (1998 a, b). In addition, I used as a node, frames, such as *the N that* in the case of nouns, endings such as **ly* in the case of adverbs, and in the case of epistemic lexical verbs **that.* Finally, the cognates of the adverbs and adjectives and verbs were also searched in the corpora (e.g. *presume* from *presumably*). Each concordance line containing an exponent of certainty or uncertainty was examined in context in order to establish whether the lexical item was related or not to epistemic modality or whether it had other meanings.

It must be added that, in the case of a number of epistemic exponents, the context searched extended well beyond the concordance line and the wider co-text was examined in order to determine whether the function was that of certainty or uncertainty, e.g. in the case of *indeed* and *expect.* In the case of anaphoric nouns, recourse to the previous stretch of text was also necessary. What should be noted, with regard to modal auxiliaries, is that *will* and *would* were excluded: the former, because it is used mainly as Metatext in the majority of the instances (e.g. In this section we *will show that*), as shown by a preliminary investigation, and the latter because it is not always possible to establish whether it expresses certainty or uncertainty. Furthermore, unlike previous studies, I did not include in the count the use of modals a) as "Interpersonal Commentative Metatext" (a term used by Crismore & Farnsworth, 1989), e.g. It *must be noted* that.., it *may be recalled* that..; b) as recommendation (e.g. *may be regarded as* a tentative hypothesis); and c) as concession (e.g. *it may be thought.... but*). It may be added at this point that modals presented most of the difficulty in the analysis, as they often involve a number of functions. Therefore, in order to ensure validity, the analysis of epistemic and non-epistemic meanings was repeated over a period of time and the results of the two analyses were

compared. In addition, to ensure that there were as few errors as possible, a specialist informer was consulted in the analysis of certain ambiguous instances of *must* and *could* from the Biology Corpus.

Before moving on to the results yielded by the analysis of the concordances, I will present a small number of concordance lines representative of epistemic exponents belonging to different parts of speech.

DOWNTONERS

Modal verbs

Might (from the Archaeology Corpus)

at a point where traces of wall-plaster and other occupation-debris suggested that buildings **might** await discovery (cf FIG. 2) A total area of c. 445 m^2 was eventually cleared and excavated hut, despite the ABRE19

There was evidence that the hall was divided into bays, and had a porch. Traces were also found of what **might** have been a sunken- featured building with a plank floor. Within the main settlement area two sites AANTG63B

It also continued its examination of sites on the adjacent coastal plain that **might** have been connected in one way or another with the Bronze Age occupation on the island and targeted two AHSE61B

May (from the Literary Criticism Corpus)

The gloom of the memoir **may** also owe something to the fact that Orwell was dying of tuberculosis and now saw the world in an austerely LRES43

While creating a new, wider audience for history, it **may** also draw that audience into metanarratives that can be blinding as well as liberating. LCQ32BB

there is a need to examine this issue of style more closely in post-romantic poetry, a study that **may** also begin to reveal some of the pressures bearing upon the displacement of rhyme in much modernist verse. LEIC43A

Epistemic Lexical verbs

Indicate (from the Biology Corpus)

This pattern is also found in other Goniozus spp. and **indicates** a considerable degree of precision in the allocation of sex to the offspring in a brood (Green et al., BHER71A)

rather than the eight 145 nm repeats of myosin head origins observed in the relaxed state. This **indicates** that dominance of the actin repeat on myosin head form enforces axial and azimuthal changes BMB233

The excellent agreement between these three methods **indicates** that the procedures for section thickness determination are very robust. Obtaining reconstructions from BMB233

Epistemic Adjectives

Likely (from the Literary Criticism Corpus)

it will seldom be possible to identify these sources with certainty, nor does it *seem* **likely** *that* such identification, if achieved, would prove particularly rewarding. Edwards cites W. K. Thomas's LEIC39

17 I would like to suggest that the difficulties of these references have been exaggerated. *It seems* **likely** *that* Browning was thinking of the expressive effects of specific musical intervals LRES41A

As Carlos Baker implies, *it is* **likely** *that* Mann's "Death in Venice" had some influence on Hemingway's Across the River and into the Trees. LTCL35A

Epistemic Adverbs

Probably (from the Biology Corpus)

we reasoned that BstEII fragments composed of the same class of variant are **probably** adjacent to one another within the NOR. Therefore, it seemed likely that the 640, 800 and two 60 kb BPJ9A

John & Miklos (1988) suggest that a ciliate protozoan, a fly and an angiosperm **probably** all have about the same number of functional genes indicating that the most important steps in evolution BLS50

Although genotype 33 was represented by a single female in the Lake Purrumbete samples, it is **probably** also a clonal genotype. This is suspected on the basis that it is not homozygous for Mpid (Table 2) BHER71D

Epistemic Nouns

Possibility (from the Archaeology Corpus)

The **possibility** also exists that the brooch was buried some considerable time after its manufacture. It is tempting to APPE60

may have been part of the accumulation of fill that took place after the Roman reuse. This latter **possibility** appears to be the case with Angelopoulos 11. The two vases(25, 26) were found in the fill, mixed with AAJE92

Severan rebuilding at the back of the rampart (Rooms 12, 22 and 35 of the men's quarters)(26), the **possibility** cannot be ruled out that this layer was hardcore connected with later activity rather than straightforward ABRE22

BOOSTERS

Epistemic Adverbs

Clearly (from the Archaeology Corpus)

excavation has begun to reveal a small square room with walls 1.50 m. in length. It is **clearly** a late addition, as it is built of small rough stones. From the western side of the tower two parallel AHSE59A

as early as the late eighth century, continuing through the fourth century. 32 Kourotrophos figures were **clearly** a part of the worship of female divinities in Italy. The two akroteria of the kourotrophos type found in AAJG91C

only 33 of these have been found. Low counts on these fragments are **clearly** a result of the thinness of the tile at this point (0.03 to 0.045 m.) and the small size AHSG58

Obviously (from the Literary Criticism Corpus)

and she receives husbandly gifts of summer blouses that cost "ten and elevenpence" (**obviously** an item of clothing out of the question for Eveline Hill). Although she made quite a show of objecting to LTCL34B

to the death of his child (for is not that to come in contact with death?), and it is **obviously** associated with his decision to murder his wife. Although with classic bad faith he represents this to LEIC42B

the 'reality effect', that constitutes at once this form's appeal and its faint uneasiness. **Obviously**, no historical novel worthy of the name, however degenerate, is ever completely unserious or completely LCQ32BB

Epistemic Adjectives

Evident (from the Archaeology Corpus)

The basic contrast of this pattern with the five politically dominant centres of southern Etruria is most **evident**. [As a shorthand these dominant centres will be called primate in the discussion below.] AANTG62B

his variety cannot be reduced to a mere difference between Greek and Etruscan culture. It is also equally **evident** between regions within both Greece and Etruria, and reflects greater social diversity than has hitherto AANTG62B

the presence of the Geometric vases a Volimidia as the offerings to a local hero or ancestor. The **evident** continuation of such ancestor worship at Volimidia in Hellenistic and Roman times tends to support this in AAJE92

INDICATORS OF CERTAINTY

Lexical verbs

Show (from the Biology Corpus)

Vibert & Craig, 1982; Toyoshima & Wakabayashi, 1985 Milligan & Flicker, 1987). These studies **show** a uniform, angled myosin head conformation. However, it remains important to view crossbridges in situ, BMB233

an exogenous trigger of settlement and metamorphosis has been **shown** to control the distribution of recruits of this coral in the natural environment. BBUL181

conforms with expectations for sexual reproduction (Table 2). This shows that their presence not only had a dramatic effect on diversity levels but also that Mpi'l'l is probably BHER71D

Epistemic Nouns

Conclusion (from the Biology Corpus)

The intriguing but inescapable **conclusion** from this analysis is that if 'protists' possess most of the requirements for development, several lineages BLS50

hydrolysis liberates a sulfate-containing, strongly anionic, small morphogen is consistent with this **conclusion**. Recently, hydrolysis, ion-exchange HPLC, and sensitive detection of the resolved monosaccharides by BBUL181

The smaller, lateral scales bear only light growths, restricted to their lower surfaces, supporting the **conclusion** that they are younger than their more dorsal counterparts. Most scales lying along the anterior BBUL182A

5. RESULTS OF THE ANALYSIS

The results of the analysis of epistemic devices in each of the three corpora verify the hypothesis that there are considerable differences across the different disciplinary areas in terms of the encoding of epistemic modality. There are, however, also a number of similarities. More specifically the results show that:

1. The three corpora differ in the amount of certainty and uncertainty encoded in the three disciplines (see Figure 1/Tables 2,3).
2. There are both similarities and differences in terms of the frequencies of the parts of speech favoured by the three disciplines (see Figure 2/Tables 1,2)

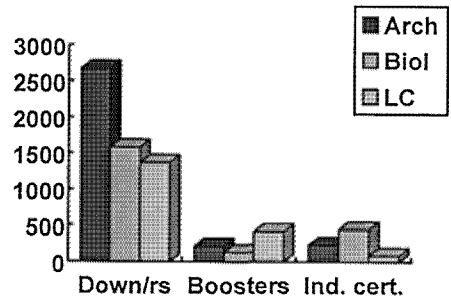


Figure 1. The frequencies of Downtoners, Boosters and Indicators of Certainty in the three corpora.

Arch.: Archaeology
Biol.: Biology
LC: Literary Criticism
Down/rs: Downtoners
Ind. cert. : Indicators of Certainty

Table 1. The frequencies of the different parts of speech functioning as Downtoners.

	Arch	Biol	LC
modal aux. verbs	601	367	212
lexical verbs	1,092	760	657
adverbs	531	181	212
adjectives	245	95	195
nouns	203	140	99
Total	**2,672**	**1,583**	**1,375**

Table 2. The frequencies of the different parts of speech functioning as Boosters and Indicators of Certainty.

Boosters of Certainty	**Arch.**	**Biol.**	**LC**
Adverbs	187	95	391
Adjectives	28	33	25
Total	215	128	416
Indicators of Certainty	**Arch**	**Biol**	**LC**
Nouns	18	26	9
Lexical verbs	214	417	75
Total	232	443	84
TOTAL	**447**	**571**	**500**

Table 3. The frequencies of the exponents of certainty and uncertainty in the three corpora (per 1000 words).

	Boosters	Indicators of certainty	Downtoners
Arch	1	1.1	13.3
Biol	0.6	2.2	7.9
LC	2	0.4	6.8

As we can see in Table 3, each of the three corpora favours one of the three types of epistemic modality identified in this study. Archaeology articles have the largest number of Downtoners, i.e. 13.3 per thousand words, compared with 7.9 and 6.8 in the Biology and the Literary Criticism corpora, respectively. Biology articles, on the other hand, have the largest number of Indicators of Certainty, i.e. 2.2 per thousand words, followed by the Archaeology articles, i.e. 1.1, and the Literary Criticism ones, i.e. 0.4, per thousand words. The Literary Criticism articles, by contrast, have the highest frequency of Boosters, namely 2 per thousand words, as compared

with that of the Archaeology articles (i.e. 1 per thousand words) and the Biology articles (i.e. 0.6 per thousand words).

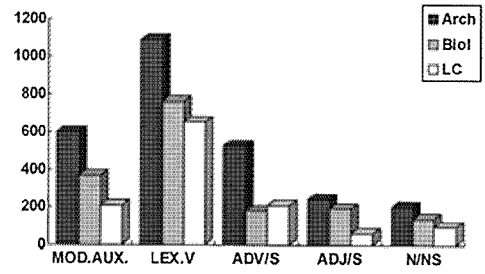


Figure 2. The frequencies of the different parts of speech functioning as Downtoners.

MOD.: Modal auxiliaries
LEX. V.: Lexical verbs
ADV/S: Adverbs
ADJ/S: Adjectives
N/NS: Nouns

Regarding the parts of speech by means of which epistemic modality is encoded, in the case of Downtoners, as Figure 2 shows, in all three corpora, lexical verbs are by far the most frequent, followed by modal auxiliaries. In terms of the expression of certainty, lexical verbs and adverbs prevail over nouns and adjectives. It is interesting to note the distribution of epistemic verbs and adverbs expressing certainty and uncertainty across the three corpora. As shown in Table 1, in the case of Downtoners of certainty, the frequency of epistemic lexical verbs is by far higher than that of epistemic adverbs in all three disciplines represented. In the case of certainty exponents, on the other hand, as shown in Table 2, there are remarkable differences across the three disciplines. While there is a balance of epistemic adverbs and epistemic lexical verbs in the Archaeology Corpus, in the Biology Corpus there is a high frequency of epistemic lexical verbs and a low frequency of epistemic adverbs, which is the reverse in the Literary Criticism Corpus, in which epistemic adverbs prevail.

6. DISCUSSION

The analysis of epistemic devices shows that the Archaeology articles encode a high degree of uncertainty, which seems to be due, among other

reasons, to the nature of the discipline. The interpretations of a particular finding and the claims about civilizations of the past can never be certain and they are always provisional, open to insights offered by fresh evidence from further excavations. Not only is there uncertainty in the field, but also it is acceptable to express it. In Biology, on the other hand, in which the prevailing ideology is that of truth and objectivity, certain claims can be made with certainty, while interpretations need to be made with caution, as it is not allowed to express a high degree of uncertainty nor a high degree of marked certainty, if validity is to be accomplished. Therefore, there is a low frequency of both, especially of the latter. In Literary Criticism, on the other hand, which aims to persuade rather than to inform, 'to create and reinforce communities of scholars sharing the same values', as Fahnstock & Secor (1991: 82) maintain, and which 'does not aim to be true' (Boukalas, 1996: 1, my translation), there is a small amount of uncertainty expressed although proof of one's claims is usually not possible to obtain. There is, by contrast, a large amount of marked certainty, encoded by Boosters. As they could be omitted, they seem to be there to serve a particular purpose, that is, to reinforce the argument, which is the only means of persuasion in this disciplinary area. The low frequency of Indicators of Certainty in the Literary Corpus, on the other hand, does not indicate that there is no certainty involved but that in this discipline claims involving interpretation tend to be expressed categorically, instead of being modified by lexical verbs, such as *indicate*. The high incidence of verbal Downtoners in the Biology Corpus, on the other hand, suggests caution on the part of science writers when addressing peers.

With regard to results of relevant research in the literature, it is interesting to note Hyland's (1998) study of a number of corpora, one of which was a corpus of Philosophy articles. Hyland found that in that corpus there was a high instantiation of hedging, unlike the rather small amount of uncertainty encoded in the Literary Criticism Corpus in the present study, and a large number of Boosters (Indicators of Certainty were also included under "Boosters" in Hyland's study), as in this study. We can see that, although in some cases there is some indication of existing tendencies, it is not always possible to generalize about frequencies of epistemic devices in the humanities and science as a whole, as each discipline reflects different conventions serving different purposes and different ideologies.

The absence of homogeneity in academic writing, shown by studies such as the present one, indicates the need for further study of the particular characteristics of disciplinary areas in different genres. This is only possible through the technology available nowadays, in other words, through the analysis of specialized corpora.

REFERENCES

Aston, G. (1997). Small and large corpora in language learning. Paper presented in April 1997 at the PALC Conference, University of Lodz, Poland.

Boukalas, P. (1996). *ενδεχομένως: στάσεις στην ελληνική και ξένη τέχνη του λόγου*. Εκδόσεις Αγρα, Αθήνα.

Biber, D. and E. Finegan (1988). Adverbial stance types in English. *Discourse Processes* 11, 1-34.

Biber, D. and E. Finegan (1989). Styles of stance in English: Lexical and grammatical marking of evidentiality and affect. *Text* 9, 93-124.

Butler, C. (1990). Qualifications in science: Modal meanings in scientific texts. In W. Nash (ed.) *The Writing Scholar: Studies in Academic Discourse*. Newbury Park, CA: Sage. 137-170.

Coates, J. (1983). *The Semantics of the Modal Auxiliaries*. Beckenham, UK: Croom Helm.

Coates, J. (1995). The expression of root and epistemic possibility in English. In J. Bybee and S. Fleischman (eds.) *Modality in Grammar and Discourse*. Amsterdam: John Benjamins. 55-66.

Crismore, A. and R. Farnsworth (1989). Mr. Darwin and his readers: Exploring interpersonal metadiscourse as a dimension of ethos. *Rhetoric Review* 8, 91-111.

Fahnstock, J. and M. Secor (1991). The rhetoric of literary criticism. In C. Bazerman and J. Paradis (eds.) *Textual Dynamics of the Professions: Historical and Contemporary Studies of Writing in Professional Communities*. Madison: University of Wisconsin. 76-99.

Halliday, M.A.K. (1985). *An Introduction to Functional Grammar*. London: Edward Arnold.

Hermeren, L. (1978). *On Modality in English: A Study on the Semantics of the Modals*. Lund: Gleerup. (Lund Studies in English; 53).

Holmes, J. (1982). Expressing doubt and certainty in English. *RELC Journal*, 13 (2), 9-28.

Holmes, J. (1983). Speaking English with the appropriate degree of conviction. In C. Brumfit (ed.) *Learning and Teaching Languages for Communication: Applied Linguistic Perspectves*. London: CILT. 100-117.

Holmes, J. (1988). Doubt and certainty in ESL textbooks. *Applied Linguistics*, 9 (1), 21-38.

Huddleston, R.D. (1971). *The Sentence in Written English: A Syntactic Study Based on an Analysis of Scientific Texts*. Cambridge: Cambridge University Press.

Hunston, S. (1994). Modal meanings in the structure of argumentation. In M. Brekke, T. Dahl and J. Myking (eds.) *9th European Symposium on LSP*. University of Bergen. 621-628.

Hyland, K. (1996). Talking to the academy: Forms of hedging in science research articles. *Written Communication,* 13 (2), 251-281.

Hyland, K. (1998a). *Hedging in Scientific Research Articles*. Amsterdam: John Benjamins.

Hyland, K. (1998b). Boosters, hedging and the negotiation of academic knowledge. *Text*, 18 (3), 349-382.

Lyons, J. (1977). *Semantics*. Cambridge: Cambridge University Press, 2 vols.

Markkanen, R. and H. Schroder (eds.) (1997). *Hedging in Discourse: Approaches to the Analysis of a Pragmatic Phenomenon in Academic Texts*. New York: Walter de Gruyter.

Palmer, F.R. (1979). *Modality and the English Modals.* London: Longman.

Palmer, F.R. (1986). *Mood and Modality*. Cambridge: Cambridge University Press.

Perkins, M. (1883). *Modal Expressions in English*. London: Francis Pinter.

Piqué-Angordans, J., Posteguillo, S. and J.V. Andreu-Besó (2002). Epistemic and deontic modality: A linguistic indicator of disciplinary variation in academic English. *LSP and Professional Communication*, 2 (2), 49-65.

Rizomilioti, V. (2003). *Epistemic Modality in Academic Writing: A Corpus-Linguistic Study*. Unpublished PhD thesis. The University of Birmingham.

Salager-Meyer, F. (1992). Hedges and textual communication function in medical English written discourse. *English for Specific Purposes*, 13 (2), 149-170.

Salager-Meyer, F. (1994). A text-type and move analysis study of verb tense and modality distribution in medical English abstracts. *English for Specific Purposes*, 11 (2), 93-113.

Scott, M. and T. Johns (1993). *Microconcord,* Oxford English Software. Oxford: Oxford University Press.

Sieler, S. (1983). *Modals and Modality in English for Academic Purposes: Science and Technology*. Unpublished Ph.D. thesis. University of Florida.

Simpson, P. (1990). Modality in literary-critical discourse. In W. Nash (ed.) *The Writing Scholar: Studies in Academic Discourse*. Newbury Park, CA: Sage. 63-94.

APPENDIX 1

Table 1. Downtoners of certainty in the three corpora.

Modal Auxiliary Verbs	
could	Notion
may	Possibility
might	Probability
must	Proposal
should	Suggestion
Epistemic Adverbs	suspicion
allegedly	view
apparently	theory
conceivably	**Epistemic Lexical Verbs**
ostensibly	appear
perhaps	argue
possibly	assume
probably	believe
presumably	claim
seemingly	deduce
supposedly	describe (as)
Epistemic Adjectives	doubt
apparent	expect
conceivable	feel
doubtful	identify
hypothetical	indicate
improbable	interpret
indicative	judge
likely	propose
possible	regard
probable	seem
questionable	suggest
seeming	suppose
suggestive	suspect
unlikely	take
Epistemic Nouns	think

argument
assumption
belief
doubt
expectation
hypothesis
impression
indication
interpretation
likelihood

Table 2. Boosters and Indicators of Certainty in the three corpora.

Epistemic Adverbs	**Epistemic Lexical Verbs**
admittedly	argue
certainly	attest
clearly	conclude
decidedly	demonstrate
definitely	confirm
distinctly	emphasise
evidently	establish
indeed	highlight
naturally	know/n
noticeably	point out
obviously	prove
of course	realise
patently	recognise
recognisably	reveal
surely	stress
undoubtedly	
Epistemic Adjectives	
apparent (that)	
clear	
evident	
obvious	
true	
Epistemic nouns	
conclusion	
confirmation	
discovery	
finding	
knowledge	
realisation	
recognition	

APPENDIX 2

Table 1. The most frequent Downtoners in the three corpora (shown in italics).

Arch.	Biol.	LC
may (417)	*suggest (233)*	*seem (253)*
suggest (294)	*may (225)*	*may (142)*
probably (220)		
appear (194)	*appear (150)*	*perhaps (115)*
seem (149)	*indicate (116)*	might (78)
indicate (140)	probably (85)	appear (49)
perhaps (122)	might (64)	think (38)
possibly (93)	likely (57)	apparently (37)
possible (84)	apparent (54)	must (30)
likely (71)	seem (44)	
apparently (65)	expect (39)	
must (54)		
argue (54)		
could (50) must (44)		

Table 2. The most frequent Boosters and Indicators of Certainty in the three corpora.

Arch.	Biol.	LC
clearly (53)	show (85)	indeed (93)
show (41)	reveal (61)	of course (87)
indeed (41)	confirm (53)	certainly (56)
certainly (36)	demonstrate (51)	clearly (42)
	clearly (47)	show (41)

APPENDIX 3

The journals used for the compilation of the corpora

1. The Archaeology Corpus (29 articles), (198,215 words)
   Britannia (32,601)
   Proceedings of the Prehistoric Society (53,888)
   Antiquity (30,884)
   Hesperia (51,222)
   American Journal of Archaeology (29,620)

2. The Biology Corpus (36 articles). (197,711 words)
   Journal of Molecular Biology (40,800)
   The Biological Journal of the Linnean Society (36,450)

The Plant Journal (40,735)
Heredity (39,614)
The Biology Bulletin (40,112)

3. The LC Corpus (34 articles), (200,189 words)
   The Critical Quarterly (39,574)
   Twentieth Century Literature (42,401)
   Essays in Criticism (38,598)
   Textual Practice (40,934)
   Review of English Studies (38,682)

PART II.
COMPUTER-MEDIATED COMMUNICATION

Chapter 5

FINDING COMMON GROUND IN LSP: A COMPUTER-MEDIATED COMMUNICATION PROJECT

Christine Appel
SALIS, Dublin City University (Dublin, Ireland)

Roger Gilabert Guerrero
Blanquerna School of Communication Studies
Universitat Ramon Llull (Barcelona, Spain)

1. INTRODUCTION

In this chapter we argue that task-based learning provides a flexible and efficient framework for both finding common ground within Languages for Specific Purposes (LSP) and for catering to specific needs in a computer-assisted language learning environment. We describe a case study which was part of a three-year project between the School of Applied Languages and Intercultural Studies at Dublin City University (DCU) in Ireland and the Blanquerna School of Communication Studies at Universitat Ramon Llull, Barcelona, Spain (Appel & Gilabert, 2002a). The Blanquerna-DCU project made use of asynchronous written communication and followed the principles of e-mail tandem language learning as described in Little & Brammerts (1996). The objectives of the project were: 1) to explore the use of computer-mediated communication (CMC) in order to cater for the needs of LSP students of English and Spanish, 2) to investigate the design of tasks for e-mail tandem projects, 3) to test and measure second language

acquisition (SLA) within our framework, and finally 4) to put forward a set of guidelines to inform practitioners in language teaching planning to engage in e-mail tandem projects for language learning purposes.

In this particular paper we report the results of the impact of tasks on written production. We compare the performance of a tandem group that was assigned tasks to a tandem group that was not assigned any tasks. Our general objective was to determine whether there was a quantitative difference in the interaction between tandem pairs who were given the opportunity to write to one another via e-mail for no particular purpose, and tandem pairs who were given a goal, a specified procedure, and from whom an outcome was expected.

In the first section of this chapter, we describe the concept of e-mail tandem language learning within the context of CMC; we report on how we addressed problems which are common to LSP contexts, such as mixed degrees and different pedagogic approaches, by identifying common ground and applying a task-based pedagogical approach. Following we present the research questions, the description of subjects and settings, and results. We finish with a discussion of the results and draw a number of pedagogical implications.

2. THEORETICAL AND PEDAGOGICAL BACKGROUND

The Blanquerna-DCU project has fed on a number of theoretical constructs which have guided the development of the different areas of the project. Firstly, the basic principles of tandem language learning in general and the ones of e-mail tandem language learning in particular have informed the project as far as context of communication is concerned. Secondly, both the principles behind skill-based and task-based needs identification and the researchers' teaching experience were drawn upon to decide on the goals and content of the project. Thirdly, the fundamental core ideas of task design and task-based learning methodology were applied in order to provide a sound pedagogical framework for learners to operate within. These three major sets of principles are briefly described and discussed, and their practical application within the project is outlined in the sections below.

2.1 Tandem language learning

Tandem language learning has taken place for a long time at an informal level. Two students who are native speakers of each other's target language get together to help each other and converse in both languages. (cf. Calvert,

1992). This type of learning has also been used within an institutional framework (e.g. Brammerts et al., 1989, 1990, 1991; Walker, 1998). However, finding enough students for these exchanges in a certain geographical location is often difficult. The Internet opens the possibility for setting up a much higher number of tandem pairs and introduces differences inherent to a written medium. E-mail tandem language learning has been described in a number of studies (e.g. Austin & Mendlick, 1993; St John & Cash, 1995; Woodin, 1997; Appel, 1999; Little et al., 1999; Leahy, 2001), which argue that it is both a motivating activity for students and potentially beneficial for language learning, particularly in the development of areas such as language awareness or learner autonomy.

In e-mail tandem, communication is asynchronous and written. Two groups of learners are given a series of tasks and are asked to work together to carry them out. Each individual student in one group is assigned one student in the other group to correspond with. In the Blanquerna-DCU project, a website which provides an environment specifically tailored to the needs of such a project is used. This environment, the Electronic Tandem Resources (ETR at http://www.tandem.dcu.ie), is a web-based e-mail system that only permits e-mail communication related to the tandem exchange and includes a number of additional tools that assist language learning and facilitate the logistics of setting up and monitoring a tandem exchange by teachers or coordinators (for a more detailed description of this environment see Appel & Mullen, 2002). Students participating in tandem exchanges write half the messages in their first language (L1) and half the messages in their target language (L2): in this way they are both exposed to the language they are learning and they both have the opportunity to write in their L2. Students are also asked to provide corrections on their tandem partners' L2 text. The corrections are meant to bring in focus on form into an exchange of mail which is otherwise very much focused on meaning. Little & Brammerts (1996) discuss the importance of this design to maintain what they describe as the two principles underlying e-mail tandem language learning: the principle of reciprocity (related to the importance that both learners contribute equally to the exchange) and the principle of autonomy (related to the need for the student in such a context to take initiative and control over their own language learning). Figure 1 shows the main interface of the site used by students for their e-mail exchange described in this chapter.

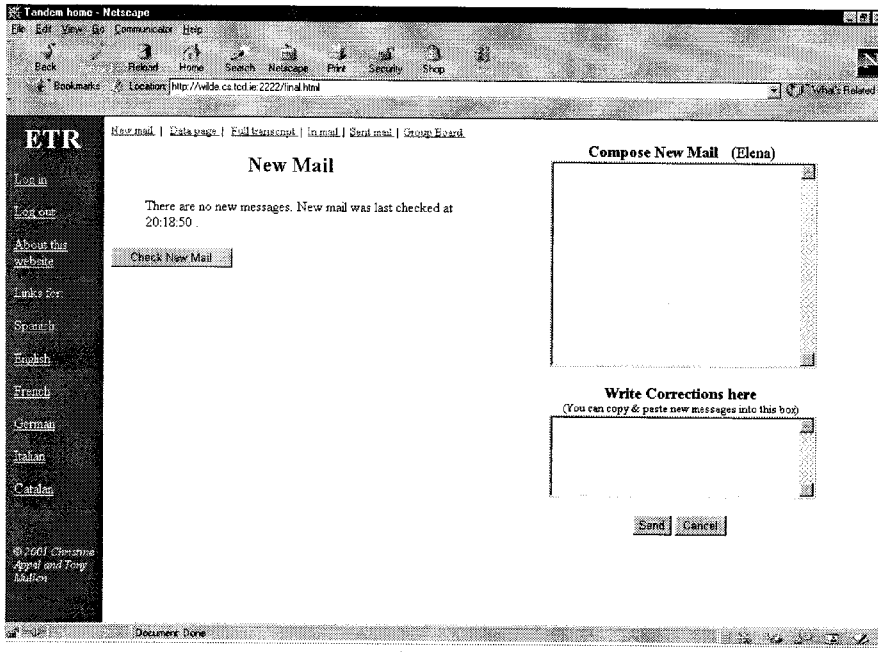


Figure 1. Interface of the ETR site.

2.2 Identifying common ground

Within LSP, one of the ultimate goals is to provide authenticity to the language learning process. Based on needs analysis, instruction should provide situations, tasks, skills or languages which resemble those that take place in real situations within a specific professional domain. As suggested by Blin (1999) and Blin & Donohue (2000), learner autonomy should be developed within such a context, and development should focus on transferable and intercultural skills. The Blanquerna-DCU project on e-mail tandem language learning started with the identification of common research interests and features of the researchers' teaching programmes which could be beneficial for their own classroom practice.

On the one hand, in Ireland we had students who belonged to three different degrees: applied languages, business, and computer science. In Barcelona, on the other hand, we also had students who came from three different degrees: journalism, advertising and public relations, and audio-visual communication. The goals, instrumental skills, and content required by each specific degree differ considerably from one another. In our effort to find common ground between these two highly heterogeneous groups, we

first carefully considered the communication skills that were required by each degree. Since we were both experienced teachers with students from those degrees, we discussed and synthesized those abilities required in all cases, such as the ability to collaborate with others, to plan and organize their work, and to negotiate and persuade in the target language. As we will discuss later on, the task-based learning framework provided us with enough flexibility to incorporate and promote those skills. Regarding instrumental skills, in all degrees the use of new technologies was required. We determined that the use of e-mail for collaborative work and the use of visual aid for presentations were essential tools all students would benefit from. Students collaborated and negotiated with one another via e-mail in order to carry out their tasks and were asked to support their presentations with visual aid, by using visual presentation software such as PowerPoint. In sum, students had the opportunity to use technology in an authentic situation and in their L2, as well as to develop communicative skills for collaborative work in their future professions.

While requirements for both communication and instrumental skills were rather similar for the different fields, degree-specific content differed considerably from one degree to another. Here we had to find a balance between the needs at both ends. In Ireland most students were taking Spanish in preparation for a one-year stay in a Spanish university and, therefore, needed to become familiar with the basic language and cultural patterns of their target culture. Although this was not a specific need of Spanish students, we thought (and later confirmed) that they would have an interest in talking about their own culture and learning about their partners' culture. In Spain, students' needs were more oriented towards their communication studies degree. In their regular English language syllabus, they are required to work with the language and general issues of the media. Since Irish students were also habitual consumers of the media, we thought we should find issues that would engage their interest. As a consequence of the considerations of needs and interests at both ends, we came up with a series of task topics which we thought catered to the common needs of the two groups. Therefore, we covered topics like:

- Organizing a night out or a weekend away in Dublin and Barcelona.
- Film reviews.
- Stereotypes in advertising (Appendix A).
- Urban legends (Appendix B).
- TV genres.

Each task let us put emphasis on different aspects. So, for example, in Ireland the emphasis would fall on more general cultural aspects involved in

each task, whereas in Barcelona the task would be oriented towards communication-related language and issues. These differences in emphasis and orientation were made possible by implementing a framework that was flexible enough for each teacher to maneuver within it. The task-based approach allowed us flexibility to maneuver not only across countries but also within groups in each country.

For example, in the case of the task on stereotypes in advertising, the contents were obviously relevant to the advertising students in Barcelona. In the audio-visual field stereotypes abound, so audio-visual communication students clearly engaged themselves in the visual treatment of stereotypes in advertising. Journalism students, a field in which stereotypes are somewhat less obvious but in which they also exist, also benefited from a critical approach to the issue. In Dublin, the business students were taking a course on Marketing for their degree and brought to the language class the knowledge they had gained from that. The students of applied languages focused on the intercultural aspects of the difference in advertising in different countries, and the computer science students took the lead in designing the webpages associated to the project and discussed how difference in stereotypes in different countries may affect web design for a site which caters for users of different nationalities.

2.3 Pedagogic approach

Given our conditions, we can state that the construct and framework for task-based language learning was useful for both our pedagogic goals and our research purposes. As far as the concept of task is concerned, we drew on several different definitions of task (Long & Crookes, 1992; Skehan, 1998; Bygate, Skehan & Swain, 2001; Skehan & Foster; Robinson, 2001). We define a pedagogic task as a goal-oriented process, which has a number of steps, that draws on a series of cognitive and communicative procedures and that has a defined outcome. In all our tasks students were given a series of objectives, were asked to analyze a series of cultural products in collaboration with their tandem partners, and were required to give a presentation and a written report of their findings in class (Appel & Gilabert, 2002a). As Skehan & Foster (2001) suggest, such a design enables acquisitional processes to operate and provides an opportunity to focus on form. Apart from serving our pedagogic goals, task design enabled us to manipulate a series of variables and test their impact on students' production. For instance, as reported in Appel & Gilabert (2002b), we manipulated task design to test the effect of convergence and divergence on production. In other words, we tested what effect would have the fact of having the same or different goals on the production of tandem pairs.

As for the context in which tasks were performed, Jane Willis' framework for task-based learning (Willis, 1996) provided us with a flexible way to structure our students' work. During the pre-task phase, students at both ends were given the objectives as well as the conceptual and linguistic input which was necessary to carry out the task. During the task cycle, students carried out the task in tandem, by negotiating the contents of their reports with their partners via e-mail. They were given planning time to prepare their reports, and they finally reported by using visual aids in most cases. In the language focus phase, students were asked to work on the language aspects that emerged from the performance of their task. While in the pre-task phase and in the language focus phase teachers could actually focus on whichever specific goals they had in mind, it was in the task phase that common ground was found, where students could develop their communicative and instrumental skills, as well as share those aspects of content which were useful in the accomplishment of their task objectives. Such a framework, we can conclude, provided us with the possibility of finding common ground and with the possibility of catering to specific student needs arising from their different degrees (See appendices A and B for the rubrics of two tasks).

The tandem tasks in our project were also designed according to the guidelines for computer-assisted language learning tasks advanced by Chapelle (2001). They were therefore designed to include sufficient learning potential, appropriate for our learners' age and learning style, were mainly focused on meaning but also on the structures emerging form each task, promoted their willingness to communicate and, as far as possible, were coherent with the principles of authenticity and practicality.

3. A CASE STUDY

As we advanced in Section 1, the study we present in this chapter had as a central aim to measure how the presence or absence of specific tasks to carry out has a differential effect on learners' production from a quantitative point of view. Practitioners often find that CMC poses problems if it is carried out in a vacuum (Little et al., 1999; Ushioda, 2000; Leahy, 2001; Appel, 2003). Without a specified goal and outcome, sustainability fails because the exchange relies solely on the development of personal rapport. Too often teachers jump into the logistics of setting up a CMC exchange (which can be time consuming and requires a great deal of coordination) only to find that their efforts are gone to waste, after the initial excitement has worn off and students drop out after writing two or three messages.

3.1 Research questions

Motivated by those concerns, this study aims to answer the following research questions:

1. Is there a quantitative difference between groups that have been assigned tasks and groups without assigned tasks in terms of production as measured by the number of words?
2. Is there a difference in the regularity of communication between the two types of groups as measured by the distance between messages?
3. Is sustainability throughout time different between the two conditions as measured by the length of the exchange?
4. Are the groups more or less homogeneous in their performance depending on whether they must carry out tasks or not?

3.2 Description of setting and subjects

All participants in the tandem e-mail projects, regardless of the group they were assigned to, were first- and second-year college students, ages 17-21, and had an intermediate proficiency level in their L2. All the Barcelona students attended lectures at the Blanquerna School of Communication Studies in Universitat Ramon Llull, and all the Dublin students were attending lectures in the School of Applied Languages and Intercultural Studies in DCU.

The tandem group (constituted by a group of students in Dublin and their tandem partners in Barcelona) that was not assigned any tasks had 14 pairs. Although they were not assigned any specific tasks, they were often encouraged by the teacher to write to their partners and were also asked in class about their progression and the contents of their correspondence. The other tandem group (also constituted by a group in Dublin and a group in Barcelona) consisted of 10 pairs and were assigned two specific tasks—with a defined goal, procedure, and outcome—which were fully integrated in their regular syllabus. The exchanges took place over two-month periods that spanned until the end of the lecture period of a semester. Students were told, however, that their accounts in the ETR site would remain active if they wanted to continue writing. In the case of the group of students without any assigned tasks, no date was given for the end of the exchange. In the following section, we discuss further the length of the exchanges in both groups.

3.3 Data collection

The data collection took place by means of the in-built mechanisms in the ETR site for data collection. When students first sign into the site, they are asked whether they are willing to provide permission for their messages to be used for research purposes, with a guarantee of anonymity. For those tandem pairs of which both students had granted permission, the transcripts of their exchange were processed automatically in order to obtain the statistics concerning number of words produced, frequency of writing measured in days and length of exchange counting the number of days between the first and the last messages sent.

One could argue that this method of data collection may affect the issue of privacy of e-mail interaction or influence the student's performance. In relation to the issue of privacy, this is one of the reasons behind the development of the ETR site, which seeks to create an environment dedicated to language learning and removed from personal e-mail accounts. Students can only write to their tandem partners so that only those messages are recorded, and they also have an option not to grant permission for the use of their transcripts for research purposes. In relation to the 'presence' of the researcher, Appel (2003) reports that students using the ETR site quickly forget/ignore the fact that their messages are being recorded. This happens in the same manner as users of e-mail still regard their messages as highly confidential when the fact is precisely the contrary: e-mail text is easy to forward or to send to the wrong recipients, and e-mail providers keep copies of e-mails which have been retrieved long after being written (e.g. for legal purposes). Yet, the tendency to a psychological state of 'illusion of intimacy' (Moran & Hawisher, 1998) when writing e-mail seems to be pervasive.

3.4 Results

In this section we will describe these measures, but we have not attempted to run any statistical tests looking for significant differences due to the low number of subjects involved (28 in the Non-Task group and 20 in the Task group). Any of the results presented here can only be interpreted as pointing towards certain trends. Small numbers of participants are a common problem in such type of studies, which are constrained to the number of students attending certain courses and the number of these students who will grant permission to use the data collected from their performance for research purposes. It would be possible to replicate the study throughout time, but considering other factors which could influence the outcome of the e-mail exchanges and task performance, such as different teachers or group dynamics among others.

Table 1. The distance between messages and length of exchange unit in days.

	Words		Distance between messages		Length of exchange	
	Mean	Median	Mean	Median	Mean	Median
Non-task	2096.84	917	8.64	8.60	64.7	43
Task	2758.1	2492	3.65	3.6	56.9	49.5

As Table 1 shows, students that were assigned tasks wrote a total average number of 2758.1 words, whereas students who wrote for no purpose, other than just communicating, wrote an average number of 2096.84. Although the mean already points to a higher number of words written by the group with assigned tasks, the median indicates that there is more to the data than the average shows. A closer look at the data reveals that the big difference between the mean and the median for the group with no assigned tasks is due to big differences between the performance of pairs within this group. Some members of the group without assigned tasks (a minority, in fact) wrote a large number of words whereas others wrote very little. The answer to our first research question is, therefore, that the group with assigned tasks wrote more and with fewer differences between its members than the group who had no tasks to perform.

Regarding the second research question, i.e. if there was a difference in the regularity of communication, we can state that students who had to perform tasks were far more regular than the students in the group without set tasks. This can be seen when looking at the average number of days that went by between messages, which was 3.65 for the group with specific tasks to carry out and 8.64 for the group without specified tasks.

With regard to the length of the exchange, although the average length of the exchange is higher for the group without assigned tasks, the median again shows that the group with assigned tasks succeeded in sustaining a more regular exchange. In the case of the group with assigned tasks, there was also a natural end to the exchange when the semester came to an end and so did the tasks. After the oral presentations of the last task, the students who were interested in maintaining contact exchanged personal e-mail addresses. In the case of the group with no assigned tasks, this never took place and communication just petered out at different points in time for different pairs.

Finally, as an answer to our fourth question, we can conclude that the group that was assigned specific tasks to perform was considerably more homogeneous in terms of performance than the group without a task. It was more homogeneous because the students produced similar amounts of words, wrote quite regularly and without big differences among its members,

and sustained the exchange over a long period of time. Figure 2 below illustrates such homogeneity. In this graph the conditions we would be striving for are clustered points (each point representing a tandem pair, and a high density meaning that all students are performing evenly) close to the x axis (meaning that students are writing to each other frequently, measured in terms of days) and high up away form the y axis (the higher, the more words they are writing).

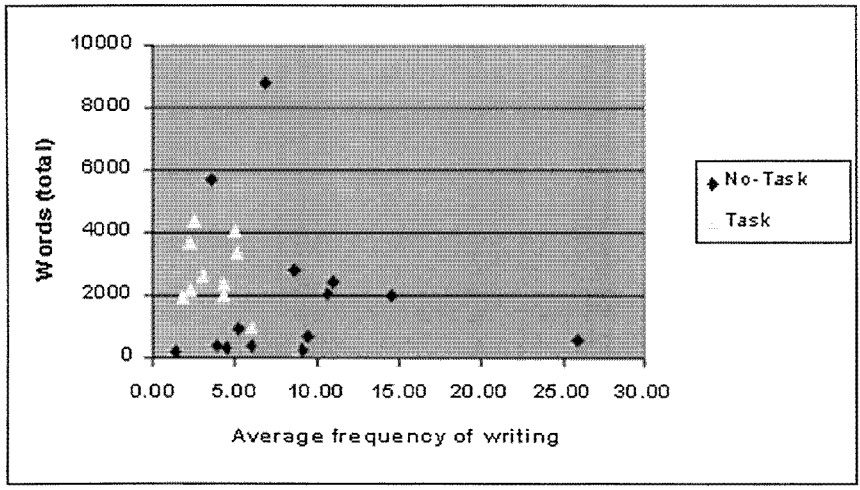


Figure 2. Performance of the groups.

3.5 Discussion and pedagogical implications

There are a number of pedagogical implications that can be drawn from the different issues dealt with in this chapter. Firstly, a task-based approach in an LSP and CMC context allows us to cater for different specific needs. Such an approach is also flexible enough to permit instructors to find common ground even if teaching situations differ considerably. Secondly, tasks seem to guarantee a better exchange in terms of production and sustainability. As the results of the case study included in this chapter suggest, learners who engage in computer-mediated communication for a purpose, with a procedure to carry out, and an outcome to account for produce more language, more regularly and in a sustained way.

Related to this second point, we can add that it is not just that production is simply better but also less widespread, letting teachers capture less participative students. In other words, highly motivated students will engage in a productive interaction even if they do not have a task to perform,

whereas less enthusiastic students will tend to give up the exchange at a very early stage. This is particularly undesirable in a tandem context in which students work in pairs because we run the risk that the lack of participation of a poorly motivated student will cause great deal of frustration in a more highly motivated tandem partner. If we set up this type of exchanges and integrate them into the syllabus to exploit the language learning potential of such an activity, we believe we have a duty to set up a number of conditions that will guarantee certain levels of participation on both sides of the e-mail exchange. With tasks to carry out, a more homogenous performance within a group can be achieved.

4. CONCLUSION

In this chapter, a collaborative tandem e-mail project in an LSP environment has been outlined. The central issue of finding common ground between two diverse teaching enviroments has been addressed. We have argued that an approach like task-based learning, both from a task design and a methodological point of view, stands out as a flexible framework for task implementation in an environment where communication is computer-mediated and the L2 is being learned for specific purposes. The chapter has presented the results of a quantitative study in which two tandem groups wrote to each other under different conditions, one group with set tasks to perform and the other without them. The results of comparing the two groups have been analyzed, and a series of pedagogical implications have been drawn.

Yet, although some issues related to performance have been addressed, such as the amount of interaction, the regularity of the exchange, and sustainability throughout time, the study of these issues has been limited to a quantitative approach. Moreover, the small number of participants only allows us to point at certain trends. The authors of this study believe that a qualitative analysis is also needed. A qualitative study may provide further answers to what makes computer-mediated interaction of this kind work successfully under certain conditions and not so successfully under other conditions.

REFERENCES

Appel, M.C. (1999). Tandem language learning by e-mail: Some basic principles and a case study. *CLCS Occasional Paper* 54. Dublin: Trinity College, Centre for Language and Communication Studies.

Appel, M.C. (2003). *Tandem Language Learning on the Internet: Theory, Tool Development and Empirical Exploration.* Unpublished Ph.D thesis. Centre for Language and Communication Studies, University of Dublin, Trinity College.

Appel, C. and Gilabert, R. (2002a). Motivation and task performance in a task-based, web-based tandem project. *ReCALL*, 14 (1), 16-31.

Appel, C. and Gilabert, R. (2002b). Interactive factors and task performance: A case study in a task-based e-mail tandem environment. Paper presented at the Eurocall 2002 "Networked language learning - a link missing?" at the University of Jyväskyla, Finland, 14-17 August.

Appel, C. and Mullen, T. (2002). A new tool for teachers and researchers involved in e-mail tandem language learning. *ReCALL*, 14 (2), 195-208.

Austin, R. and Mendlick, F. (1993). E-Mail in modern language development. *ReCALL* 9, 19-23.

Blin, F. (1999). CALL and the development of learner autonomy. In R. Debski and M. Levy (eds.) *WorldCALL: Global Perspectives on Computer-Assisted Language Learning.* Lisse: Swets and Zeitlinger. 133-147.

Blin, F. and Donohue, R. (2000). Projet TECHNE: vers un apprentissage collaboratif en classe virtuelle bilingue. *Apprentissage des Langues et Systèmes d'Information et de Communication*, 3 (1), 31-58.

Brammerts, H., Kleppin, K., Schleyer, J. and Zarco De La Hoz, F. (1989). *Tandem Bochum-Oviedo, Intensivkurs Deutsch, Tándem Oviedo-Bochum, Curso intensivo de español, Oviedo 2.91989-30.9.1989.* Bochum: Seminar für Sprachlehrforschung der Ruhr-Universität [dto. 1990, 1991].

Bygate, M., Skehan, P. and Swain, M. (2001). *Researching Pedagogic Tasks.* London: Longman.

Calvert, M. (1992). Working in tandem: Peddling an old idea. *Language Learning Journal* 6, 17-19.

Chapelle, C. (2001). *Computer Applications in Second Language Acquisition.* Cambridge: Cambridge University Press.

Leahy, C. (2001). Bilingual negotiation via E-mail: An international project. *CALL*, 14 (1), 15-42.

Little, D. and Brammerts, H. (1996). A guide to language learning in tandem via the Internet. *CLCS Occasional Paper* 46. Dublin: Trinity College, Centre for Language and Communication Studies.

Little, D., Ushioda, E., Appel, M.C., Schwienhorst, K., O'Rourke, B. and Moran, J. (1999). Evaluating tandem language learning by e-mail. Report on a bilateral project, *CLCS Occasional Paper* 55. Dublin: Trinity College, Centre for Language and Communication Studies.

Long, M. and Crookes, G. (1992). Three approaches to task-based syllabus design. *TESOL Quarterly*, 26 (1), 27-56.

Moran, C. and Hawisher, G.E. (1998). The rhetorics and languages of electronic mail. In I. Snyder (ed.) *Page to Screen.* London & New York: Routledge. 80-101.

Robinson, P. (2001). Task complexity, cognitive resources and syllabus design: A triadic framework for examining task influences on SLA. In P. Robinson (ed.) *Cognition and Second Language Instruction.* Cambridge: Cambridge University Press. 287-318.

Skehan, P. (1998). *A Cognitive Approach to Language Learning.* Oxford: Oxford University Press.

Skehan, P. and Foster, P. (2001). Cognition and tasks. In P. Robinson (ed.) *Cognition and Second Language Instruction.* Cambridge: Cambridge University Press. 183-205.

St John, E. and Cash, D. (1995). German language learning via e-mail: A case study. *ReCALL*, 7 (2), 47-51.

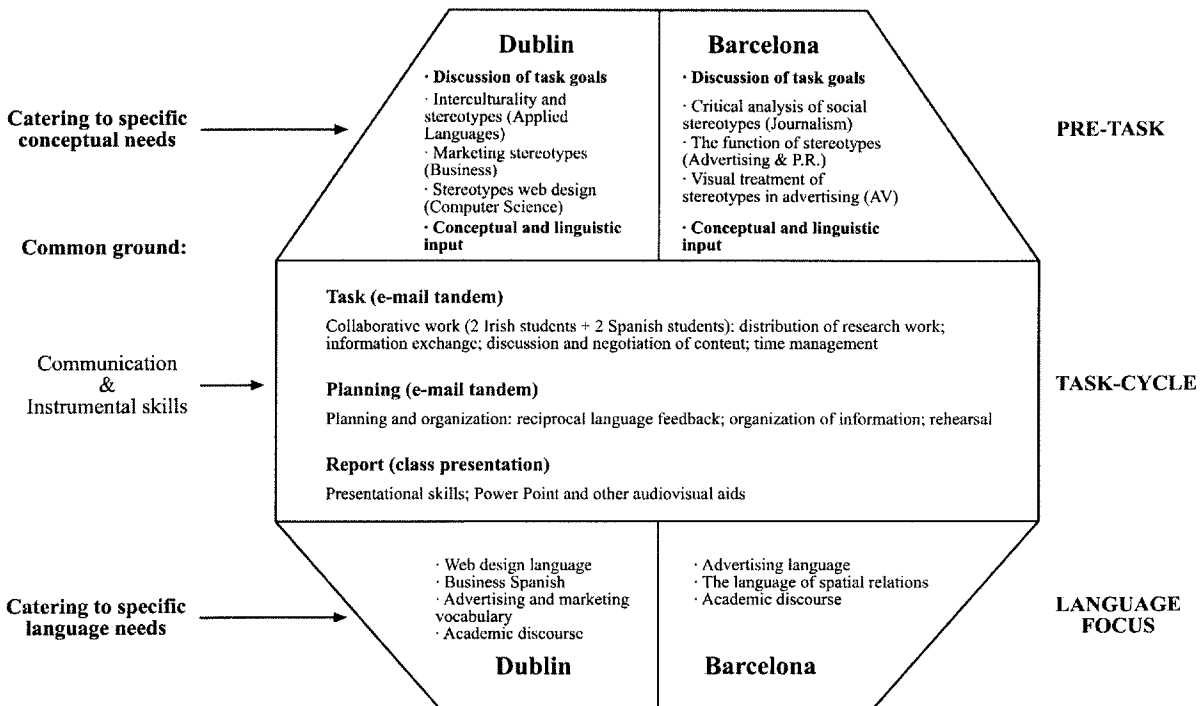
Ushioda, E. (2000). Tandem language learning via e-mail: From motivation to autonomy. *ReCALL*, 12 (2), 121-128.

Walker, L. (1998). The face to face tandem learning module: A case study. Available at: <http://www.uclan.ac.uk/facs/class/languages/translang/tandem.htm>

Willis, J. (1996). *A Framework for Task-based Learning.* Harlow, UK: Longman.

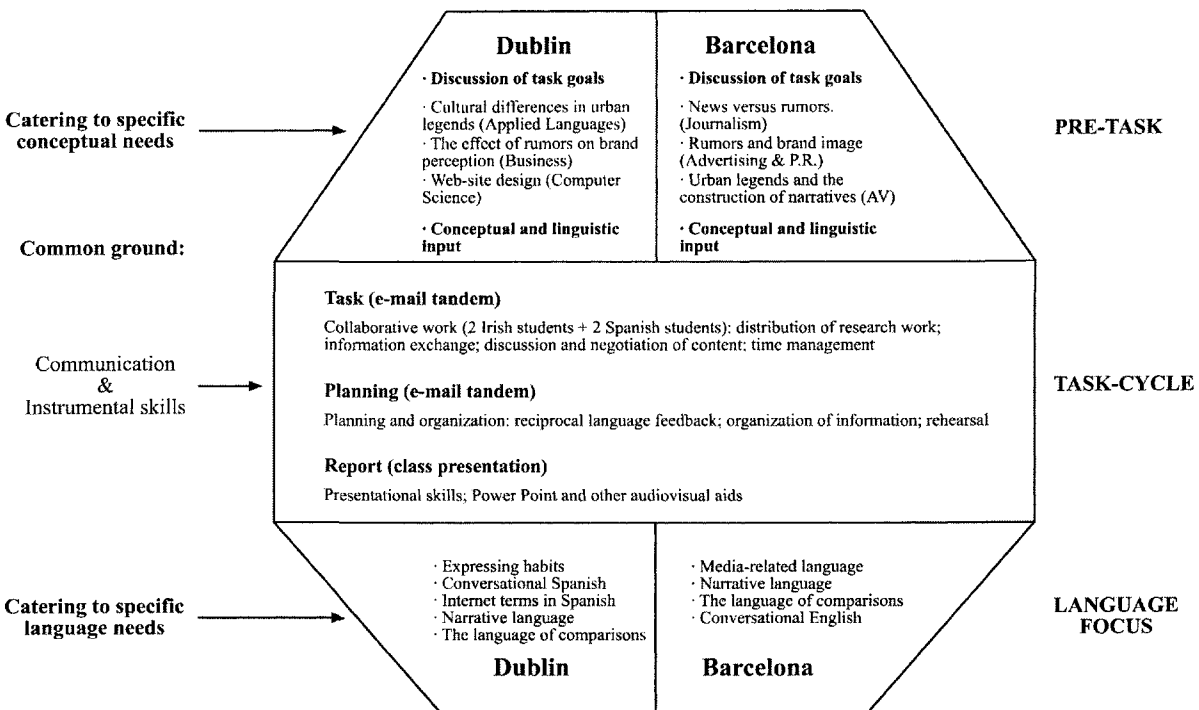
Woodin, J. (1997). Email tandem learning and the communicative curriculum. *ReCALL*, 9 (1), 22-33.

APPENDIX A: STEREOTYPES IN ADVERTISING



Based on Willis' (1996) diagram for task implementation.

APPENDIX B: URBAN LEGENDS



Based on Willis' (1996) diagram for task implementation.

Chapter 6

UNCOVERING TASKS AND TEXTS - TEACHING ESP THROUGH ONLINE WORKSHOPS

Virginia Hussin
University of South Australia (Adelaide, Australia)

1. INTRODUCTION

As online delivery of courses is adopted by universities world-wide, there is a corresponding need to develop new forms of ESP support teaching. The University of South Australia has a large population of students for whom English is a second language, and about half of these students are studying off-shore in Asian countries. The university has a history in providing distance courses to rural and remote students and a teaching and learning conceptual framework that gives students flexible access to learning and more control over the learning process, particularly through the innovative use of information technologies. Within this framework, eight Learning Advisers, based in a centralised unit called Learning Connection, work to develop and enhance language and learning skills of students. Three Learning Advisers have specialisations in supporting International and ESL students, and part of their work involves ESP teaching in a variety of modes, including content-based adjunct language instruction (Brinton, Snow & Wesche, 1989).

This chapter will present two practical applications of information technology to ESP teaching in the form of interactive online workshops. It will outline why the workshops were developed and how they are used in

ESP teaching. Some of the positive features of the workshops will be discussed as well as the challenges they present, including ways to take advantage of the online environment in order to raise students' critical language awareness.

The first of the two online workshops was designed specifically to help develop the communication skills of ESL Nursing students for their clinical placements (Hussin, 1999). The chapter presents the pedagogical underpinnings and language tasks of the workshop and identifies some of the shortcomings of the online mode. The second online workshop is for ESL Business students studying off-shore (Hussin, 2001). This workshop focuses on the generic structure of the major assignment, a research conference paper, and on ways to avoid plagiarism. It includes interactive exercises. The chapter reports on the evaluation of the workshop which led to an improved approach.

2. THE ONLINE WORKSHOP FOR NURSING STUDENTS

2.1 Background

The difficulties that non-English speaking background (NESB) university students in the Health Sciences experience during the course of their clinical placements have been well-documented. In a 1996 study, Stewart et al. asked students to identify difficulties they faced in the clinical placement and to suggest strategies to overcome them. The majority of students favoured the introduction of 'cross-cultural communication workshops for themselves and their supervisors' (Stewart et al., 1996: 1). The need for teaching strategies which focus on clinical communication for NESB Nursing students is reinforced in work done by Gonda et al. (1995), Brown (1997) and Hussin (2002).

Within their placements, students are expected to learn and perform new clinical skills and communication tasks in the target or 'real-world' situation where the safety of human life is paramount. Students need to develop cross-cultural communication strategies, an understanding of the culture of the workplace and of how language is used in interactions which require a range of different registers and literacies within a new discourse community. Literacy is interpreted as 'mastery of a new Discourse', where a Discourse refers to 'ways of using language,... of thinking, feeling, [and] believing... that can be used to identify oneself as a member of a socially meaningful group' (Gee, 1996: 130).

In May 1998 the Faculty of Nursing at the University of South Australia identified a number of NESB students experiencing difficulty or failing to meet the requirements of the clinical placement. Through a service agreement mechanism, the faculty negotiated with the Learning Connection staff to 'develop and implement programs to enhance the NESB students' learning outcomes'.

The Learning Adviser conducted interviews with three nursing staff involved in the clinical supervision of first year NESB Nursing students, identifying two broad categories of concern:

- Students were not spending enough time communicating with patients; that is, they tended to concentrate on the nursing task and neglected to explain procedures and offer reassurance to patients while performing the task.
- It was not always clear if students understood instructions given to them by the nursing staff. The students tended to 'nod and smile' when asked to perform a task rather than respond verbally, and this left the staff member wondering whether or not the instruction had been understood. Indeed in some cases, there had been misunderstandings.

It was decided to address these concerns by providing face-to-face workshops for first year students which would build a safe environment where students could learn and practise communication skills before their placements. The face-to-face workshop was divided in two parts, communicating with patients and communicating with staff, and was delivered over two half days. Fairclough's concept of 'orders of discourse' (1995) was applied to structured role-plays in the workshops. These 'orders of discourse' can be seen as a structured set of conventions associated with language use in a particular place, for example a hospital ward. The face-to-face workshops received very positive evaluations from the students, most of whom reported increased confidence in their next clinical placement. However, some students had difficulty attending the workshop because of time clashes with other classes or with the actual practicum. To increase accessibility to learning support, an online version was developed the following year.

2.2 The structure of the online workshop for Nursing students

The online workshop, *Communication Skills for the Clinical Placement* (Hussin, 1999), has a navigation bar on the left-hand side and replicates the face-to-face version in that it has two main sections: *Communicating with patients* and *Communicating with staff* (see Figure 1).

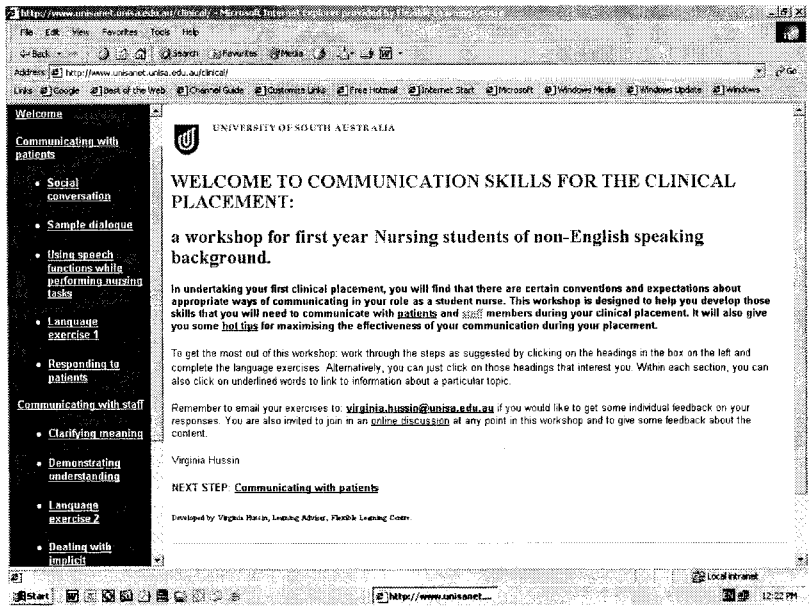


Figure 1. Welcome page.

The first section, *Communicating with patients,* begins with a page on Social Conversation and presents the kind of formulaic greetings between staff and patients found on hospital wards. It also gives some examples of communication strategies that students might use to initiate or continue conversation, including verbal and non-verbal encouragement and back channel cues. Students are directed to go to a specific page that presents a typical sample dialogue in text form. The dialogue is between a nurse and patient as the nurse takes the patient's vital signs, and the students are first invited to identify different stages or speech functions within the interaction, and then they are directed to a further link that explains the various speech functions. This link uses Fairclough's concept of 'orders of discourse' (1995) as applied to the stages of the oral genre, Taking Vital Signs, to make explicit how the process of taking a patient's vital signs can be divided into the following six speech functions:

- giving information to patients
- explaining procedure to patients
- seeking cooperation from patients
- offering encouragement to patients
- offering reassurance to patients
- giving feedback to patients

Next, students are directed to a language exercise (shown in Figure 2) that asks them to put their knowledge into practice by using the speech functions within five separate nursing tasks. This exercise is an attempt to replace the role-play used in the face-to-face workshop. While students report that they find it a useful rehearsal exercise, it obviously loses the interactivity and the unpredictable features which made the face-to-face version a dynamic language task.

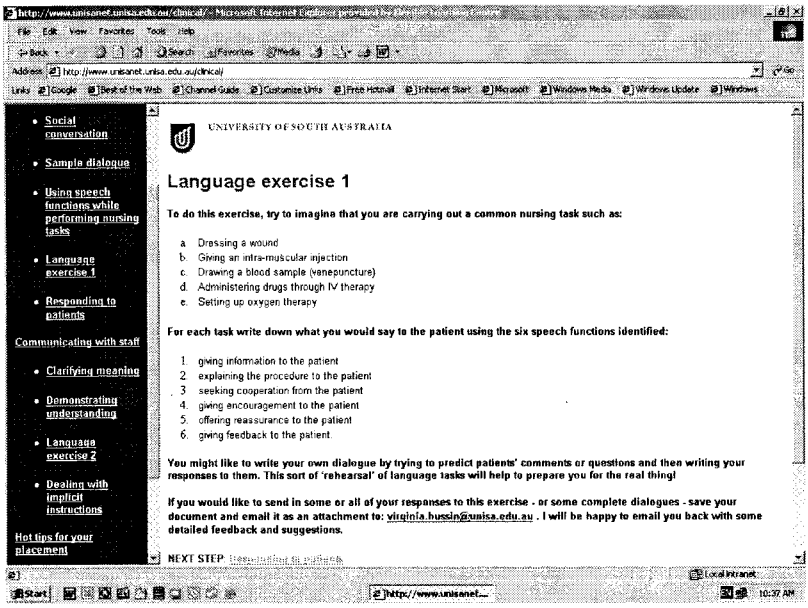


Figure 2. Communicating with patients: language exercise 1 page.

The second section, *Communicating with staff,* presents communication strategies drawing on the work of Faerch & Kasper (1983) and Tarone (1983). These cover ways to clarify meaning such as asking for repetition and asking clarification questions, e.g. '*What* did you say we need to order from the pharmacy?' as well as a range of ways to demonstrate understanding such as:

- repetition of key words
- confirmation statements which paraphrase information
- expansion statements which add information
- elaboration questions which ask for more information

In the face-to-face module students had been presented with four case studies where the Learning Adviser took the role of the Clinical Instructor,

made requests, issued instructions, and asked questions, for example, which required students to use these communication strategies by giving verbal responses. This is successfully built into the online version as a written exercise that can be submitted to the Learning Adviser for feedback.

2.3 Positive features of the online workshop

One of the positive features of the online version is that lessons learnt from the face-to-face workshop have been incorporated into it. For example, the experience in running the face-to-face workshop highlighted the need for an additional section on 'Responding to implicit instructions'. Current improvements planned for the workshop include the addition of audio sound files for the sample dialogues and possibly the inclusion of a video clip similar to that used in the Queensland University of Technology's (2002) *English for International Nurses* web-site.

The online workshop raises awareness of student language issues among new Nursing faculty staff, and this knowledge can then be embedded into the teaching processes. For example, the workshop has been linked to the first and second year practicum-based subjects, and Nursing faculty staff encourage students to access it before their first placement. Although students do not get evaluated for accessing the workshop, many have been referred to it by faculty staff and have submitted exercises to the Learning Adviser for feedback.

This online alternative has attempted to incorporate a range of literacies and encourage interactivity by including practical language exercises for submission. The workshop is a timely response to the university context of increased numbers of NESB students but reduced resources for student support. The provision of online support also meets the needs of various cohorts of students across faculties and year levels who enter their study programs, undertake their practicum at different times of the academic year, and so increasingly require flexibly delivered modes of support. These include international students and working students who may be doing intensive programs such as summer schools.

2.4 Shortcomings and challenges

An obvious shortcoming of the online version is the problem inherent in using a written medium to develop oracy in students. For example, in the online workshop there is no possibility for role-plays and the immediate checking of students' responses to tasks or cues, including feedback on body language and paralinguistic features, that are available in the face-to-face version. If the students submit exercises, then they are a written form of how

they think they might respond verbally, rather than the spoken response itself. Additionally, although the workshops include an 'Online Discussion' facility, a more comprehensive evaluation of the workshop by students is needed in order to assess its effectiveness in preparing students for their clinical practicum.

Another concern is that new discourses and roles within the clinical placement require students to adopt new identities as novice health professionals who will need to advocate on behalf of their patients and negotiate their own working conditions: 'Students need also to develop the capacity to speak up, to negotiate, and to be able to engage critically with the conditions of their working lives' (New London Group, 2000: 13). To do this, NESB students need a critical awareness of language and how it is used in clinical settings. The New London Group's Pedagogy of Multiliteracies (2000) provides a useful teaching model that focuses on a critical language perspective. The model has four stages:

- *Situated Practice* or 'immersion in meaningful practices within a community of learners' (13).
- *Overt Instruction*, that is, teacher interventions that scaffold learning activities, characterised by the use of metalanguage.
- *Critical Framing* where attention is drawn to the social, cultural and power relations embedded in language as social practice.
- *Transformed Practice*, that is, applying knowledge gained from practice, instruction and critical reflection to other contexts.

An analysis of the online workshop reveals many examples of 'Situated practice', such as the scenarios and language exercises, and also of 'Overt instruction' where students are given explicit information that they can apply to practice. One of the characteristics of 'overt instruction' is the use of metalanguage that describes 'the form, content and function of the discourses of practice' (New London Group, 2000: 33). Examples of metalanguage used in the workshop are the naming of speech functions, such as 'explaining procedure to patients', and communication strategies such as 'confirmation statements which paraphrase information'.

The workshop also includes some examples of 'critical framing' and, to a lesser extent, 'transformed practice'. Critical framing '...involves the students standing back from what they are studying and viewing it critically in relation to its context' (New London Group, 2000: 35). In the context of oral communication in the clinical placement, this would entail designing reflective elements whereby students can examine how particular language choices demonstrate values and establish power relations among the speakers. There are some examples of critical framing in the questions posed to students on the *Communicating with staff* page. On the *Dealing with*

implicit instructions page, the students' attention is drawn to important sociocultural knowledge that impacts on their language use.

Attempts have been made to introduce a 'transformed practice' perspective into the workshop. For example, on the *Social conversation* page, the students themselves are invited to give examples of how they have used communication strategies successfully and again, on the *Hot Tips* page, students are encouraged to add their experiences to the shared sociocultural repertoire. There is no doubt that there are further opportunities to extend the critical framing and transformed practice aspects of the workshop, but this would be best done in collaboration with the faculty staff. For example, one kind of cooperative activity could involve team-teaching in face-to face or online workshops and then joint-tracking of the workshop participants through their clinical practicum. The current plan is to incorporate the use of reflective journals, where students will be asked to critically reflect on their literacy practices and outline their action plans for re-practice.

3. THE ONLINE WORKSHOP FOR BUSINESS STUDENTS

3.1 Background

The next online workshop, *Writing the Research Conference Paper* (Hussin, 2001), was designed for third year NESB Bachelor of Business students studying an Information Technology course off-shore in Hong Kong. The development of the workshop was a response to a situation where 25% of the students had failed the major assignment, a 3,000-word Research Conference Paper worth 50% of the total marks. A joint analysis of papers by the Learning Adviser and course lecturers revealed that failures were due to two major factors: students not understanding the expectations of the generic structure of the assignment and students not demonstrating the appropriate attribution of source material.

Together the faculty lecturers and Learning Adviser identified that the students needed help to structure the assignment and to write without plagiarising, in particular to distinguish between the literature review and discussion sections in regard to 'whose voice' is being used. The Learning Adviser was asked to develop an online workshop in collaboration with faculty lecturers. The workshop needed to:

- de-code and clarify the purpose and expectations of the assignment
- outline a suggested writing process
- 'uncover' the structure of a research conference paper
- make explicit what students need to do to avoid plagiarism

3.2 The structure of the original online workshop for Business students

The original workshop (Hussin, 2001) began with an Overview page – *What is a research conference paper* – followed by 5 writing process steps: Analysing topic, Making a plan, Reading and noting, Revising your plan, and Drafting the paper.

The next five steps focussed on specific sections of the conference paper: the literature review, the discussion, the conclusion, the introduction and the abstract. Here the work of Swales (1990) was used to uncover the textual features of these sections, including lexical, syntactical and grammatical features. For example, the *Writing the literature review* page (shown in Figure 3) included the purposes of the literature review, with links to how to read and note for the review and how to cite from sources. The hot-link *Discuss your own ideas* took students to examples of linking words and phrases used to distinguish the author's 'voice', while another link under the section on *Taking a stance* took students to a page that shows them how to use language to show the degree of certainty or speculation of ideas.

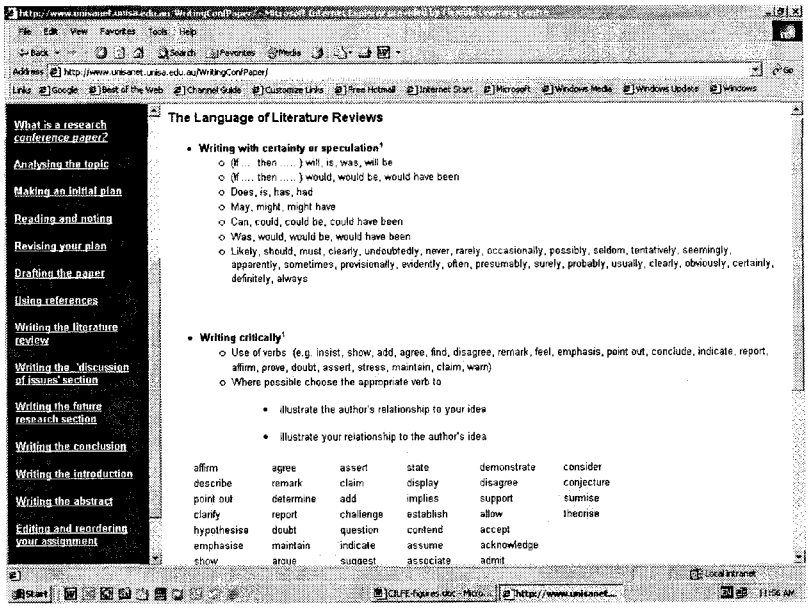


Figure 3. Writing the Literature Review page.

The students could follow the workshop in a linear order or use the navigation bar on the left-hand side to 'dip in and out' of the sections that interested them. However, all of the students needed to access the last page

on *Avoiding plagiarism*. This page included information on language strategies, paraphrasing and referencing, and then a link to multiple choice exercises which were worth 10% of the total assignment marks. These exercises were due for submission ten days before the main assignment that was worth the remaining 40% of the marks.

At the end of the semester, the cohort of 225 students was invited to complete an online evaluation of the workshop using a program called Tell Us, and 27 students responded. Table 1 shows responses to the question: 'Which steps of the online workshop did you use?'

Table 1. Evaluation of online workshop HK06026692 – Question 1.

Number of students	Steps used
27	Avoiding plagiarism
22	What is a research conference paper
21	Using references
20	Analysing the topic
18	Writing the literature review
18	Writing the future research section
17	Writing the conclusion
16	Making a plan
16	Writing the discussion of issues
16	Writing the introduction
16	Writing the abstract
15	Reading and noting
13	Drafting the paper
12	Editing and reordering your assignment
8	Revising your plan

Further questions in the evaluation elicited some useful data. For example, 24 students found the workshop very useful or moderately useful, 23 students found it very easy or moderately easy to use, and all 27 students found that it prepared them very well or moderately well for the avoiding plagiarism exercises. The evaluation also revealed that the steps overall in the workshop that the students found most useful were 1) *What is a research conference paper*, 2) *How to avoid plagiarism* and 3) *Writing the literature review*. When asked for further comments, two students asked for model assignments to be posted and three students asked for more examples of referencing within conference papers. One student complained of 'information overload', while another suggested that some of the information needed to be presented more concisely.

At the end of the semester, the faculty lecturers did an informal evaluation of the workshop. In this they commended the workshop highly and reported that the overall standard of writing had improved. However, the lecturers noted that the fail grades and incidence of plagiarism remained the

same, and one reason posed for this was that there was inadequate time for feed-back on the 'avoiding plagiarism exercises' before students had to complete the main assignment. This meant that mistakes made in the exercises could be repeated in the assignment.

Another significant group of students got the answers to the exercises 'correct' but still made the same mistakes in the assignment. One lecturer put this down to surface learning and the inability to transfer information. Another lecturer had anecdotal evidence that some students had consulted with their friends about the answers and then submitted them without really knowing why the answer was a, b or c. Some students claimed that this was due to a lack of time while others admitted to not really understanding the importance of not plagiarising, and the lecturer believed that this lack of understanding was culturally-based.

3.3 Some features of the improved version

At the beginning of the following semester, the Learning Adviser and course lecturers met to plan learning support for the next cohort of students. It was decided to trial an improved approach to reduce the incidence of plagiarism using an updated online workshop. These students were required to submit an 'Avoiding Plagiarism Mini-assignment' worth 10% of the marks. The Mini-assignment consisted of an extended 400-word definition of the research paper topic, including technical terms, and required a set number of appropriately-cited sources and a reference list. The students were advised that they could in fact use this material in the first section of their final assignment, the research conference paper.

The *Avoiding plagiarism mini-assignment* page was moved to the top of the online workshop, indicating the importance of appropriate attribution of sources as a necessary underpinning of a good conference paper. This was then followed by pages on *How to avoid plagiarism* and *Avoiding plagiarism practice exercises* (shown in Figure 4). The workshop then proceeded to outline stages of the writing process and describe how to write the various sections of the conference paper. The mini-assignment was marked ahead of the main assignment, and students were given feedback on their citation and referencing two weeks before the main paper was due, giving them adequate time to correct any mistakes.

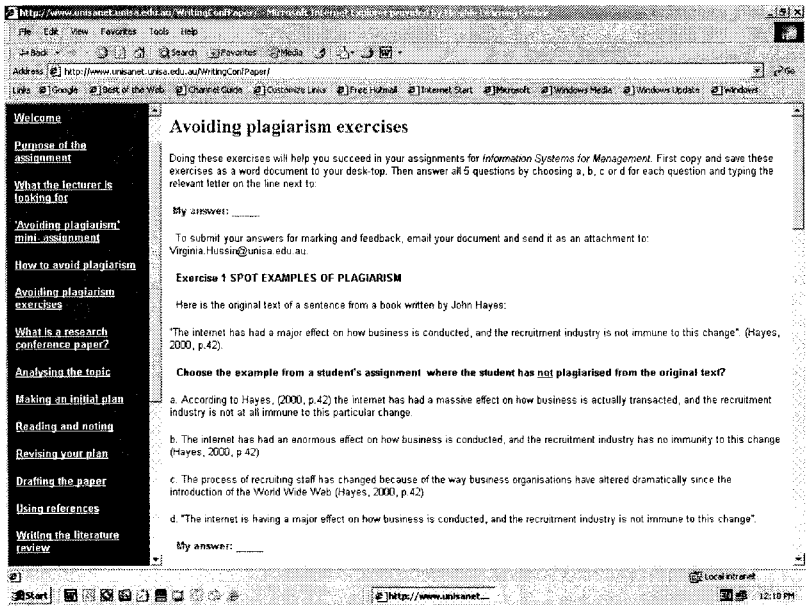


Figure 4. Avoiding plagiarism exercises page.

The course lecturers were pleased to report that an analysis of the assignments of this second cohort of students showed 1) fewer fail grades, 2) an improvement in overall grades and 3) less plagiarism overall. While there was no formal student evaluation, many students emailed their lecturers to tell them that they felt more confidence in writing the main assignment, after having accessed the online workshop and having received the feedback on the mini-assignment.

3.4 Ongoing issues and challenges

In the workshop there are three distinct sections – plagiarism, the writing process and analyses of specific sections of a conference paper. Having all sections and pages visible on the navigation bar means that students can immediately see what is available and can 'dip in and out' of sections and pages, but it makes the navigation bar very long. Students need to scroll down to find out what is available, and the actual number of linked pages may make the task appear overwhelmingly large. A better option may be to re-configure the layout using folders for the section or at least headings and sub-headings in the navigation bar. There is also a need to strike a balance between the amount of information presented in linear, lateral and deep-layered forms so that the students do not get lost in the online learning

process, and the current plan for this workshop is to pare down the information, particularly in the writing process steps.

Perhaps there is also a need to engage students more critically in the issue of plagiarism as it currently seems to have been deemed the most heinous of all other academic writing 'crimes'. Warschauer (1999) believes that while new technologies are used to impose structures on students, they can also provide the opportunities for more democratic and self-directed learning. He gives as an example a case study, where students used an online discussion 'to critically reflect on the discourses of power, such as the particular interpretation of plagiarism in Western academic discourse' (Warschauer, 1999: 171). Pennycook (1996) explains how perspectives on plagiarism vary enormously from culture to culture, and there is an ideal opportunity in this mode of learning support to engage the students more directly in an online discussion of plagiarism – asking them what the concept means in their cultures and what they believe about the attribution of sources and why. Future research directions include the need to explore the links between culture and citation practices and between on-line learning and student understanding of instructions and expectations.

4. CONCLUDING REMARKS

On-line workshops provide an accessible and enduring form of support for learning which gives the students control over the development and management of their communication skills and academic writing. For example, the Nursing workshop meets the needs of various cohorts of students across faculties and year levels who enter their study programs and undertake their practicum at different times of the academic year and so increasingly require flexibly delivered modes of support. In the workshop for business students, the language and learning support is embedded in the course at the point where the students need to know how to fulfil the requirements of the assessment task, and the online environment gives better flexibility for the embeddedness of that support.

Faculty staff often find it difficult to identify and teach the implicit language and literacy skills that their discipline-based knowledge is built upon, which leads to the situation where students are simply expected to pick up necessary clues (San Miguel, 1996). Working alongside the faculty lecturers allows the Learning Adviser, as ESP teacher, to get 'inside' the tasks and texts of courses in order to uncover that knowledge and make it explicit. However, most educators, including ESP teachers, would claim that they are not just concerned with reproductive learning or the learning required by students to cope with their present situations but also with the

lifelong learning potential of their students. Increasingly, faculty lecturers are expecting students to engage in critical thinking and critical analysis. The interactive nature of the online environment presents opportunities for ESP teachers to exploit activities which will engage students in critical language awareness as a necessary part of language learning.

REFERENCES

Brinton, D., Snow, M. and Wesche, M. (1989). *Content-Based Second Language Instruction.* New York: Newbury House Publishers.

Brown, V. (1997). Nursing SPEAK Program. *Proceedings of 1997 Higher Education Research and Development Society of Australasia Conference.* Adelaide: Adelaide University. 71-84.

Faerch, C. and Kasper, G. (1983). On identifying communication strategies in interlanguage production. In C. Faerch and G. Kasper (eds.) *Strategies in Interlanguage Communication.* London: Longman. 210-237.

Fairclough, N. (1995). *Critical Discourse Analysis.* London: Longman.

Gee, J.P. (1996). *Social Linguistics and Literacies: Ideology in Discourses.* London: Taylor & Francis Ltd.

Gonda, J., Hussin, V., Gaston, J. and Blackman, I. (1995). Migrant nurses: Their unique value. In G. Gray and R. Pratt (eds.) *Issues in Australian Nursing 4.* Churchill Livingstone: Melbourne. 129-144.

Hussin, V. (1999). *Communication Skills for the Clinical Placement.* Online workshop available at <http://www.unisanet.unisa.edu.au/clinical/> in March 2003.

Hussin, V. (2001). *Writing the Research Conference Paper.* Online workshop available at <http://www.unisanet.unisa.edu.au/WritingConfPaper_> in March 2003.

Hussin, V. (2002). An ESP program for students of nursing. In T. Orr (ed.) *English for Specific Purposes.* Virginia: TESOL Publications. 25-40.

New London Group (2000). A pedagogy of multiliteracies: Designing social futures. In B. Cope and M. Kalantzis (eds.) *Multiliteracies: Literacy Learning and the Design of Social Future.* Melbourne: Macmillan. 9-37.

Pennycook, A. (1996). Borrowing others' words: Text, ownership, memory and plagiarism. *TESOL Quarterly* 30, 201-230.

Queensland University of Technology (2002). *English for International Nurses.* Video clip available at <http://www.issupport.qut.edu.au/language/video/nurses.jsp> in March 2003.

San Miguel, C. (1996). Cultural influences on academic literacy: A case study. *Open Letter*, 6 (2), 31-43.

Stewart, M., McAllister, L., Rosenthal, J. and Chan. J. (1996). International students in the clinical practicum: Problems with English language proficiency, cross-cultural communication and racism. Paper presented at *ISANA 7th Annual Conference: Waves of Change*, Adelaide, December 1996.

Swales, J.M. (1990). *Genre Analysis – English in Academic and Research Settings.* Cambridge: Cambridge University Press.

Tarone, E. (1983). Some thoughts on the notion of communication strategy. In C. Faerch and G. Kasper (eds.) *Strategies in Interlanguage Communication.* London: Longman.

Warschauer, M. (1999). *Electronic Literacies: Language, Culture and Power in Online Education.* New Jersey: Lawrence Erlbaum.

Chapter 7

THE SMAIL PROJECT[1] . A DIALOGIC APPROACH TO COMPUTER-ASSISTED LANGUAGE LEARNING FOR THE LSP CLASSROOM

Mª del Rosario Caballero Rodríguez
Universidad de Castilla-La Mancha (Ciudad Real, Spain)
GIAPEL (Grupo de Investigación y Aplicaciones Pedagógicas en Lenguas)

Mª Noelia Ruiz Madrid
Universitat Jaume I (Castelló de la Plana, Spain)
GIAPEL (Grupo de Investigación y Aplicaciones Pedagógicas en Lenguas)

1. INTRODUCTION

The growing importance of Information and Communication Technology (ICT) and of Computer-Assisted Language Learning (CALL) in education and, more specifically, in Foreign Language (FL) learning/teaching is generally accepted – whether this concerns learning a foreign language for general purposes or contexts where languages are studied to cover more specific, professional needs. This interest has sparked a renewed emphasis on the need to further promote autonomous language learning methodologies (see, for instance, the discussion in Richterich & North, 1992; Trim et al., 1996; Blin, 1999; Chapelle, 2001).

Indeed, both ICT and the learner autonomy approach (Holec, 1988; Little, 1991; Esch, 1996; Benson, 2001) may help us make up for some of the weaknesses still observable in current LSP courses. Such needs are of

two broad types and concern both teachers and students. One of the problems of most LSP courses in the Spanish context is the large number of students per course, which makes it difficult to pay close attention to the idiosyncrasy of each student. For, although these courses may be designed bearing in mind a more 'homogeneous' class in terms of needs and expectations, heterogeneity remains with regard to the students' learning style and FL proficiency, among other aspects. This affects both teachers and students alike, the former trying to cater for the diversity of styles, expectations and preferences in their classrooms, and the latter aiming to succeed in their learning enterprise. Obviously, such attempts are met with varying degrees of success. The LSP teacher has an active role in mediating his/her learners' acquisition of a foreign language which will, to a large extent, enable their immersion in their new community of practice, while learners themselves must actively participate mainly through individual attention to and study of the material offered.

In other words, catering for the diversity of styles and concerns in large LSP classrooms requires a context different from the one(s) we are familiar with. The solution may be in the aforementioned growing development of CALL materials and virtual environments, whose flexibility may benefit both sides involved, allowing teachers to design tailor-made materials that cover diverse needs and concerns while supplying learners with a varied range of materials for autonomous learning when needed.

This chapter presents one such multimedia material aimed at making the most of technology in order to promote autonomous language learning. SMAIL (Multimedia System of Interactive Autonomous Language Learning) was developed by the research group GIAPEL comprising researchers from the Universitat Jaume I, Universidad de Zaragoza and Universidad de Castilla-La Mancha – all of them teaching various LSP courses. In the following sections we describe the various components of SMAIL as well as the rationale underlying its design. Then, we present the case study of 4 learners who tested the beta version of the program. The discussion that follows draws upon their experience and points to some of the issues that still need to be addressed in CALL design aiming at achieving effective LSP materials and experiences.

2. THE SMAIL SYSTEM: A CALL PROGRAM FOR LSP COURSES

SMAIL was designed for teaching French, Spanish, German and English for LSP courses and is addressed to undergraduates enrolled in degrees other than English Language and Literature, particularly those needing a second

language for future professional motives. The system was devised taking into account not only several basic premises concerning both a particular view of language and language learning, but also the guidelines set by the European Portfolio for Languages. The premises derived from such guidelines motivated the incorporation in the application of a set of questionnaires, to establish the learners' profile before the students interacted with the system, and of a learner diary. Additionally, the tasks and materials offered by the program were organised according to such notions as genre and metaphor. The following sections describe these in detail.

2.1 Questionnaires

As pointed out earlier, SMAIL started from the basic premise that its future users would illustrate various learning styles and concerns, as also happens in a conventional LSP classroom. Accordingly, the system needed to be flexible enough to cater for diversity rather than providing a fixed learning 'route' or plan for all students. Moreover, the system should allow for autonomous language learning as well as meet the expectations of those wishing to follow a more 'traditional' language course. In this sense, one of the characteristics of SMAIL is the provision of two questionnaires designed to determine the learners' profile before they embark on the learning tasks proposed (i.e. a bipolar test and a learning styles test), as well as a language proficiency test. In so doing, insights were drawn from previous work by GIAPEL on learning styles (Villanueva & Navarro, 1997) as well as from the work of scholars working on similar issues (Chapelle & Green, 1992; Soo & Ngeow, 1997).

The bipolar test was designed following the previous work carried out by Cembalo (1994), who contemplated such typical profile opposites as active versus reflective, emotional versus rational, synthetic versus analytical, visual versus verbal, inductive versus deductive, cooperative versus individualistic, and field-dependent versus field-independent learners. The final design of this bipolar questionnaire was based upon Pâquier & Balser's (2001) work on a learning style questionnaire. As shown in Figure 1, this test provided learners with information about the most relevant aspects of their learning style (displayed in percentage form). Its final purpose was to make them aware of the way they learn and, therefore, help them in their choice among the materials and the different ways to approach them offered by the system.

The final purpose of both questionnaires was to make learners aware of the reasons that led them to choose the learning path best suited to their own style through SMAIL materials, assuming that this would affect the outcome of their learning experience.

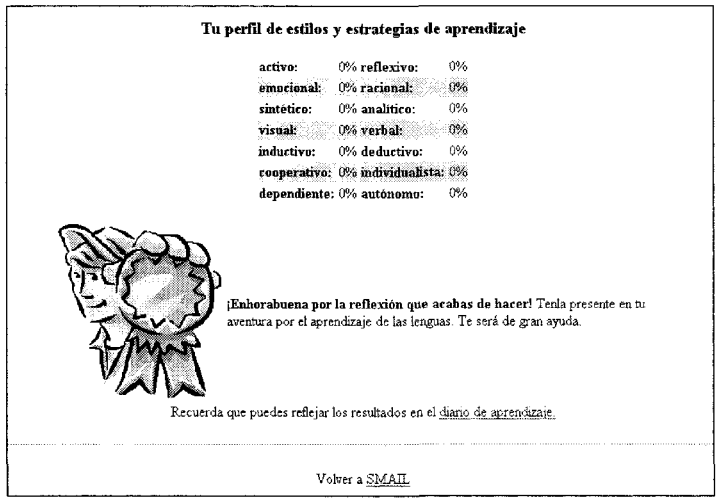


Figure 1. Results of the bipolar test on learning styles in SMAIL. After doing it, learners are encouraged to reflect upon them in their learning diary.

SMAIL also includes a learning styles questionnaire (a multiple-choice activity) designed to provide the system with criteria for offering learners a specific *learning journey* through the system, according to their learning style in those cases where students did not wish or could not choose by themselves. It should be noted that the importance of this first interaction with the system goes beyond determining a learning profile and suggesting a suitable *learning journey* through the system. Indeed, the real interest of the activities that depend on the questionnaires in SMAIL is that they represent a first attempt to mobilise the learners' background knowledge. The hypothesis here is that making students aware of their learning skills and built-in strategies may help them develop as learners and, in the long run, make the most of their learning experience. In other words, the aim of the questionnaires is to make learners reflect upon their learning potential and previous experience(s) – if any – before actually starting to learn, or to improve their knowledge of a foreign language and, as a result, participate in the SMAIL experience consciously and actively.

Furthermore, the inclusion of the aforementioned questionnaires in SMAIL does not mean that, once the learners' style is spotted, they must engage dutifully in the tasks and activities proposed by the system or that, even if these are indeed chosen, the students cannot change them whenever they wish. In fact, learners always have the option to change their initial choice as they work with the system, and the interface of SMAIL is thus devised as a flexible system rather than as a passive construct; that is, it emulates a real teacher, who also often adapts his/her initial learning

proposals and techniques as needs arise in the classroom, in order to make learners change their former learning attitudes and styles in the process, if needed.

2.2 Genre

The importance of generic competence in L2 learning is widely accepted (Hymes, 1972; Canale & Swain, 1980; Widdowson, 1990), and nowhere has this particular domain of knowledge received greater attention than in the field of LSP, where multiple studies of particular genres have served to provide descriptive and explanatory accounts of the discourse of particular communities. In this regard, the second basic idea was that if SMAIL was to be helpfully applied for LSP teaching, we needed a comprehensive concept encompassing the *what*, *when*, *how*, and *what for* dimensions of language use.

Accordingly, the second key notion in designing SMAIL was that of genre: all the materials offered to learners were organised according to particular uses of language and to the different genres that articulate them. SMAIL thus drew useful insights from the discussion within diverse theoretical proposals on textual/discourse typologies, using prototypical types of discourse (de Beaugrande & Dressler, 1981; Biber, 1988, 1989; Swales, 1990; Bhatia, 1993; Flowerdew, 1993; Berkenkotter & Huckin, 1995; Paltridge, 1997). The different activities proposed for each text point to the diverse rhetorical goals motivating the particular use of language resources.

In this respect, SMAIL offered learning tasks based upon reviews such as *Der Zauber hinter der Fassade*, instruction leaflets such as *Proper Care of Disks*, car ads from magazines and newspapers such as *Alfa SW*, and argumentative texts such as the one entitled *Les Européens sont surprenants*.

2.3 Journey metaphors

The system also needed a unifying criterion for designing the various activities proposed to learners. In other words, we needed a notion which acted as some kind of blueprint for the presentation of the learning activities while, at the same time, keeping the idea of diversity and autonomy intact. In this regard, the group decided on the notion of metaphor, particularly of a journey metaphor, as a heuristic tool to (a) help learners get acquainted with a way of thinking and communicating in a language other than their own, and (b) choose the learning 'route' best suited to their needs and interests among those proposed in the application.

In this sense, the journey metaphor in SMAIL exploits the idea that discovering a language is engaging in a journey where the learner 'enters' (discovers) a new culture through its language (as used in genres and texts). The advantages of this metaphor are diverse. First, it takes into account the learners' previous real experience and corresponding background knowledge of journeys, and foresees that their capacity to establish analogies between journeys and language learning will make it easier and, presumably, more enjoyable for them to engage in the latter. Second, the comprehensiveness of the metaphor allows learners to engage themselves in a reticular versus linear system of links that adapts itself to both their needs and styles. Finally, the metaphor is characterised by a clear rationale basically consisting of a starting point, a path or steps to follow and a goal or destination to reach, all of them easily transferable to the learning of a foreign language (for a discussion on the journey metaphor in SMAIL see also Caballero, forthcoming; Villanueva, 2003).

Nevertheless, if we stop to reflect on our own experience, travelling encompasses more than goals to be achieved and the steps to achieve them. If we draw upon our previous experience, we find that journeys often involve a number of tailor-made itineraries, some of which are actually inserted within the general route. Thus, we can not only devise our own trajectory when visiting a foreign country, but may also depart from it at certain times according to our particular interests. Likewise, we seldom travel 'alone', but make use of a tourist guide or follow the suggestions in brochures and travel guides. Finally, the ultimate purpose of travelling is not only to get somewhere, but also, and most importantly, to enjoy the very process of doing so – slowing down, even stopping, at times, and speeding up at others.

Bearing in mind these characteristics of real-life journeys, the design of SMAIL exploits some of their most prototypical components. In the first place, languages are presented as *countries* to be explored, and their texts as the *lands* to be travelled while exploring them. These learning journeys can be made with the help of an experienced *guide* as well as alone. This guide is always at the disposal of learners, regardless of whether they choose an autonomous journey or, rather, a guided one from the very beginning. This guide, then, plays the role of a counsellor prompting learners to activate learning strategies, suggesting ways to carry out the activities and tasks in the system or to solve the problems that may arise. The guide encourages them to both establish learning objectives as well as to evaluate their achievement by themselves, providing the instruments for evaluation rather than evaluating them itself. At the same time, learners are advised to make use of what is presented as a learner diary or *travel log*. As shown in Figure 2 below, this consists of the following pre-designed files: *learning styles*,

self-evaluation, objectives and plans, materials and methods, notebook, and *tutorials.*

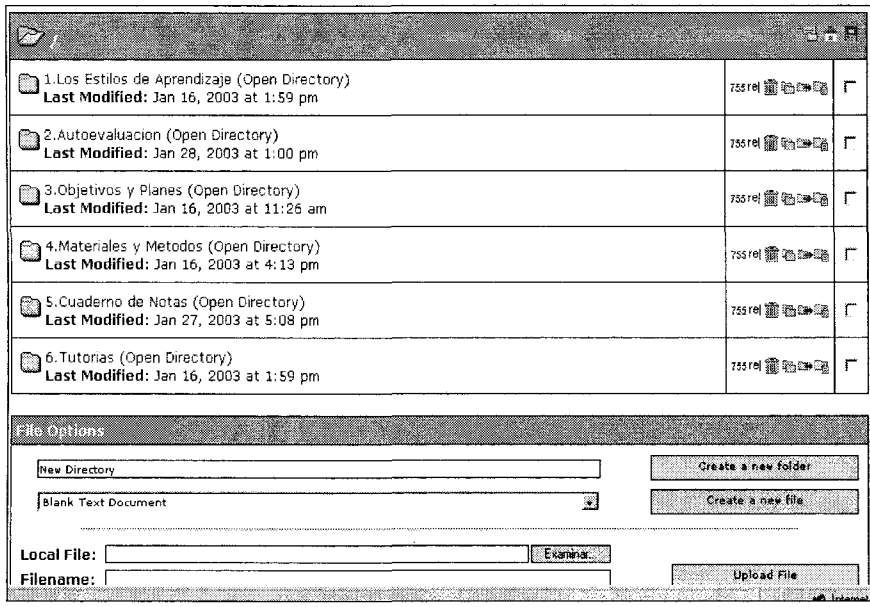


Figure 2. Interface of the learner diary in SMAIL. The files in it are the following: (a) Learning Styles; (b) Self-evaluation; (c) Goals and Plans; (d) Materials and Methods; (e) Notebook; (f) Tutorials.

Together with the default files provided by the system, learners can create their own files. Figure 3 below shows the diary of one of the learners who tested SMAIL. More specifically, the figure shows the file created by one of the learners after completing the learning styles test (file referred to as *test results*), as well as some of the documents created in it.

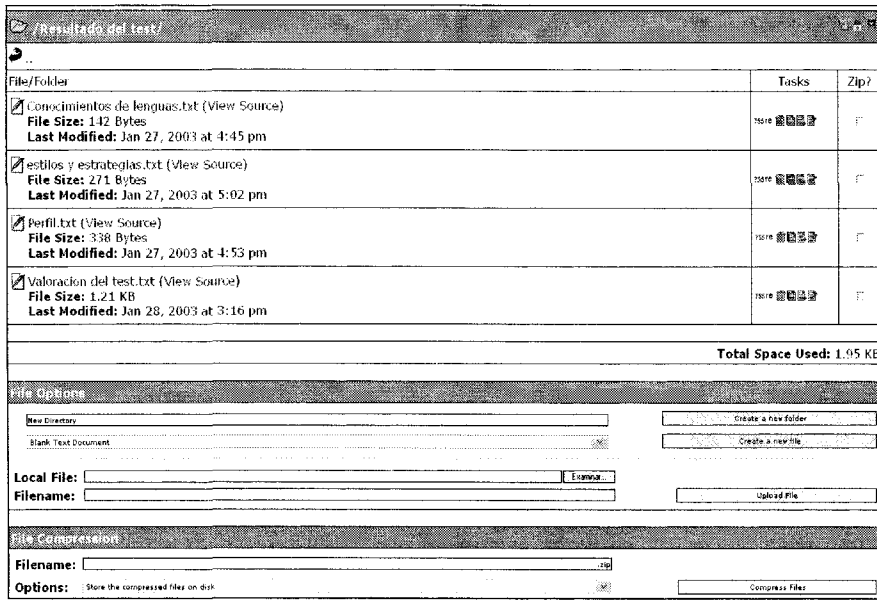


Figure 3. The documents created by a learner in his learning diary: (a) language knowledge; (b) learning styles and strategies; (c) profile; (d) evaluation test.

The learner diary fulfils two main functions: on the one hand, it is the place where learners reflect upon their learning objectives and plans; on the other, it is the place where they may collate all their activities while using SMAIL. Here learners can copy the results obtained in the questionnaires described earlier, take notes while doing the activities, or write comments about those aspects they need to discuss or clarify with the course tutor. All this may help learners both evaluate their achievement and, most importantly, set new plans and objectives. In sum, the learner diary is a place where learners can reflect upon their own learning as it takes place and, by so doing, develop the meta-cognitive skills they need in order to develop their learner autonomy.

Finally, all the activities and tasks in SMAIL are organised in terms of *journeys*, *excursions* and travel training exercises. *Journeys* are long learning modules which cover a set of interrelated activities organised in terms of various graded stages. In this respect, learners may engage in different journeys, such as narrative genres, descriptive genres, etc., according to their needs and/or preferences. Moreover, each text (journey) is exploited bearing in mind prototypical learning styles or types of travellers, with four prototypes built upon the system. For if diversity is both a starting assumption and a desired result in CALL design, it may also represent a serious threat when actually building up a realistic and workable learning

system – multimedia or otherwise. A good way to overcome this issue was to design the system according to a small set of *models* or *prototypes* exemplifying various types of learners, tasks, and patterns of language use (genres). The prototypes of learners considered in SMAIL were referred to as (a) travellers wishing the help of a guide, (b) travellers with a clear route in mind, (c) 'determined' travellers, and (d) fearless travellers.

Learners of the first type, those who want the *help of a guide*, were described as those learners who considered learning a language a complex and difficult task. Therefore, they urged a teacher's or tutor's presence throughout the entire learning process. These learners were not able to cope with open-ended activities that could cause ambiguity and eventually anxiety when learning a language. Those learners with a *clear route in mind* were considered to be practical learners, who preferred a step by step approach to learning starting with grammar and vocabulary. Similarly to the first type, these learners were unwilling to hypothesise about a text if they did not know the meaning of all the words contained in it. However, unlike the previous learners, the clear-minded learners did not need permanent support from the teacher or tutor. Learners of the third type, that is, *determined* learners, were those who considered learning a language not only a practical and necessary task but also extremely interesting. Their particular interest in learning languages made them investigate during their learning process by comparing different languages. Obviously, and unlike the two previous cases, these learners preferred to choose their own materials and considered dictionaries, grammars and teachers or tutors as simple supporting tools to be used only when needed. Finally, *fearless travellers* were expected to be the more autonomous learners out of the four types mentioned here. In fact, they felt totally responsible for all the aspects of their learning process, such as their choice of learning strategies or learning materials. Fearless travellers enjoyed experimenting and investigating not only the target language but also the learning process; for this reason, they were able to decide about changing their learning goals if they considered it necessary for the correct development of their learning process. The teacher's role, thus, was considered as a complementary support in the design and reorientation of a learning plan.

As opposed to *journeys*, *excursions* are fairly short activities dealing with a particular learning point (classifying and grouping texts, re-constructing a text from a set of headlines, de-composing a text into a number of headings, and looking for information according to various reading objectives, for example). Learners may also opt for diverse training activities (e.g. grammar, vocabulary or pronunciation drills) as well as games and quizzes, all of them designed for practising specific language points. SMAIL also includes a number of resources such as dictionaries, grammars, extra texts

and, of course, external resources (i.e. resources posted on the various online websites available).

Of course, as it has been pointed out, one of the basic premises of SMAIL is flexibility. Accordingly, learners may interact with the system in any way they choose, either following the system's advice and suggestions or exploring the texts on their own. Whatever the option chosen, SMAIL always offers its users a range of learning possibilities before, during and after the various tasks proposed, as shown in Figure 4 capturing the screen that opens after clicking on one of the icons at the end of a journey:

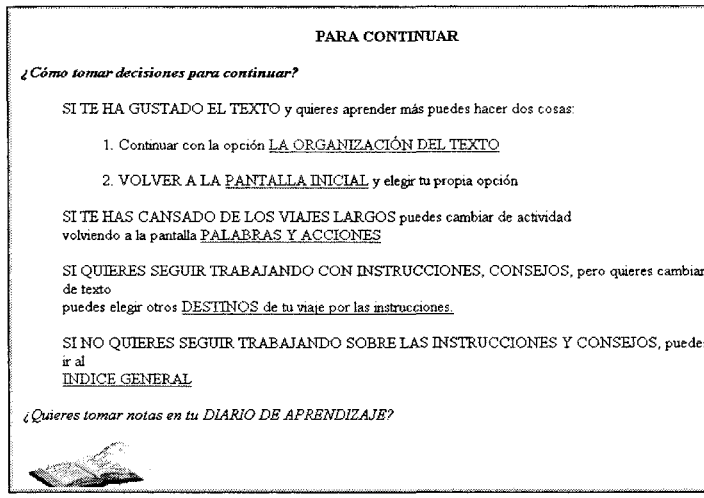


Figure 4. Different options to continue working in SMAIL after finishing an activity. Learners can follow a journey stepwise or, rather, go back to the initial screen and choose among the other tasks activities offered by the system.

2.4 The European Portfolio for Languages

GIAPEL also decided to implement the system with a portfolio along the guidelines proposed by the European Council (Rüschlikon, 1991)[2]. Thus, we reformulated the materials and activities in SMAIL according to those guidelines, yet restricting them to levels B1 and B2 (i.e. Intermediate level) in the European Portfolio for Languages.

In short, SMAIL is designed as a flexible and dynamic system for LSP learners to use as they choose. Particular attention has been paid to the system's interface. This is devised as a virtual tutor or more experienced *traveller* that can help students through their language journey and, most importantly, that enables the opening of discourse spaces where they can navigate, negotiate, and actively participate in their own learning experience.

At this point the main question that remains is how learners interacted with SMAIL. A beta version of SMAIL, which includes the portfolio, was tested by 15 students in Universitat Jaume I, all of them studying various foreign languages for professional reasons. The following section describes the learning experiences of four such learners.

3. LEARNING WITH SMAIL: A CASE STUDY

The present case study focuses on four adult learners (out of the fifteen learners who tested the system), all of them from the field of Computer Science Engineering with an intermediate level of English. Our particular focus on these four learners derives from their choosing the same journey through instruction (namely, a journey through an instructions leaflet on data storage devices). We were interested in seeing how they approached this journey either with the help of SMAIL or of their own accord.

The first thing they did was to fill in the two questionnaires on learning styles in SMAIL as well as a proficiency level test in the foreign language to study. The table below shows a summary of the different learner profiles.

Table 1. Students' results in both the learning styles and bipolar questionnaires.

STUDENTS	LEARNING STYLE QUESTIONNAIRE	BIPOLAR QUESTIONNAIRE
STUDENT 1	Active, emotional, synthetic, visual, deductive, individualistic, dependent.	A traveller with an opinion of his/her own
STUDENT 2	Active, emotional, synthetic, verbal, inductive, autonomous	A fearless traveller
STUDENT 3	Reflective, emotional, synthetic, visual, deductive, individualistic, dependent	A traveller with a clear route
STUDENT 4	Reflective, emotional, analytical, visual, inductive, cooperative, dependent	A traveller with a clear route

SMAIL offered Student 1 (*a traveller with an opinion of his/her own*) a choice between a journey and an excursion, since the tests showed a high degree of individualism and autonomy. As this learner was interested in reading information about the different devices for storing data, she chose a journey through "Proper care of disks" rather than the excursions associated with it. She justified her choice as follows: "*The 'disks' journey deals with computer vocabulary and presents structures typical of the language used in computer science; because of this I have chosen this text, since I expect to work on grammar and vocabulary that can help me in order to understand the specialised texts we use in class*".

When evaluating this journey, Student 1 described it as "*really interesting and useful, especially the part about strategies*". Interestingly, this student was not initially interested in strategic competence but rather on grammar training ("*I'd rather prefer this route, since it is the grammar the aspect I want to learn since it is in grammar where I have most of the problems*"). In this sense, her own evaluation of her learning experience may validate some of the basic premises and concerns of SMAIL, namely the integration of grammar and discourse, the introduction of strategic knowledge in the different activities proposed, and the assumption that learners may change their previous assumptions and profile as learning takes place.

SMAIL suggested that Student 2 could take a journey, yet displayed all the possible materials and resources in the system so he could personalise his learning experience. This learner asked for a counselling session with his assigned tutor in order to discuss a tailor-made learning plan reflected in the following comments:

> "*The first learning plan made us decide on the following aspects: Taking into account the results of the tests and my behaviour as a language learner, we have decided to work as follows: a) regarding my interest in webpages, I am going to go through all the vocabulary and structures used in this context in order to get familiar with it; b) I have to choose a text and propose a learning plan based upon it. c) goals: trying to speak English with Noelia, proposing a learning plan on a specific text in order to be able to understand the grammatical structures contained in it. This learning plan could start by studying webpages similar to the one in my department*".

At this last stage, Student 2 made use of all the resources offered by the system, such as the Web resources, especially those that complemented his work on the journey "disks"; that is, he used the links devoted to grammar and those included in the ESP section. In this sense, he referred to the *grammar section* and the *external resources* as "very useful in order to practice English and as a complement to the work we do in class".

Finally, SMAIL suggested that Student 3 and Student 4 (both *travellers with a clear route*) could start with an excursion. In this sense, the main difference between *a traveller with a clear route* and *a traveller with an opinion of his/her own* is that SMAIL sees the former as basically interested in activities with a clear beginning and a clear end and, accordingly, suggests excursions instead of journeys – longer and more 'open-ended'.

Both students were then offered the same excursion through the text on disks. However, the interaction with the text was different in each case. Student 3 completed the excursion proposed and, then, chose different excursions on the same journey. He was indeed a *traveller with a clear*

route; that is, whenever SMAIL suggested a shift towards a journey rather than an excursion, he disregarded this suggestion and kept on working on excursions. In contrast, Student 4 was 'easier' to convince and, thus, after finishing the excursion proposed by the system, he chose a journey. He explained his decision in the following terms: "*After the excursion I decided I wanted to know more about the text. Especially the way it was written, so I decided that doing the rest of the journey was going to help me to learn more and to understand the text better*".

These two different experiences undergone by the same type of *traveller* made GIAPEL reflect on how the meta-language used by SMAIL may affect the interaction of learners with the system. For one of the final goals of SMAIL is to promote learner autonomy (and, therefore, 'change' some of their previous representations about both language and language learning), and this made us pay close attention to how the meta-language used in the interface of SMAIL could affect the choice of activities and tasks by learners.

Indeed, the choice of meta-language in the system's interface is one of the possible shortcomings of the current version of SMAIL, as suggested by the reactions of some of the learners discussed above. Further work is still needed to both adapt this meta-language to the diverse learning profiles (i.e. types of traveller) used in SMAIL, as well as achieve a 'true' dialogue between learner and machine according to the characteristics of the former. In this regard, meta-language is one of the central aspects currently discussed by GIAPEL and will be one of the improvements of future versions of the system. The second shortcoming concerns the use of the European Portfolio for Languages. This entails that learners are trained to set their own learning objectives and choose the strategies to accomplish them before engaging with CALL materials that incorporate the concept of portfolio. In this sense, GIAPEL is considering the introduction of a set of activities and/or a training module to the use of the portfolio in SMAIL.

As to the positive feedback of the learners who tested the beta version of SMAIL here described, all of them regarded the "*possibility of choosing among different activities the one you are more interested in*" as one of the most attractive features of the system. The second most valued component of SMAIL was the learner diary. This was seen as an opportunity to write down anything related to their learning process as this actually took place, and as a source of insight into their achievement. Finally, they also valued the fact that materials were organised according to those genres and topics they were familiar with in their own language. Specificity was, thus, regarded as an advantage since it catered for their specific interests regarding the study of a foreign language.

4. CONCLUSIONS

This chapter has described a proposal for teaching LSP using CALL materials. The starting assumption is that ICT may be particularly helpful for learners enrolled in LSP courses, usually in large groups characterised by diverse learning styles and needs. Moreover, it may be extremely helpful for those LSP courses offered to adult learners with different professional interests, for whom the concept of learner autonomy may be essential for their future development as LSP learners and users (e.g. faculty from different disciplines who need a foreign language for attending conferences or for publishing their own research, students in those disciplines, etc.).

Indeed, the design of any such course involves reflecting upon the ways in which ICT may be useful in the LSP context, which implies paying attention to both the technical and methodological aspects involved. The SMAIL project resulted from our attempt to reconcile theory and practice while, at the same time, making the most of technology. As for the methodological aspects, in SMAIL we combined the notion of genre (so basic an assumption in many LSP courses), together with metaphor and portfolio, as an appropriate tool to develop learner autonomy.

NOTES

[1] The SMAIL project was initially funded by the Ministry of Science and Technology (ref. TIC 2000-1182) and is still being developed by the GIAPEL group from Universitat Jaume I, Castellón (Spain). The language used in the program's interface is only available in Spanish. Other languages will, nevertheless, be offered in future versions of the SMAIL program.

[2] Intergovernmental symposium on *Transparency and Coherence in Language Learning in Europe: Objectives, Evaluation, Certification* held on the initiative of the Swiss Government in Rüschlikon in November 1991.

REFERENCES

Benson, P. (2001). *Teaching and Researching Autonomy in Language Learning*. London: Longman.

Berkenkotter, C. and Huckin, T.N. (1995). *Genre Knowledge in Disciplinary Communication*. Hove: Lawrence Erlbaum Associates.

Bhatia, V.K. (1993). *Analysing Genre: Language Use in Professional Settings*. Harlow: Longman.

Biber, D. (1988). *Variation Across Speech and Writing*. Cambridge: Cambridge University Press.

Biber, D. (1989). A typology of English texts. *Linguistics* 27, 3-43.

Blin, F. (1999). Learner autonomy and IT strategies. Institute of Technology Carlow, Carlow, International Seminar.

Caballero, R. (forthcoming). Journey metaphors in foreign language teaching-learning: Ways of travelling/learning in multimedia environments. *Melanges.*

Canale, M. and Swain, M. (1980). Theoretical bases of communicative approaches to second language teaching and testing. *Applied Linguistics* 1, 1-47.

Cembalo, M. (1994). Files and catalogues: Meeting and answering learner queries in a resource centre. In R. Duda and P. Riley (eds.) *Learning Styles.* Nancy: Presses Universitaires de Nancy.

Chapelle, C.A. (2001). *Computer Applications in Second Language Acquisition. Foundations for Teaching, Testing and Research.* Cambridge: Cambridge University Press.

Chapelle, C.A. and Green, P. (1992). Field independence/dependence in second language acquisition research. *Language Learning*, 42 (1), 47-83.

De Beaugrande, R. and Dressler, W.U. (1981). *Introduction to Text Linguistics.* London: Longman.

Esch, E. (1996). Promoting learner autonomy: Criteria for the selection of appropriate methods. In R. Pemberton (ed.) *Taking Control: Autonomy in Language Learning.* Hong Kong: Hong Kong University Press. 35-48.

Flowerdew, J. (1993). An educational, or process, approach to the teaching of professional genres. *ELT Journal*, 47 (4), 305-316.

Holec, H. (1988). *Autonomie et apprentissage autodirigé.* Conseil de l'Europe, Strasbourg: Hatier.

Hymes, D. (1972). On communicative competence. In J.B. Pride and J. Holmes (eds.) *Sociolinguistics. Selected Readings.* Harmondsworth: Penguin. 269-293.

Little, D. (1991). *Learner Autonomy. Definitions, Issues and Problems.* Dublin: Authentik.

Paltridge, B. (1997). *Genres, Frames and Writing in Research Settings.* Amsterdam: John Benjamins.

Pâquier, E. and Balser, J. (2001). Stratégies d'apprentissage (Point Didactique). *Le Français dans le Monde* 317, 45-46.

Richterich, R. and North, B. (1992). Transparency and coherence in language learning in Europe: Objectives, assessment and certification. *Proceedings of the Intergovernmental Symposium* held in Rüschlikon, Strasbourg: Council of Europe.

Soo, K.S. and Ngeow, Y.H. (1997). ESL instruction with interactive video: The MCALL Project. Paper presented at *SITE 97 Informational Technology and Teacher Education Conference*, Orlando, USA.

Swales, J.M. (1990). *Genre Analysis: English in Academic and Research Settings.* Cambridge: Cambridge University Press.

Trim, J., North, B. and Coste, D. (1996). *Modern Languages: Learning, Teaching, Assessment. A Common European Framework of Reference.* Draft 2 of a Framework Proposal. CC-LANG (95) 5 rev IV, Council of Europe.

Villanueva, M.L. (2003). Les espaces de la médiologie et les nouveaux enjeux de la médiation. La métaphore du voyage dans le Projet SMAIL. *Actes XII Colloque APFFUE.* Universidad de Alicante, 17 April, 2003. 11-25.

Villanueva, M.L. and Navarro, I. (1997). *Los estilos de aprendizaje*, Castelló de la Plana: Publicacions de la Universitat Jaume I, Col. Summa, Filología/6.

Widdowson, H.G. (1990). *Teaching Language as Communication.* Oxford: Oxford University Press.

PART III.
SPECIFIC TECHNOLOGY-BASED PROJECTS IN DIFFERENT EDUCATIONAL SETTINGS

Chapter 8

TECHNOLOGY FOR TRUST, COLLABORATION, AND AUTONOMY AMONG ASIAN STUDENTS AT THE UNIVERSITY LEVEL

Claudia Devaux
The Guli Institute (San Francisco, USA, and Chongqing, China)

Renate Otterbach
University of San Francisco (San Francisco, USA)

Ying Ying Cheng
Fortune Institute of Technology (Kaohsiung, Taiwan)

1. INTRODUCTION AND THEORETICAL FOUNDATION

What we call the traditional approach to education–one where the teacher is the authority transmitting knowledge to passive learners who essentially put their energy into memorization with a view of passing an examination–was labeled as early as 1970 by Paulo Freire as *the banking method.* Most often associated with political ideology, this method does have its merits. It was appropriate in the industrial age when it was important to educate the masses who, by the time they finished school, had the skills necessary to sustain them for life. And the approach is valid today in situations where it is important to build a vast knowledge base of facts, principles, and fixed procedures–anatomy for the future surgeon and landing gear operation for the future pilot. But even they join the rest of society in the information age

that is characterized by such rapid movement that an individual can be expected to change careers one or more times during his/her life; the skills learned in youth are no longer relevant or adequate, and organizations and structures are continuously reinvented. Technology has changed the world and the way we live. People in the twenty-first century, even if they live in a small town, might find themselves communicating and collaborating with co-workers on the other side of the globe–crossing geographies, time zones, and cultural boundaries. To survive, much less thrive, in these times requires an education system that engenders lifelong learners conscious and appreciative of the world around them, ready to identify problems and find solutions and make appropriate adjustments. To reach this goal, students can no longer be passive learners but rather have to be actively engaged in the acquisition and application of knowledge and procedures. Only in this way are they able to acquire the conceptualization and problem-solving skills necessary for a continuously changing society. The social-cultural activity theory of Lev Vygotsky, who lived in the first half of the twentieth century, focuses in part on the importance of peer and/or mentor interaction in social settings. In "conversation," the mentor or peer adjusts his/her language to the range of understanding of the student (Katz & Lesgold, 1993). Whereas Vygotsky focuses on live person-to-person interaction, we applied the same concept using technology as the medium of engagement. This enabled us to personalize the interaction to meet the specific cognitive needs of the student. If technology has brought about a shrunken globe and accelerated change, technology, along with cultural sensitivity and linguistic skills, also provides a solution for helping students move from the banking method of education to a model of active learning.

2. LEARNING ENVIRONMENTS

Our purpose is to explore how to use technology to facilitate effective learning for Asian students engaged in learning English for Specific Purposes (ESP) in the information age. Interestingly, there are more Chinese studying English today, about 600 million (Niu & Wolff, 2004) than there are native speakers of English, who number about 402 million (Farlex, 2005). During the 2001-2002 academic year, we were working with Asian university students at three different schools: a university in Southwest China (Devaux), a technical college in Taiwan (Cheng), and a West Coast college in the United States (Otterbach). Devaux's graduate students were learning academic writing in preparation for thesis work, Cheng's students were learning English for engineers, and Otterbach's course was on research methodology for visiting teachers from Taiwan. In the last case, many of the

students, with varying competency in English, were preparing for certification as Montessori teachers. The course was taught in English with concurrent translation provided, and all students had meetings with the teacher, either one-on-one meetings or with a peer mediator. A term paper in English was required, and, although the students had the option of writing the paper in Mandarin for subsequent translation, many were serious about writing directly in English. Remaining connected via e-mail, we came to understand that our students, educated in Mainland China or Taiwan, shared a similar cultural and educational background. This led us to collaborate in developing teaching strategies to help our students make the transition from passive learning to a more active style. Key to our success was e-mail, which will be discussed later, because it enabled us to communicate among ourselves and with our students. The focus of this chapter is the experience of the academic writing graduate students in Mainland China as it is representative of the integration of the cultural understanding we gained through our on-going e-mail conversation.

We think that our experience with traditional Asian students is of marked importance in that their educational background, possibly in contrast to that of their peers in the West, has been exclusively in a banking method environment. The challenge for us as teachers was to help our students transition in the course of a semester or two from the traditional environment to one appropriate for the information age, that is, to help them transition from being passive recipients of knowledge to active participants in their own learning. Our approach was to use scaffolding for cognitive development–that is, to offer support as long as the student needed it with the goal being to keep the level of support at a minimum–and our task was to know where each student was in his/her learning, where he/she needed to go, and what form of support to offer at what level. We saw ourselves as mentors and some of our students as peer mentors in what Vygotsky (1978) refers to as *the zone of proximal development.* Our chapter addresses the use of technology to build the foundation for an effective scaffolding environment.

Our ESP students were brought up in a system that educators refer to as teacher centered. In this system, the instructor–or ministry of education–controls the learning process by selecting and sequencing the subject matter; the student's role is to receive the information and demonstrate, usually through an examination that may mean entry into a key secondary school or university, that it has been received. This model is by no means practiced only in Asian countries; indeed, it is typical of North American universities especially at the undergraduate level, but in North America, as opposed to Asia, assessment of learning is also likely to include term papers, projects, and presentations. Another way that the experience of American students

differs from that of their Asian counterparts is that the former have not spent their pre-college years in classrooms filled with a large number of students–fifty or sixty–at desks bolted to the floor facing the teacher sitting at a desk on a raised platform. Rather, as youngsters, Americans may have been in classrooms with flexible furniture, and generally, at least theoretically, they have had experience discovering for themselves, under the guidance of their teacher, scientific principles, and, moreover, they have experienced working on group projects. The art work in American kindergartens and primary schools is that of the children, whereas in the Asian schools decorations are made by the teachers.

In American schools, library research begins at an early age. In Asian schools, if there is a library, it functions more as a study hall than a resource center. In fact, secondary-level Chinese students return to the school in the evening to attend study hall where they do homework and silently review materials expected to prepare them for an upcoming examination. At the university level, library hours in Asia are not conducive to research, and, in fact, circulation of library books is limited. The library is a place where students can go during the week to consult books and, if they can find a place, to sit at a table to write. As for university-level classes, the students, while typically respectful of teachers, tend to remain passive and unwilling or unable to participate. Some young Asian teachers complain that not only do their students fail to participate in class but they sleep or read the newspaper during the session. It would seem that motivation to pay attention in class is tied to how relevant the information imparted by the teacher is to the next examination and that there is little or no connection between student and teacher in the circumstances just described. Nevertheless, in all fairness, we must point out that there are many cases of Asian students who have enjoyed a good relationship with teachers they consider warm hearted and caring.

3. THE CHALLENGES

Our students actually had considerable experience working in pairs inside and, especially, outside the classroom. Usually they had seatmates in class who often looked after each other, one collecting handouts for the absent partner and turning in homework as well. Throughout their years of schooling, classmates would find partners to drill each other on things like vocabulary and verb forms. These practices were particularly geared toward memorization. The ESP students we encountered, however, had had very little experience creating knowledge in a collaborative way in which the whole might be greater than the sum of the parts.

We asked ourselves how we might engage the students in the learning process. At first glance, it seemed that all we had to do was to meet with the students in classrooms and give them assignments and the freedom to explore with minimal instruction; such was the academic environment we, as teachers, were familiar with. However, we found our students ill equipped to move into this kind of environment; theirs was a different academic culture. Asian ESP students, intent on doing academic writing, are faced not only with challenges related to language learning; they are confronted with many difficulties, especially when it comes to participating in discussions and doing extended writing (Ballard & Clanchy, 1984). The insecurity our students felt from the sudden lack of structure was reflected in their anxious questions. Students accustomed to a more open classroom and a constructionist approach to education also want to know specifics about a given assignment, but in general they are more confident in organizing a paper, for example, and searching for sources and synthesizing material, eventually expressing their own conclusions. Our Asian students, on the other hand, not only wanted to know what we as teachers wanted and how many words they should write in an essay, but they preferred a step-by-step, cookbook-style set of instructions. Moreover, when they consulted sources, their work tended to be a series of quotations with very little contribution of their own; in many cases, they actually copied papers. Sometimes they were guilty of outright plagiarism, but often without any deliberate intent to plagiarize; the students simply did not feel that what they had to say was worthy, and so they relied more than they should have on the work of established scholars. Like the students observed by Jordan (1997), they were unaware of the need to acknowledge all sources. Our challenge of how to engage the students included finding ways to build their confidence and help them learn to synthesize and integrate information. We sought to offer them support, but we did not want them to remain dependent on us. Our goal was to help them become autonomous learners in a collaborative community where the exchange of knowledge, ideas, and insights was stimulating and exciting. And so we identified three goals: the building of trust, a movement from isolation to collaboration, and the development of autonomous learning.

Scaffolding is characterized by its temporary nature. In this sense, the construction metaphor is especially descriptive; support is withdrawn when the building can stand on its own. Being able to ascertain when moments were teachable and being able to gain the trust of the students, as we gradually released them to work on their own, implied sufficient support for the students. The literature is rich in examples of scaffolding at the primary and secondary levels, but our circumstances were different. We were working with young adults whom we saw in classes that met only once a

week. Class meetings, meetings during office hours, and other meetings outside class would not offer adequate opportunities for developing the critical student-teacher relationship. That is where technology came in.

4. TECHNOLOGY

A few years ago, there was a perception of computers as impersonal machines but, in fact, they have become the very instruments that enable communication and foster relationships. Thanks to the internet, we had a means of communicating with our students collectively in one-way broadcast mode and individually in two-way transmission mode. Our internet-based technology strategy had the following components: teacher webpages, e-mail, research, bulletin boards, and chat rooms. In our theatres of operation, there was some variance in student access to the internet. One multi-nation study on student access to the internet involved over ten-thousand youth aged 12 to 24 ("Internet Invaluable," 2000). As shown in Table 1, the study revealed that 63 percent of Taiwanese students access the internet at school, 59 percent of the students in the US have school access to the internet, but in Mainland China, and then only in the urban areas, internet access at school is limited to 13 percent. In our example of ESP instruction in Mainland China, internet access was possible mainly in internet bars which were actually more frequented by boys and young men who smoked as they played video games than by serious students intent on using the internet as an educational resource. On-campus internet access was rare and generally not available to the students in this study; for the most part, they had to go to internet bars in the vicinity of the university where they paid two yuan an hour to use a computer. By the end of 2002, following a tragic fire in an illegal Beijing internet bar earlier in the year, more than three-thousand internet cafés had been permanently shut down in Mainland China and some twelve-thousand temporarily closed pending safety improvements ("China's internet cafés slashed," 2002).

Table 1. Students who access the Internet at school.

Country	Percentage
Taiwan	63%
United States	59%
China	13%

Source: Ipsos-Reid, 2000.

We present in Table 2 the results of a survey used to measure the effectiveness of internet usage among the academic writing students in

Mainland China. Eighty-three students of the academic writing course participated in the survey, which was conducted during the second-to-the-last week of the 2001-2002 school year. The students had been exposed to web usage for the entire academic year. Copies of the survey were prepared, each with a unique number, and randomly distributed to the participants. There were 53 items; only those relevant to the present discussion are presented here. The students had the option of putting their names on the survey, and they were invited to write in comments about what they liked about the course and how they thought it might be improved. Specifically, we relate here experiences regarding the teacher's website, e-mail, bulletin boards and chat rooms, and web-based research.

Table 2. University student perceptions as indicated on an anonymous survey, n= 83.

Item	Positive Responses	Percentage
The teacher cared about me as an individual.	81	97.6%
The teacher was available to the students.	75	90.4%
The teacher's webpage indicated that the teacher cared.	65	78.3%
The teacher's webpage was useful because it helped create a sense of community.	78	80.7%
It was helpful for me to have a detailed syllabus.	72	86.8%
The teacher's webpage was useful because I could find the syllabus.	59	71.1%
The teacher's website was useful because I could read the reflections.	70	84.3%
I usually hesitate to speak up in class.	44	53.0%
I liked being able to communicate with the teacher by e-mail.	67	80.7%
I was able to connect with a native speaker who could help me by proofreading my work.	46	55.4%
I use the internet to "chat" with people.	47	56.6%
I have improved my computer skills during the course of the year.	71	85.5%
It was beneficial to work on a team.	57	68.7%
The teacher's webpage was useful because of the links to other websites.	68	81.9%
The course helped me get a clearer idea of my thesis topic.	68	81.9%
I feel that I am better able to do my own original work and less inclined to copy the writing of others.	73	88.0%

4.1 Teacher's website for information and community building

The teacher's homepage was designed to let the students know that the teacher cared about them and that she wanted to collaborate in their education. Predominantly placed on the teacher's homepage was her letter to the students expressing her delight at being with them; also posted were her telephone number, office location, office hours that included the possibility of making an appointment, and e-mail address. One website feature that students seemed to enjoy was being able to click on the word "smile" and launch a program presenting lively animations and upbeat music along with a message urging them to smile because someone was thinking about them. In fact, one young man continues to communicate with the teacher by e-mail; on the subject line for each communication is the word "smile." In our survey at the end of the school year, 97.6 percent of the students indicated that they felt that the teacher cared about them as an individual, 90.4 percent found that the teacher was available to them, and 78.3 percent indicated that the website was of value because it expressed that the teacher cared. These results suggest that even without the website the students felt cared for by the teacher, but two points are worth noting: (1) that more than three-quarters of the students connected the webpage to the teacher's caring for them, and (2) the teacher herself believes that the website greatly enhanced her ability to reach out to the students and let them know that she was available to them and concerned about them.

Among the items on the teacher's website were community-building components–such as pictures of group events and pictures of research teams comprised of class members–links to other websites, a copy of the syllabus, and a copy of reflections used in class. There were special pages for pictures of the research teams; more on them will be brought up later, but let us say now that alongside the team photo, which was most often taken in an informal garden setting or some other campus location, were the names and e-mail addresses of each team member as well as the research topic. Other web pages included photos of special events like the Mid-Autumn Festival and a pizza party held in May as well as a page for family and friends. This meant that relatives back home–hometowns in many cases were thousands of miles away–could get to an internet bar and see pictures of the students. Of the students participating in our survey, 80.7 felt that the teacher's website created a sense of community. As for the syllabus, it was handed out in hardcopy format the first day of each semester. It gave the students a detailed roadmap of what they would cover during the term, when they would cover it, what their responsibilities would be, and how their performance would be assessed. A syllabus is identified as typical of the

teacher-centered model (Moore, 2001); in our case, the syllabus was of primary importance in giving the student proper guidance akin to the moral support that Hutchinson & Waters (1987) attribute to the syllabus, since it makes the language learning task more manageable. Our observation is that the syllabus provided a bridge between a traditional structure and that which they were accustomed to. Of the 83 students participating in our survey, 86.8 felt that a detailed syllabus was helpful. And yet our intent was not to set up a rigid timetable; some degree of flexibility was desirable, and this implied modifying the syllabus on occasion. As elsewhere, our Chinese university sought to be judicious in making photocopies of handouts, and even though there was excellent cooperation in providing photocopying resources, the teacher found the logistics cumbersome and time-consuming. Thanks to the internet, a certain degree of flexibility in the program was achieved; the syllabus was updated periodically to reflect changes in needs, and students could always find the most recent version online, something appreciated by 71.1 percent of them.

The reflections were a popular part of the program. A reflection consisted of an inspirational story or piece of traditional wisdom read at the end of each class session. Sometimes there was a word of commentary or a response from the students, but in general the reflections were simply the parting message of the teacher who sought to show respect for different cultural traditions, to develop appreciation among the students for diverse perspectives, and to create a moment of sharing values with the students. There were never any handouts for reflections, but the students knew that they could find the text on the website. The teacher felt that the non-verbal communication–the nodding of heads and attentive countenances–during the reading was an indicator of a teacher-student connection having been made. Our survey shows that 84.3 percent of the students deemed the Web as useful in providing them with the reflections; in other words, outside of class, the students continued the non-verbal "conversation" and thereby made yet another step into the community of scholars that was under construction.

4.2 E-mail for communication and collaboration

E-mail turned out to be one of the chief ways to develop the teacher-student relationship–greetings and e-cards were frequently exchanged–and provide individualized mentoring. The Taiwanese students in America actually relied on e-mail as a standard method of communication with their teacher, who was able to gauge their level of knowledge and gently guide them one by one to where they needed to be. Obviously, this was a very individualized approach with each student having a unique relationship with

the teacher, and yet while it was highly personal, it also allowed the teacher to group the students according to common needs. E-mail provided in education the mechanism for what in the manufacturing industry is called mass-customization, meaning that products can be both customized and produced in quantity. Computers enable companies to take thousands of orders, each with a slightly different configuration for the final product, deal with numerous suppliers, and eventually deliver to each customer exactly what was ordered. It would be possible to create a set of computerized scenarios for teacher responses as is done, more or less successfully, in customer care applications, but fortunately our situation was not as complex. The teacher was able to group levels and issues in learning in a way that would never have been possible in the ordinary classroom situation. A series of steps could then be drawn up, and the teacher could guide each student or group of students from one step to the next, sometimes copying and pasting directions but always seeing each student as an individual person. Students who might otherwise not participate in class discussions–53 percent of the academic writing students surveyed indicated that they usually hesitated to speak up in class–used e-mail to communicate with the teacher. They felt comfortable sending their questions and comments by e-mail, and they were usually thrilled to get an encouraging response. The willingness of the students–80.7 percent of the students in our survey indicated that they liked to communicate with the teacher by e-mail–to address the teacher frankly and without fear of losing face is testimony to their trust in the teacher, whom they considered as a mentor and friend.

There was another use of e-mail, and that was to set students up with native speakers abroad for the deliberate purpose of gaining review and proofreading of student work. In our survey, 55.4 percent of the students were able to make contact with native speakers; students were encouraged to have their papers reviewed by native speakers before handing them in. Contact with foreigners in China is still rare enough, but some of the students managed to find native speakers who could go over their papers with them. E-mail represented a means for our students to be in touch with native-speaker correspondents who became, in essence, members of a virtual extended instructional staff. The correspondents provided encouragement and coaching and also served as resource persons when questions arose. There was a deliberate effort on our part to match native speaker correspondents with ESP students. The correspondents were sometimes experts in a given field (e.g., an American civil engineer, an Australian scholar knowledgeable about Ming and Qing documents, a physician in Hong Kong who was an authority on epidemiology in Asia), but they were also ordinary, generous people who read the papers, made a few suggestions pertaining to grammar and style, and generally cheered our scholars on. One

of the difficulties encountered was that it was not always possible for the Chinese students to send or receive their documents as attachments; sometimes the attachments could not be opened, and sometimes the message simply did not go through. Though challenged, students generally found creative solutions to overcome these obstacles.

It is important to mention again that we three authors also depended on e-mail to collaborate on our work and our teaching. E-mail allowed us to exchange questions on subject matter as well as on approaches to education. Located in the United States, Taiwan, and Mainland China, we formed our own virtual community and were able to remain in contact with each other and offer mutual support.

4.3 Bulletin boards and chat rooms for primary research

Reports indicate that both genders do e-mail and participate in chat rooms in China. In our survey of 83 students, we found that 56.6 percent used the internet for chatting. The potential, not tapped by us, is there to create chat rooms according to the particular needs of various groups of students, possibly identified through the e-mail contact mentioned above. However, if we as teachers did not take advantage of bulletin boards and chat rooms to enhance instruction, some of the students did. Agreeing with Robinson (1991) that team writing has advantages for ESP students including a higher quality product, the teacher of the academic writing course instructed her students to divide themselves into research teams–they were told to choose people they shared interests with and would like to have tea with–and they were allowed to choose their own term paper topic. A team of six young women–larger than most teams which typically had three or four members–wanted to investigate homosexuality in China. It seemed to be a sensitive topic, and we were not sure how they would manage an ethnographic approach to carrying out their project. What they did was to review both ancient and present-day literature on the topic and conduct face-to-face interviews on attitudes and perceptions. Then they created a bulletin board, inviting anonymous responses. About 30 people identified themselves as Chinese homosexuals, sharing their issues and concerns with the research team; the communication from the respondents was presumed to be authentic.

4.4 Web-based research: accessing reference material and exploring new territory

Our Chinese ESP students had had no previous instruction in internet usage. In fact, several were novices at using a computer, and they faced three

major challenges: having access to a computer (the department provided 18 personal computers available at limited times during the day but without internet access), learning to use Microsoft Word, and learning to use the internet. Very brief instructions were given in class about word processing and internet searches; novices were almost entirely guided by volunteer peers. Even those who were computer veterans improved their skills; 85.5 percent stated in our survey that they had improved their computer skills. The internet actually was an invaluable resource, especially since there was not much material in the library which was only open during certain hours and even then with limited circulation of books. An important part of the teacher's website then consisted of "playgrounds" that would allow the students to explore various topics. A "playground" consisted of a webpage full of links on a specific research topic, such as bilingual education, gender studies, religion, careers for English majors, large class size, traditional Chinese medicine, disabilities, children's literature, and humor. The idea was to introduce the students to surfing and searching for resources on a given topic. In addition, there was a webpage of useful links that would take them to style guides, information on ethnographic research, online instruction in writing, tips on résumé writing, sample papers, and places where they might want to submit their own papers for possible publication. They also learned to look up dissertation abstracts.

As described earlier, the students formed their own research teams for their term papers, and they relied to a certain extent on the Web for sources. Besides the project on homosexuality mentioned above, examples of student projects included urban planning, the role of fathers in preschool education, differences in gender communication, the contributions of Jesuit missionaries to science in late Ming and early Qing China, the role of Buddhism in the lives of modern Chinese women, classroom seating arrangements, translating the aesthetic, and the role of the moon in Eastern and Western poetry. In almost every case, there was research based on sources gleaned from the internet, and there was significant communication among team members and others. Working on research teams expected to present fresh perspectives and uncover and synthesize new information was a novel experience for the graduate students who, in certain cases, became "experts" in their respective fields. The members of one team were invited to present their paper in Hong Kong; the paper was subsequently published in the United States. Not all students found the team approach beneficial; 13.2 percent would have most likely been happier working independently, and 18.1 were neutral whereas 68.7 percent found teamwork to be beneficial. However, 81.9 percent of the students appreciated the links on the website prepared by the teacher. It seemed that these links were able to help them get started in their own pursuit of web-based sources. In fact, the same figure,

81.9 percent, appears for the students surveyed who indicated that during the course they were able to get a better idea of their thesis topic. Besides, 88 percent of the students indicated that they were less inclined to copy the writing of others and better prepared to do original work.

5. CONCLUSIONS

The students surveyed felt that they had made progress in their writing during the year, a perception consistent with the observations of the teacher and the dean of the graduate studies department; in fact, the dean described their improvement as remarkable. Above and beyond our goal of teaching ESP courses to Asian students with different needs, we sought to help our students transition from a banking method environment, where they put their time and energy into accumulating information and memorization, to an environment where they saw themselves as active participants in a changing world. We hoped to instill in them a sense of their place and role in society, not just how they would fit in according to the status quo, but how they would relate to the world and shape its future. And so our courses were not merely content-driven but grounded in cognitive theory with a view of helping the students become responsible for taking initiative in their own learning in order to join the community of scholars as contributors. We also wanted our students to know that they could derive support from this same community, and part of this meant that they could do their own work in English as well as rely on established scholars for sources and on colleagues for dialogue in English about the issue at hand.

The three concepts that we kept in mind were trust, collaboration, and autonomy. Our students needed to trust us in order to trust themselves. One example from a scholarly article that the students found particularly appealing was that of a father helping his son learn to ride a bicycle. In the beginning the father supported the bicycle by holding on to the handlebars and the seat as he guided the boy on his first ride. Gradually, as the child gained confidence, he let go of the handlebars, keeping a firm grip on the seat. Eventually only his finger touched the seat, and finally the boy was riding the bicycle entirely on his own. For this to happen, the child had to trust his father, and the father also had to trust that the moment would come when the boy could ride by himself. This analogy illustrates two of the three concepts: trust and autonomy. First, the father had control of the bicycle. Gradually, as the son gained both competence and confidence, the father turned over control of the bicycle to the boy until he was finally in total control. Our perception of trust was not limited to our gaining the trust of the students; it included their trusting themselves as capable of doing original

work, and our trusting that they would one day not need us. What the bicycle analogy does not address directly is peer collaboration, and yet collaboration is also grounded in trust. At first, student teams may rely on the teacher for setting timetables and assigning roles, but gradually they work these things out collectively with little or no intervention. Internet technology was only a tool in our approach–we loved our students, were available to them, provided leadership in collaboration activities, gave them meaningful tasks to accomplish, and hopefully inspired and encouraged them–but technology tremendously enhanced our teaching. It allowed frequent communication, helped us know our students better, gave us the means to be flexible in our program, aided in building community, and provided the students with resources all over the world.

Vygotsky's theory of the zone of proximal development made a major contribution to our understanding of learning. One barrier to implementing Vygotsky's theory in practical settings is that each student's level of proximal development is different, not to mention the collective level of proximal development of any given team of ESP students collaborating on a research project. In a class comprised of a large number of students, as is typically the case in Asia, to address each zone as needed would be impossible. It is here that technology can make a significant contribution. For example, e-mail can be used to meet particular needs that occur as the students engage in complex projects. E-mail communication can be designed to provide students and groups of students with minimal individual but sufficient support to reach the learning goal, thereby facilitating cognitive development through scaffolding. In contrast, websites offer specific help for students, and they can be set up to provide areas of exploration that give the students access to expert knowledge in their content area of study. A teacher website aids in scaffolding students to become both independent, that is, autonomous, and collaborative in their research projects. Without a certain amount of guidance, web searches and data mining can be frustrating and not very fruitful for the novice. As students, provided with links on the teacher website, become more experienced, they rely less on the teacher's links and directions, and are more able to organize, conduct, and refine their own searches. They can set up chat rooms to explore ideas with their peers and teacher and others whom they have located in the virtual community of scholars; these chat rooms can be a sounding board for projects in progress. These students, some with limited access to libraries, now have access to competent authorities all over the world, with English typically being the common language, and can find themselves with the resources to write original papers.

The banking method that we sought to move our ESP students from is sometimes identified with the system of education implemented by

Confucius when, in an effort to promote equality, he instigated the civil service examination. We must remember Confucius also as a model for dealing with individual differences; he recognized that individuals had to identify and work on their own needs and at their own pace. The example of two youths who came to Confucius for instruction comes to mind. One, an exuberant fellow with lots of energy, wanted to know if he should put his lesson to immediate use, but Confucius advised him to hold off. The other pupil was a retiring sort, and Confucius knew that he would profit from moving forward, advising him thusly. We cannot help but wonder what the internet would have meant to a teacher like Confucius from whom we derive many lessons. Let us conclude with a proverb that guides us and our students as we work for each to participate in our global society:

If there is light in the soul.
There will be beauty in the person.
If there is beauty in the person.
There will be harmony in the house.
If there is harmony in the house,
There will be order in the nation.
If there is order in the nation.
There will be peace in the world.

REFERENCES

Ballard, B. and J. Clanchy (1984). *Study Abroad: A Manual for Asian Students*. Kuala Lumpur: Longman Malayasia Sdn. Berhad. In Jordan (1997).

China's internet cafés slashed. (December 27, 2002). CNN.Com./World. Retrieved January 4, 2003. Available at <http://asia.cnn.com/2002/WORLD/asiapcf/east/12/26/china.cybercafe.ap/>

Farlex (2005). English Language. The Free Dictionary.com. Retrieved March 14, 2005. Available at <http://encyclopedia.thefreedictionary.com/English%20language>

Freire, P. (1970). *Pedagogy of the Oppressed*. New York: Seabury Press.

Hutchinson, T. and A. Waters (1987). *English for Specific Purposes*. Cambridge: Cambridge University Press.

Internet Invaluable to Students Worldwide. (September 11, 2000). Ipsos-Reid Press Release. Retrieved July 18, 2002. Available at <http://www.angusreid.com/media/dsp_displaypr_cdn.cfm?id_to_view=1073>

Jordan, R.R. (1997). *English for Academic Purposes: A Guide and Resource for Teachers*. Cambridge: Cambridge University Press.

Katz, S. and A. Lesgold (1993). The role of the tutor. In S. Lajoie and S. Derry (eds.) *Computer and Cognitive Trends*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Moore, P. (2001). Models of Teacher Education. Reading Recovery Council of North America. Retrieved July 18, 2002. Available at <http://www.readingrecovery.org/sections/training/models.asp>

Niu, Q. and M. Wolff (2004). ESL\EFL in China. Using English.com. Retrieved on March 14, 2005. Available at <http://www.usingenglish.com/esl-in-china/>

Robinson, P.C. (1991). *ESP Today: A Practitioner's Guide*. Hemel Hempstead: Phoenix ELT.

Vygotsky, L. (1978). *Mind in Society*. Cambridge, MA: Harvard University Press.

Chapter 9

NETWORKING FOR LEARNING AND TEACHING ENGLISH FOR SPECIFIC PURPOSES

Deborah Healey
English Language Institute, Oregon State University (Corvallis, OR, USA)

1. INTRODUCTION

As teachers of languages for specific purposes, we try to give our students the tools they need to achieve their goals, usually job-related. We help our learners achieve their desired changes – mastery of another language, perhaps a new or better job. Sometimes, the changes we help to enact may be larger than just the individual. The Tunisia Oregon Project was designed to enable change – helping Tunisian educators understand more about the Internet in order to use it for *their* purposes. In this chapter, I will use a three-year project that brought together educators from two US and six Tunisian institutions of higher education as a focus, in order to discuss networks and networking – electronic and human – and reflect on ESP and change. Project participants interacted both face-to-face and electronically, using email and the World Wide Web to create a fabric of human connections.

E.M. Rogers' diffusion of innovation theory (Rogers, 1983) provides a framework for understanding how the Tunisia Oregon Project helped encourage change. In Rogers' theory, innovations are adopted in a bell pattern. Innovation begins with a very few *innovators* (2.5%), moves to a

small number of *early adopters* (13%), adds about one-third in the *early majority* (34%), then progresses to about the same number in the *late majority* (34%). In any innovation, there will be a small number of people in the *laggards* category (16%), who may never be convinced to adopt the innovation.[1]

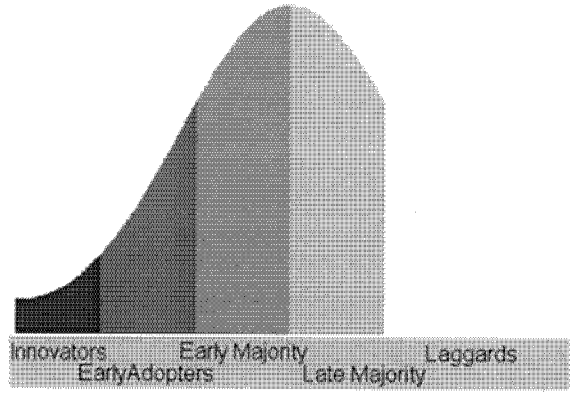


Figure 1. Diffusion of innovation curve.
Graphic from http://riccistreet.net/port80/charthouse/present/diffusion.htm

Some individuals serve as opinion leaders, moving information around; some as change agents, on the leading edge and pushing for the innovation; and some as change aides, less adventuresome but more convincing for those still deciding whether or not to accept the change.

2. BACKGROUND

Oregon is large physically and small in population. Its three million people are spread out from the Pacific coast in the west to the high desert plateau in the east. The Willamette River valley, where most people live, is very dry from about mid-June to late September. The rest of the time, it rains. (On the coast, there is even less of a dry period.) As a result, most of the state is very green and lush, with large evergreen trees.

Tunisia is a bit smaller than Oregon with more than twice the population. It also has coast and desert, but the large difference in rainfall creates a large difference in vegetation. Tunisians speak Tunisian Arabic, French, and Berber. One of the things I found fascinating there was the extent of code-switching – one of the project principals, Karim Hamdy, is a Tunisian American from Gabes in southern Tunisia. When he spoke with his friends,

they moved seamlessly between Arabic, French, and English. For educated Tunisians, French is the major language of wider communication. However, English is playing an increasingly important role, largely due to the importance of English on the Internet.

2.1 Project goals and participants

The Tunisia Oregon Project was a faculty exchange. The objectives were to:

1. create and expand connections among Project participants;
2. improve the teaching of chemistry, environmental engineering, science, and business administration; and
3. encourage use of the Internet to enhance the teaching of English for Specific Purposes.

The three objectives would all require significant changes in education in Tunisia, as well as a broadening awareness potentially leading to change in the American partners. In Tunisia, there is no tradition of collaboration among faculty members within departments, much less among institutions. While faculty members are cordial to each other, they have no mechanisms or incentives for sharing their material. ESP teachers have the ESP Center in Tunis as a central source of information. Information flow from the ESP Center, however, seemed to be only one way: from the Center to individuals, not from individuals to the Center or among individuals.

The Oregon participants were members of five departments at Oregon State University (OSU), two departments at the nearby community college, and a private company that provides Internet access and training. The group was accompanied in Tunisia by a computer consultant/solar engineer who volunteered his time to the Project.

The Tunisian participants were the Language Department of the Université 7 November (ISLT) and the Higher Institute of Management (ISGT) in Tunis, and the National School of Engineering (ENIG), the pre-engineering college (IPEG), the Faculty of Science (FSG), and the Higher Institute of Technology Studies (ISET) in Gabes in southern Tunisia.

The person who brought all of the parties together was Karim Hamdy, who worked at Oregon State University. He had previous personal connections with three of the five people most involved from OSU. One of the key people in Tunis and all of the key participants in Gabes were personal friends of Karim Hamdy; the other key participant in Tunis was an acquaintance. Using Rogers' terminology, Hamdy was a change agent.

3. PROJECT ACTIVITIES

The Project brought a total of 21 Tunisian faculty and administrators to Oregon for two to four weeks and sent seven Oregon faculty to Tunisia for two to four weeks each year over the three years. Workshops held in Oregon and Tunisia covered ESP (business, science, and engineering); computers and the Internet for research and teaching in ESP, chemistry, and math; setting up computer networks; grantwriting; and applying to graduate school in the US.

In order to encourage acceptance of change, the first Project activity was to bring six administrators, one from each Project partner, to Oregon. This two-week workshop introduced the administrators to the faculty who would be coming to Tunisia and served to refine the topics of upcoming workshops. The administrators were very strongly encouraged to use their email to communicate, which in turn encouraged them to push for better email access at their institutions. Having administrators buy into the Project was critical to its success. Administrators gave faculty time to go to workshops, provided space for the workshops, and provided per diems for the OSU personnel in Tunisia. In terms of Rogers' theory, the administrators were opinion leaders and sometimes change aides, who could put us in contact with the change agents and who would support other change aides. Their support opened the door.

The next step was four weeks in Tunisia with four OSU faculty and Steve Baker, the computer consultant who donated two weeks of time to the Project. Topics included ESP, use of computers and the Internet in teaching and research, grantwriting, and applying to US universities. One of the secondary goals of the Project was to help teachers recognize key Internet words and concepts in English, so workshops were in English where possible. Otherwise, the workshops were conducted in a mixture of English and French and had periodic translations into Arabic. Faculty from other institutions were invited to the workshops on a space available basis, and additional workshops were offered each year that were open to all interested parties. The US Cultural and Information Center and AMIDEAST, for example, offered the use of their facilities for these open workshops. Outreach was an important aspect of the Project. It provided additional visibility, increasing the stature of the Project in a very hierarchical society, and encouraged early adopters at other institutions. At this point, we began to identify some change agents who would support the Project actively by trying new methods, both in teaching and in computer system architecture.

The second year of the Project brought 12 Tunisian teachers to Oregon, half of them English teachers and half content area specialists in chemistry, math, business, and engineering. While the content of the workshops in

Oregon was similar to those in Tunisia, we could go much further in demonstrating resources, particularly in the content areas. The teachers also spent time observing classes and using the university library for research. The time in Oregon was an opportunity for teachers to build stronger Tunisian networks and to link ESP and content area teachers in ways that had not been done before. These teachers also served as resources for the next phase of workshops in Tunisia.

The four weeks of workshops in Tunisia during the second year brought in more teachers from each of the partners, as well as reaching out to different non-partner institutions. A lot of the work was one-on-one advising with teachers, administrators, and computer technicians. Each iteration allowed us to expand the pool of Tunisians who were at least familiar with possible ways to use technology to improve teaching and gave us more contacts who would be change agents, early adopters, or in the early majority at their institutions. It also provided more direct experience with the Tunisian context for OSU faculty, enabling them to view their own practice through a different lens.

By the third year, a number of personal connections had been made between teachers in Tunisia and Oregon. Two new administrators and a computer specialist came to Oregon for two weeks for more in-depth work in their areas of expertise. Four OSU faculty members and the volunteer computer expert, Steve Baker, went to Tunisia for another round of workshops and consultations. This time, we could do much more. A new computer lab had been installed at the Language Institute, though Internet access was only possible by stringing network cable across the hall from another room and setting up a temporary server. In Gabes, Baker and colleagues at the engineering school were able to set up two Linux proxy servers, extending the Internet from its previous 10 machines to two full labs in time for workshops. These improvements gave more teachers the hands-on practice they lacked, which helped expand the pool of teachers who could be in the early adopter or early majority category.

4. ISSUES IN ADOPTION OF INNOVATION

4.1 Technology resources

Tunisia is a beautiful place with great people, but not wealthy in material goods. Although it is possible to get foreign currency in Tunisia, Tunisian dinars cannot be used outside of Tunisia, which makes the purchase of imported goods difficult. Computers were available to varying degrees in all

of our partner institutions. At the Language Institute (IBLV-ISLT), some faculty had computers. A computer lab for students was installed in Year 3 of the Project, though it took several months to get a working Internet connection. The lab was left locked most of the time. On the other hand, the Management Institute (ISGT) had three computer labs for student use, one of which had moderate Internet access, when the Project began. By Year 3, there was a new Information Services building with excellent equipment and reasonable Internet access. The institutions in Gabes generally had computer labs, but with very little Internet access. For example, the National School of Engineering (ENIG) had over 100 computers but only 10 Internet connections available when the Project began.

The ESP faculty were mostly in the Language Institute (IBLV-ISLT) and the Management Institute (ISGT) in Tunis, and at the Faculty of Science (FSG) in Gabes. Their English libraries were quite limited. Faculty at ISG in Tunis were involved in creating their own material in text form in order to have high-quality, locally-relevant content. We have had ongoing discussions about adding electronic components, as well. Until more computers with good Internet connectivity are available for student access, however, ESP faculty cannot take full advantage of the range of resources available online. As a result of the current situation with access to computers and the Internet, emphasis was placed throughout on low-cost and sustainable solutions. Teaching in a one-computer classroom and using downloaded resources offline were consistent themes.

Cybercafes were more common by the third year of the Project in both Tunis and Gabes, making it easier for teachers and students to count on Internet access at reasonable speeds – thus helping at least some aspects of the Project extend from the "early adopters" to the large "early majority" group.

4.2 Political issues

Politics is a key component of educational decisions in Tunisia, as in most parts of the world. Tunisian education is highly centralized, so much so that most Internet connectivity for higher education in Tunisia is managed through one server in Tunis, with static IP addresses doled out sparingly. The Internet itself is a relatively new arrival in Tunisia. Internet service was blocked until a few years ago, when the government realized that Tunisian business was being stifled by lack of access to global communication online. The government is now funding high-speed lines into Tunisia and has at various times encouraged the growth in cybercafes. A small note about the importance of government support: all Tunisian university graduates are guaranteed jobs – sooner or later – by the Tunisian government. During the

first year of the Project, the government decided to allow university graduates to buy into cybercafes to fulfill their job guarantee. As a result, the number of cybercafes exploded between the first and third year of the Project. Later government support has waxed and waned, with occasional crackdowns closing cybercafes. Still, access to the Internet via cybercafes is now possible throughout Tunisia, thanks to government incentives.

The essence of the Internet is free exchange of information around the world. In many countries, governments are very sensitive about the type of information coming in and going out freely. This sensitivity resulted in some web-based email sites suddenly becoming unavailable, making them impossible to use in workshops. For example, we had to shift between Hotmail and Yahoo mail at various times, when one or the other was blocked. The Project also provided some email access for faculty at our partner institutions who used Eudora or a similar mail client. Awareness of government sensitivities occasionally created wariness in Tunisian faculty, especially those who used institutional computer labs for their work. Our Internet workshops included information about how to keep personal information private online, such as knowing how to clear the cache and otherwise purge the records of sites visited – important knowledge for those using public computers anywhere in the world.

4.3 Collaboration

Another issue that arose as the initial proposal was being developed was the willingness – or unwillingness – of various partners to collaborate with each other. The four institutions in Gabes, a small city in the south that is often left out of resource allocations, were very collaborative. Two of the institutions already shared space, some faculty members were already working together, and the institutions found ways to share resources during the workshops with each other. Again, it was not a coincidence that all of the leaders of the institutions in Gabes were personal friends and acquaintances of Project facilitator Karim Hamdy, who was from Gabes.

The climate was distinctly different in the capital, Tunis. The two, then three, institutions were far less collegial toward each other. The Project ended up doing a number of workshops in the US Embassy's Cultural Center because the Language Institute did not have a facility of its own at the outset and could not use the space at the Management Institute. Resources were traditionally not shared by faculty at the institutions, and the Project made little headway in opening channels of collaboration. Perhaps this was due to a sense of distance between language and business faculty, English literature and ESP. Even though the grant-funded ESP Center was located in the Language Institute, it seemed a world unto itself. The sense was strong that

there were other agendas at work outside the Project. The Tunis portion of the Project seemed to be held together by personal connections between the two institution heads and Karim Hamdy, and between Project director Laura Rice (who had been on a Fulbright in Tunisia a few years before) and the English and ESP faculty.

5. RESOURCES AND WEBSITES USED

5.1 Approach

The approach to topics and materials for Project workshops fits with suggestions by McDonald & Klein (2003) in their review of seven large-scale projects to create networks of educators in the humanities. Among their recommendations are (a) a blending of pedagogy and content, and (b) reliance on local knowledge as well as the use of experts in designing workshops and other learning opportunities. Project workshops focused on finding material online and creating material (content) that could be used effectively in the classroom (pedagogy). We assumed limited access to computers, limited bandwidth, and modest technical skills as well as the need to customize material to meet changing needs. The focus throughout was on material that could be used offline as well as online, that was learner-centered, and that would not take a lot of time to create. For creating material, we recommended the use of simple authoring programs, such as Hot Potatoes, that could create custom material to use online or offline. A strong recommendation throughout was to think of ways to make learners into creators of material, not just passive recipients.

Many of the teachers were experienced in the classroom and had substantial content-area expertise. Most had used the word-processor, and many used email. However, most were novices in the area of computer-assisted language learning. Teachers and experts worked together to integrate technology in pedagogically appropriate ways into the teachers' content.

Each visit by Project team members to Tunisia and to Oregon resulted in more appropriate workshops and materials, keeping in mind the various constraints mentioned above. Our major areas were email; basics of using the Web; doing research online; and improving teaching with online resources, especially for ESP/EFL.

5.2 Email

The first step in the workshops was to familiarize teachers with use of the Internet for their own professional development and to encourage networking. This meant making sure that everyone had an email account, or multiple accounts as needed. Teachers without existing email signed up for Hotmail or Yahoo mail in the workshops, then joined TESL-L's ESP sublist, TESP-L.[2] Those for whom email was new were excited to be getting mail immediately. For others, we urged that they set their list mail to DIGEST so that they would get only one message per day from TESP-L. Teachers could see an extensive array of information available as files to download, as well as the daily messages from TESL-L and TESP-L. For many ESP teachers in countries where English is not commonly spoken, these connections to others in the same situation are enormously helpful in reducing the sense of isolation that many feel.

A number of the teachers were also concerned that their students would know more about the Internet than they did. We emphasized the benefit of relinquishing some control in the classroom and allowing more skilled students to act as assistants. At the same time, teachers should feel free to demand appropriate register and tone in classroom email messages. To that end, we offered some netiquette tips from the Student Lists (SL-LISTS) at

http://www.kyoto-su.ac.jp/~trobb/slwelcome.html.

The fact that a discussion is partially or completely online does not eliminate the need for classroom rules. The Student Lists also provide an opportunity for students with email to communicate with others who have similar interests, such as in English for Business (BUSINESS-SL) or Science and Technology (SCITECH-SL). More information about the Student Lists is at

http://www.latrobe.edu.au/education/sl/sl.html.

5.3 Web basics

Web basics were the next step, including recognizing links, websearching, and evaluating sites. This was the most problematic area, since Internet connections were almost always slow during the workshops. We had teachers work in groups and go to different places so that there would not be too many people trying to get to the same site at the same time. This also provided a good opportunity to demonstrate classroom management in a computer lab. One bright spot was a session at the British Council with good connectivity. Teachers were able to actually try

websearching, and they became more at ease with using the British Council facilities. The Project consistently had very good collaboration from colleagues at British Council, to the benefit of the Tunisian participants.

5.4 Research with the Web

English language journals are hard to find in Tunisia, even in places like the Language Institute. Teachers in the university who want an advanced degree or just want to do research and publish need access to refereed journals. A limited amount of information is available for free online, although an increasing number of refereed journals for English language teaching are now online. Kenji Kitao's Journals web page was used as a good listing of journals for ELT:

http://www.ling.lancs.ac.uk/staff/visitors/kenji/onlin.htm

The literature and humanities specialists were happy to find The Voice of the Shuttle at

http://www.qub.ac.uk/english/humanitas_home.html
(and now also at http://vos.ucsb.edu/).

Various faculty members from OSU offered to do searches through the subscription service available at the university (EbscoHost) and send copies of articles via email for those with specific research needs that could not easily be met by the online resources. Given the current budget situation in Tunisia, faculty there had little expectation that their institutions would subscribe to an English online journal service.

5.5 Teaching

At the heart of the Project, both in Tunisia and in Oregon, was improvement of teaching through use of computers and the Internet. Workshops were the primary means of sharing information; the Project also created and shared collections of freeware and shareware with Project partners. In addition to sharing websites, the workshops served to demonstrate the use of computers in teaching. We frequently had one computer and a projection device, typical of a one-computer classroom. Presenters modeled ways to encourage group participation in this environment and encouraged teachers to generate more ideas about how these techniques would fit in their classes. We also had some workshops in computer labs, where we could demonstrate some lab management techniques and have the teachers share their experiences. Throughout the

workshops, we attempted to create shared learning experiences and learner-centered classrooms.

Issues of privacy and security came up repeatedly in the workshops and in face-to-face discussions with individuals. Newcomers to email do not always realize how easily their messages can be read and shared with others. Many faculty had to use shared computers, either in their institutions or in cybercafes, and needed to know how to protect as much of their privacy as possible. Viruses and the safety of online purchasing were frequent topics of discussion, as well. The global interconnectedness of the Internet means that viruses can spread across continents in milliseconds. Unfortunately, not many Tunisian computers are equipped with up-to-date virus protection, leaving their users vulnerable to any and all attacks. We strongly encouraged participants to take advantage of free virus protection programs such as VirusScan if they could not afford commercial programs such as Norton AntiVirus.

5.6 EFL/ESP resources

The limited Internet access during workshops in Tunisia meant that Project workshops emphasized sites that loaded reliably or that could be downloaded and still work. These sites are listed in Appendix A.

In addition to websites, each of the partner schools received a CD-ROM freeware and shareware compilation created by the Project. The CD-ROM included software for a range of skill areas, as well as teacher tools, that could be copied freely. While some programs were quite good (including Hot Potatoes), most were designed for small-scale use and did not have the sophistication of commercial programs.

6. DISCUSSION: OUTCOMES AND LESSONS LEARNED

A definite change in the environment took place over the course of the Project. Email became more widely used, even by administrators in the partner institutions. In several of the partner schools, Internet access was extended with proxy servers, enabling access in a lab setting. The rapid growth of cybercafes also made it far easier for teachers and students to have reliable Internet access. Over the course of the three years, the Project reached beyond the original six Tunisian institutions, with faculty and students from a number of other schools participating in workshops. As a result of greater access and the widening exposure to ways to use computer and Internet resources, some aspects of the Project – most notably email for

professional purposes – extended from the "innovators" and "early adopters" to the large "early majority" group.

Significant barriers to wider adoption of use of technology by ESP teachers were still in place by the end of the Project. Zhao & Cziko (2001) point out three elements that must be in place for wider adoption of technology use by teachers:

1. The teacher must believe that technology can more effectively maintain a higher-level goal than what has been used.
2. The teacher must believe that using technology will not cause disturbances to other higher-level goals that he or she thinks are more important than the one being maintained.
3. The teacher must believe that he or she has or will have the ability and resources to use technology. (Zhao & Cziko, 2001: n.p.)

Even when teachers saw the Internet as personally useful and potentially helpful in their classes, the possible disruption in their normal way of working and unreliability of computers and Internet access posed large barriers. Nonetheless, an increasing number of teachers said they planned to make use of Internet resources in developing classroom material, and a few were planning to try to use computer resources in class.

Several other key lessons came out of the Project:

- *The importance of flexibility.* Names of participants coming to Oregon were not finalized until quite late, making early planning very difficult. In Tunisia, meetings and workshops were scheduled and rescheduled at the last minute. Lack of reliable Internet connections (and occasional lack of power) made it important to be prepared with offline as well as online content. The first workshops at ISLT had simulated Internet connections; all content was loaded onto computers from CD-ROMs and opened offline.
- *The need for appropriate cultural interaction.* The Tunisian partners and the American partners were both enabled and constrained by their own contexts. The Project's design took into account that the benefits for each partner would need to be clear and would not necessarily be the same. The human networks were nurtured consistently throughout by regular communication and the personal interactions that Tunisians expect. As Project Director Laura Rice writes, follow-up "took into account local practices, whether that be frequent stopping by to see decision-makers (as human beings apart from the project per se) or a lot of attention (beyond

project tasks) to those Tunisians who visited the US" (personal communication, 2003).

- *The need to provide infrastructure internally and externally.* Partner schools and faculty were given space on the Project server in Oregon for their institutional and professional websites. This enabled innovators and early adopters to set up pilot sites that could be upgraded once they had their own web servers, offering a kind of "proof of concept" at no cost to the Tunisians.
- *The need for low-cost, locally-managed solutions.* Lack of institutional funds in Tunisia meant that solutions had to be affordable. The servers set up by the Project were based on Linux, a freely downloadable operating system. Freeware, shareware, and free websites were similarly essential components when enabling teachers to start to use technology. A combination of computer security requirements and local political realities meant that long-term use of the Oregon-based Project server for institutional websites in Tunisia was not feasible. It was critical to have resources available and managed locally.
- *The importance of key change agents.* The Project began with personal connections among the Project leaders, with Karim Hamdy's friends and acquaintances in Tunisia and connections at OSU and at the partner community college. Throughout the Project, individuals were willing to go beyond what was funded and expected. Bringing the administrators to Oregon initially set the stage and helped them serve as opinion leaders, nurturing the innovators and early adopters in their institutions. The Project provided both resources and incentives for change over a period of time long enough for innovation to spread.

At this point, the initial Tunisia Oregon Project has ended. However, work continues on enhancing education and the partnership between Oregon and Tunisian institutions of higher education. For example, Lydie Ben Gayed in Gabes, who came to some of the workshops, has been working on an interactive English for Finance course to be distributed on CD-ROM. ESP Director Maggie Alouane at the Management Institute in Tunis has been spearheading a materials development project; there is interest in developing computer-based material to accompany this. Both of these projects are looking for funding. In addition, the team at OSU continues to write proposals for cooperative teacher training projects. We are waiting to hear if our latest proposal will be funded, sending us back to Tunisia to work with some additional institutions and expanding the network of connections.

7. CONCLUSION

The Project was affected throughout by political and economic barriers, but some adoption of technological enhancements occurred nonetheless. The Project set up interim websites for the partner institutions and faculty (some of which are ongoing), created a mailing list for participants, offered workshops in Oregon and Tunisia for faculty and administrators, and continues to provide online consultation and support. The teaching of English for Specific Purposes in Tunisia has been enhanced where Internet and computer resources are available. Rapid growth in Internet availability to faculty and students bodes well for future use. It was clear from this experience that teachers, even in countries without extensive resources, can take advantage of low-cost or free Internet material available for online or offline use. A theme often repeated throughout the Project, too, was that teachers were preparing not only for the present, but also for the future. As computer and Internet access continue to expand in educational institutions, English language teachers need to be prepared to seize opportunities as they arise and to create, sustain, and extend change. The Project benefited both the American and the Tunisian partners by offering an opportunity to share ideas in a new environment and thus gain a broader understanding of the uses and limitations of technology in education. Our teaching will be better for it.

NOTES

[1] See http://www.anu.edu.au/people/Roger.Clarke/SOS/InnDiff.html for a quick overview of this theory.

[2] Information about joining is at http://www.hunter.cuny.edu/~tesl-l/

REFERENCES

McDonald, J.P. and Klein, E.J. (2003). Networking for teacher learning: Toward a theory of effective design. *Teachers College Record,* 105 (8), 1606-21. Retrieved from WilsonWeb online database.

Rogers, E. (1983). *Diffusion of Innovations*, 3rd Ed. The Free Press.

Zhao, Y. and Cziko, G. (2001). Teacher adoption of technology: A perceptual control theory perspective. *Journal of Technology and Teacher Education,* 9 (1), 5-30. Retrieved from WilsonWeb online database.

APPENDIX A

Internet resources primarily of interest to teachers:

Hot Potatoes authoring system - web.uvic.ca/hrd/halfbaked/
WebWhacker to download pages (commercial product) - www.webwhacker.com/
Webquest information - edweb.sdsu.edu/webquest/webquest.html
Tech Tips – oregonstate.edu/dept/eli/techtip.html
Nicenet for online discussion – http://www.nicenet.org
EL Easton for a compendium of links by topic - eleaston.com
English for Science at eleaston.com/scimat.html
English for Business at eleaston.com/biz/bizhome.html
EST links, including discussion lists, reading, writing, publishers, etc. - http://www.u-aizu.ac.jp/~t-orr/est1.html
EFL for Engineering Without Fear - a bibliography and some links, as well as tips for teaching English for Engineering - www.multimania.com/jcviel/tips/tips1.htm
Project site for more business and science links - www.onid.orst.edu/~healeyd/top.html

Business English resources for students:

Business dictionaries - www.yourdictionary.com/diction4.html#business
Finance and economics websites - a relatively academic list, not particularly focused on EBE - www.mgmt.utoronto.ca/finance/links/olists.htm
ESL Cafe Web Guide: Business English - a long list of links - www.eslcafe.com/search/Business_English/
Business English Hangman - www.better-english.com/hangman/hangone.htm

English for Science and Technology resources for students:

A Rare Solar Eclipse - a slide show with images, text, and music to accompany other listening quizzes - www.esl-lab.com/sun/sunrd1.htm
Engineering dictionaries - www.yourdictionary.com/diction4a.html#engineering
Discovery Channel - www.discovery.com
Science and Nature from Yahooligans - www.yahooligans.com/Science_and_Nature/
The Why Files - whyfiles.org/index.html

Some of the websites used can be found at www.onid.orst.edu/~healeyd/top.html.

PART IV.
TECHNOLOGY AND LEARNER AUTONOMY IN HIGHER EDUCATION

Chapter 10

LEARNING ENGLISH WITH COMPUTERS AT UNIVERSITY LEVEL

David Lasagabaster, Juan Manuel Sierra
Universidad del País Vasco (Vitoria-Gasteiz, Spain)

1. INTRODUCTION

It is now almost fifty years since the language laboratory was integrated into the classroom as a space for formal foreign language teaching for the first time (Levy, 1997). Since that day, we have witnessed the introduction of videotapes, laser discs, television and satellite transmissions, CD-ROMs and DVDs.

Teachers were immediately aware of the enormous power of images to help communicate messages by providing authentic settings and non-verbal communication, which clearly contextualizes the language used. However, they also soon realized the pedagogical problems audiovisual materials present (Allan, 1985; Geddes & Sturtridge, 1982; Sierra, 1990; Tomalin, 1984). Patrikis (1997: 163-164) briefly summarizes these problems as, "use at the lowest common denominator" and "the naive fallacy". The former is defined as "the practice of employing a *text* – whether it is film footage, a newspaper, or a poem – as if it were the pretext for posing *factual* questions. (...)" [emphasis in the original]. The latter is "the notion that simply showing foreigners speaking another language somehow gives us a special glimpse into their language and their world".

As it is often the case with new technologies, CALL aroused high expectations of contributing to solve these problems. Although early CALL was not probably seen as solving the problems audiovisual materials presented, because it did not include graphics and sound, its power lay on the ability to provide paced learning, immediate feedback and engaging simulations. In fact, at first, software materials were not very promising, since most commercial courseware basically offered computer-assisted drills or word-by-word parsing. In fact, these materials resembled very much the pedagogical proposals of well-known, long-standing methods in the field of foreign language learning instruction such as the Audio-Lingual or the Grammar Translation Method. Nevertheless, it is also worth remembering that some exceptions could be found; for example, two text-based simulations, London Adventure and Fast Food, published around 1986 were anything but audiolingual-style drills. Thus, many of the tools and instructional programs offered by CALL were just workbook-style exercises in a different form. As Patrikis puts it,

> much of the development work that one sees today – and certainly most of the commercial foreign language software – emulates traditional methods of language instruction and the traditional format of language instruction: the teacher teaches, the student learns, the teacher asks questions, the student provides answers (Patrikis, 1997: 169).

And this situation has not changed much over time. Although the citation reflects the situation a few years ago, the fact is that, in spite of much improvement in hardware – computers are now able to play natural human speech with full-screen interactive video – and courseware in recent years, the basic problems about the pedagogical soundness of many of the activities are far from being resolved.

With the evolution of hardware and networks, new materials appeared trying to answer the questions posed by many researchers and teachers: "what do new technologies have to offer us in our search for even more effective teaching and even greater success in passing on to the student appropriate life-long learning skills?" (Felix, 2002: 3). New types of computer-mediated communication came to the fore, in the form of electronic mail, e-mail tandem language learning (Appel & Gilabert, 2002), and computer conferencing. Computer-mediated communication, along with creative language learning via web and online language learning, has been a clear attempt to promote communicative competence and develop areas neglected so far such as language awareness (Lasagabaster & Sierra, 2001), formative learner autonomy, and an effective integration of CALL into the syllabus, thus enhancing collaborative learning.

In this respect, CALL designers have tried to incorporate tasks into a coherent framework for sociocollaborative language learning (Meskill, 1999). Cohen suggests that sociocollaborative language learning with CALL

> has more than one answer or more than one way to solve the problem; is intrinsically interesting and rewarding; allows different students to make different contributions; uses multimedia; involves sight, sound and touch; requires a variety of skills and behaviours; also requires reading and writing; is challenging (Cohen, 1994: 68; in Levy, 2002: 74).

A number of studies explore the attitudes of teachers (Burston, 1996; Dodigevic, 1998; Lam, 2000) and students (Allum, 2002; Levy, 1997; Scholfield & Ypsiladis, 1994; Stracke-Elbina, 1998) towards CALL. However, in Spain in general and in the Basque Autonomous Community (BAC) in particular, there is a dearth of research studies that take into account students' insights and impressions. In our opinion, following other authors such as Kessler & Plakans (2001), the inclusion of learners in the process of assessing CALL software is a must, as they are the ones who have first-hand awareness and perception of their own learning, as well as the ones who actually use the CALL programs.

There are four main approaches when it comes to investigating this issue. Firstly, the researcher or teacher can evaluate the programs from a pedagogical viewpoint, considering the opinion of another expert to minimize the lack of objectivity. Secondly, we can compare groups of students using CALL with those not using any CALL program. Thirdly, we can gather data from the students themselves. This can be carried out by analysing the data from the user by means of self-report or questionnaires or by examining the information retained by the computer of each user's errors and choices, for example. Finally, we can assess the programs from a technical viewpoint, examining for instance the hardware needed to operate them, although it may be argued that this is usually part of the assessment by teachers/researchers. This piece of research belongs to the third type mentioned above, as we believe that it may have more potential from a pedagogical point of view than the other three types, as students' first-hand impressions are undoubtedly very valuable to compensate for the programs' weaknesses.

The study we report here sought the views of 59 undergraduates about their learning experience in a university multimedia laboratory in the Basque Autonomous Community (BAC).

2. METHODOLOGY

2.1 The sample

The sample in this study was made up of 59 undergraduate university students, mostly females, in the age range 18-29. All of them were studying at the Faculty of Philology, Geography and History of the University of the Basque Country during the 2001-2002 academic year. As regards specializations, 23 were completing their degree in English Studies, whereas the other 36 were studying Basque, Spanish, French or German Philology. Although both of them are ESP groups, this second group could be characterized as studying EGAP (English for General Academic Purposes). The English Studies students, on the other hand, may be included in the domain of ESAP (English for Specific Academic Purposes), since they have to deal with very specialized subjects such as Linguistics, Curriculum Design and Literary Criticism, where they need a good command of the characteristic jargon of highly sophisticated English terms.

The English Studies Group (ESG henceforth) is studying for a degree in English Philology and their most probable professional orientation will be the teaching world. These students were enrolled in an advanced level course, whereas the Other Philologies Group (OPG) was attending an English course at intermediate level. Therefore, there are significant differences between the two groups as far as their competence in English is concerned. Similarly, students in the ESG are more motivated as their future career will require a high command of the English language in a variety of domains related to their professional needs, whereas this is not the case for the OPG.

2.2 The instrument

The questionnaire consisted of 18 items. Sixteen of them were closed questions and the final two were of an open nature (see Appendix). The closed items were Likert-type scales or a listing of different choices. Students were given the option of filling out the questionnaire in the language they felt most at home (Basque, Spanish or English). The items elicited information about basic questions such as the frequency of use of the computer, the programs used, the reasons for choosing them, and the number of hours they used the software. Students also expressed their opinions about different issues, ranging from their degree of satisfaction with the programs and the type of activities they enjoyed most to what they would prefer in order to improve their English (only a teacher, only software programs or both).

In the open-ended questions, students were asked to list the advantages and disadvantages of learning English with a computer, as well as to enumerate the pros and cons of learning English with a teacher. The objective was to provide them with a space where they could further elaborate on their answers to the closed questions. Similarly, this could lead to the appearance of relevant aspects not adequately covered in the closed questions.

2.3 The method

The participants filled out the questionnaire in the classroom and were allowed the time they needed to complete it (an average of 20 minutes). The teacher was present to resolve any possible queries. The statistical analysis of the data was carried out with the SPSS (Statistical Package for Social Sciences).

2.4 The CALL programs

In the Faculty of Philology, Geography and History of the University of the Basque Country, there is a multimedia laboratory with 24 booths, each equipped with a computer. The programs used by the students were four: *Tell Me More*, *CD English Tutor*, *English Express*, and *Interactive Course in Acoustic Phonetics*, all of which cover all levels from beginners to advanced (except the phonetics software, which is geared toward specialists). *Tell Me More* is a program in which the activities are structured around different themes. The 5.0 (1998) version is the one used by our students and consists of activities focused on the four language skills, grammar, vocabulary, phonetics and pronunciation. *CD English Tutor* is made up of a series of several CD-ROM disks from beginners to advanced: 6 CDs aimed at beginners and false beginners, 4 at pre-intermediate, 6 at intermediate and 10 at advanced level. The course claims to be comprehensive and structurally based on English grammar, vocabulary and idiomatic expressions, with interactive exercises combining text and sound. This is the program which most clearly concentrates on grammar and vocabulary.

English Express builds upon the language students hear in its introductory videos. It contains a wide variety of exercises to help students develop listening and pronunciation skills and to build vocabulary. Moreover, the syllabus covers functions and structures. The course is divided into 3 levels. The first one ("Begin at the beginning") contains 4 CDs, but as it is too basic, it was not used by the participants in the study. The second and third levels consist of 6 CDs each. *Interactive Course in Acoustic Phonetics* is an interactive multimedia course on theoretical aspects

of speech production and perception, which includes only activities on phonetics. Some activities are simply animations that students look at. Others are simulations of physical processes. Others are synthesizers that can be controlled to create new sounds. Finally, some others show models of systems with different inputs. The program allows students to record and analyze sounds and voices other than those provided in this course. For example, students can record themselves producing a vowel and then see the spectrogram of that vowel.

It has to be underlined that *Tell Me More* is the most widely used courseware not only among our sample, but also among the 421 students who used the multimedia laboratory during the 2001-02 academic year: 65.6% of the students made use of it. Apart from English, there are also programs in German, French, Spanish for foreigners, Basque, Italian and Japanese. In this multimedia laboratory there is always an assistant who helps the students with any problem that may arise.

All programs were equally accessible in the laboratory and easy to use. In fact, the vast majority of the students (94.9%) found it very easy or easy to work with them, whereas only 5.1% encountered difficulties when using the software (Lasagabaster & Sierra, 2003). All programs were optional and none of them was directly linked to the syllabuses of the students' subjects. Teachers did not recommend any program in particular, as it was thought that it would be interesting to allow students to choose the most suitable program. The only exception is the case of the Phonetics and Phonology lecturer, who overtly recommended her students to use the *Interactive Course in Acoustic Phonetics*, a course clearly aimed at developing technical concepts and language within the LSP sphere.

3. HYPOTHESES

This chapter intends to compare the opinions held by two different groups of students. On the one hand, the ESG – due to the advanced level of their course and exam format – may feel the need to choose pronunciation, vocabulary and grammar accuracy exercises, which is why they may select this kind of activities when using the CALL software. On the other hand, the OPG, whose level ranges from pre-intermediate to intermediate, are more likely to choose receptive tasks, especially listening comprehension activities. The latter complain about the lack of systematic listening training in secondary education, as well as about the excessive heed paid to grammar. Bearing these two different groups in mind, the following hypotheses were put forward:

HP1: The ESG will choose pronunciation, vocabulary and grammar tasks more often than the OPG, whereas the latter will prefer listening activities.

HP2: As for reading, speaking and writing, no differences between the two groups are expected as the CALL programs do not consistently work on these skills.

Finally, it has to be considered that a previous study (Lasagabaster & Sierra, 2003), in which the sample was analysed as a whole, showed that the vast majority of students (76.3%) preferred the combined teacher and software option to improve their English, whereas only one of them (1.7%) chose the only computer option. The rest (22%) went for the only teacher option. This led us to our final two hypotheses:

HP3: (a) Both groups will prefer the "both computer and teacher" option to improve their English, and (b) the same will apply to the correction of mistakes.

HP4: As for the open questions, it is expected that the students' comments will point out a greater number of disadvantages on the part of the computer than on the part of the teacher.

4. RESULTS

4.1 Results concerning the closed questions

The results regarding our first hypothesis (HP1: The ESG will choose pronunciation, vocabulary and grammar tasks more often than the OPG, whereas the latter will go for the listening activities) are shown in Figure 1, below.

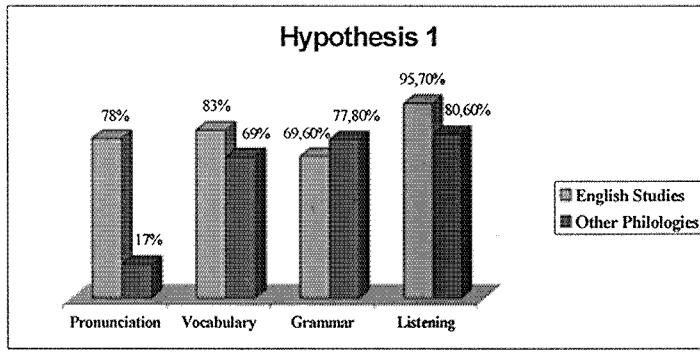


Figure 1. HP1: Choice of activities by the two groups.

As expected, the pronunciation activities were very popular among the ESG (78.3%) but not so popular among the OPG (16.7%). Chi-square tests were performed to check whether the differences between these two groups were statistically significant in the different areas. In the case of pronunciation, the differences turned out to be significant (p.=.000). Although the vocabulary activities were chosen more frequently by the ESG (82.6%) than by the second group (69.4%), the Chi-square test did not show significant differences (p.=.257). Contrary to expectations, the OPG (77.8%) opted more often for grammatical exercises than their counterparts did (69.6%), although not in a significant way (p.=.480). Finally, as for listening, our hypothesis was not confirmed (p.=.508), since the ESG made more use of listening exercises (95.7% versus 80.6%).

Our second hypothesis (HP2: As for reading, speaking and writing, no differences between the two groups are expected as the CALL programs do not consistently work on these skills) was not borne out either. In fact, as shown in Figure 2, there were significant differences between the two groups with regard to reading (ESG 73.9% versus OPG 30.6%), (p.=.001), and speaking (52.2% versus 16.7%), (p.=.004). With writing, on the other hand, there were no significant differences (p.=.942).

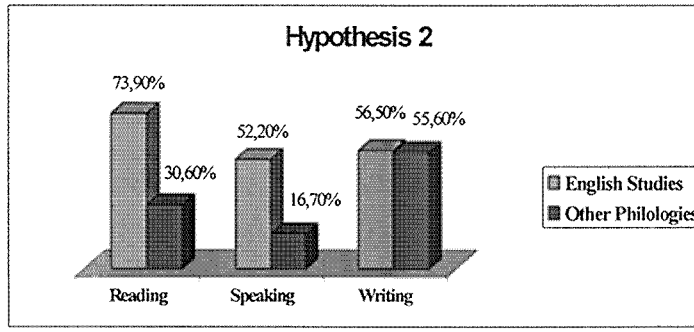


Figure 2. HP2: Differences in reading, speaking and writing.

In the case of the third hypothesis (HP3: (a) Both groups will prefer both the computer and teacher option to improve their English, and (b) the same will apply to the correction of mistakes) the results fully confirmed the first part, the one related to the improvement of their command of the language.

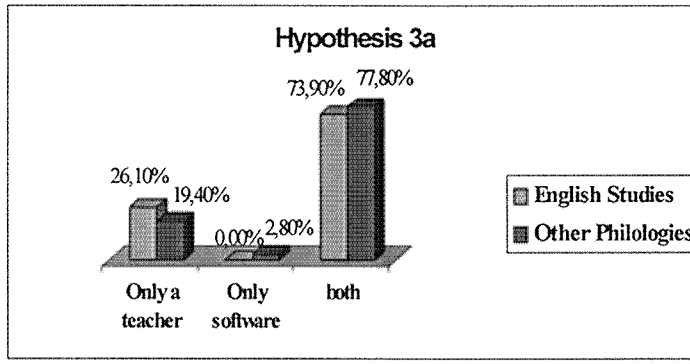


Figure 3. HP3a: Students' preferences for improving their English.

When the students were given the option "If you could choose, what would you prefer to improve your English?" (Figure 3), they overwhelmingly went for the combination of both the teacher and the computer: 73.9% in the case of the ESG and 77.8% of the OPG. Only one out of the 59 participants would rather have only a computer as a means to improve their English, which clearly reflects their confidence in the assistance of a teacher. The "only a teacher" option was supported by 26.1% and 19.4% respectively, therefore clearly lagging behind the "both computer and teacher" option.

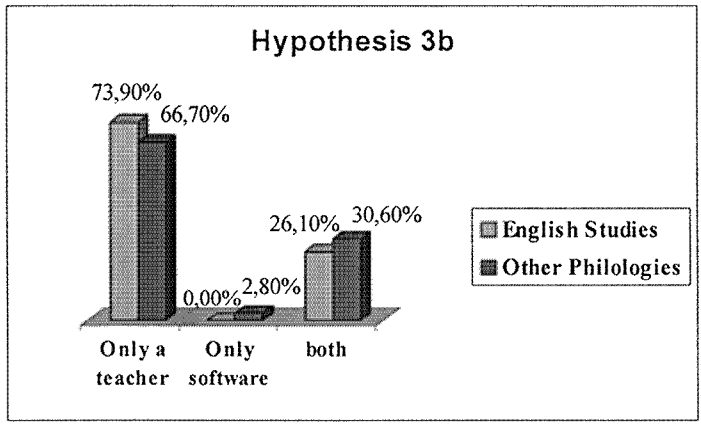


Figure 4. HP3b: Students' choice to correct their mistakes.

However, the results did not confirm the second part of the hypothesis, as most of the students chose the teacher as the best option to correct their mistakes (see Figure 4). 73.9% of the English Philology and 66.7% of the OPG supported the teacher option. Only one student preferred the computer both to improve their English and to correct their mistakes. The both option was supported by roughly one quarter of the sample.

4.2 Results concerning the open-ended questions

The fourth hypothesis (HP4) was as follows: As for the open-ended questions, it is expected that the students' comments will point out a greater number of disadvantages on the part of the computer than on the part of the teacher. The total number of sentences produced by the students was 333 (Table 1), distributed as follows: 198 statements described the students' favourable judgements while 135 accounted for the disadvantages. The number of positive comments about the teacher amounts to 99, exactly the same number of comments about the computer. With regard to the disadvantages of the teacher, participants generated 47 statements while the negative points of using the computer generated 88. Therefore, as hypothesized, the number of negative comments about the computer almost doubled those about the teacher.

Table 1. HP4: Favourable and unfavourable statements about the teacher and the computer.

Total no. of statements	No. of favourable statements	No. of unfavourable statements	Teacher		Computer	
			Pros	Cons	Pros	Cons
333	198	135	99	47	99	88

The positive comments about the teacher could be summarized into the following 7 areas:

1. More personal and individualized attention:
   They (teachers) know their students and can help them (student 32).
   I prefer the relationship with a person rather than a machine (student 44).
2. Classroom interaction:
   You are in a classroom environment with more students and not on your own (student 50).
3. They are better at correcting mistakes and providing strategies:
   The teacher explains more than the computer (student 26).
   If you don't understand something, you could get the explanation in different ways (17).
4. You can improve your speaking skills:
   You learn to speak better and this is what we really need (student 6).
5. Their classes are more varied and enjoyable:
   It is more interesting and not so boring (student 10).
6. Your pronunciation will improve more with a teacher:
   Pronunciation can be explained (student 48).
7. Motivational aspects:
   They make you work a lot and make an effort (student 49).
   They motivate you to work (student 16).

When the participants reflected on the positive aspects of using a computer, they made abundant comments on areas such as:

1. Flexible learning environment:
   You can work at your own pace (student 13).
   You can use it whenever you want and as much as you want (student 6).
2. Less stressful learning situations:
   You can feel more relaxed as you study alone (student 50).
   You are not so afraid of making mistakes (student 59).
3. You do improve your listening comprehension:
   It's good to improve listening (student 54).
4. Faster to correct some mistakes.
   The computer corrects errors immediately (student 20).

Despite the fact that the number of positive statements on the teacher and the computer was exactly the same (99), the range of areas covered by those statements in the case of the computer was more limited and most students made repeated comments falling into the four areas aforementioned.

The disadvantages underlined by the students when judging the weaknesses of the teacher can be summarized in the following areas:

1. Fixed timetable:
   You have to attend classes at specific hours (student 7).
   He is not always available (student 59).
2. Compulsory syllabus:
   We have to do exercises the teacher chooses (student 21).
   Exercises done with the teacher aren't enough (student 1).
3. Disadvantages of large classes:
   It is a bit difficult to learn a foreign language with a lot of people in class (student 28).
   Much time is needed to correct the exercises (student 20).
4. Personality traits:
   Sometimes they're stressed and students can notice the difference. Computers are never stressed (student 49).
   Sometimes teachers haven't got much patience (student 22).
5. Professional standards:
   Teachers can have a great knowledge about the subject they're teaching but sometimes they don't know how to teach it (student 49).
   Sometimes the teacher's hard disk gets blocked and there is no technician who can fix it (student 31).

It is worth noticing that the areas mentioned above, except for areas 4 and 5, do not clearly belong to the sphere of the teacher, but touch upon general pedagogic issues such as syllabus design or teaching constraints derived from large, mixed ability classes. Obviously, the first three issues can be considered to be, more often than not, beyond the reach of the teacher.

As for the computer, students expressed their concern for these areas:

1. Boredom:
   In general it is more boring than the class (student 20).
   It can be boring (student 33).
2. Technical drawbacks (hardware):
   Sometimes it's very slow (student 49).
   It can break down (student 55).
3. Pedagogical limitations (software):
   The computer only admits one answer (student 20).
   It's not possible to ask your doubts (student 32).
   Mistakes are corrected without explanation (student 48).
4. Artificial situation:
   You may feel as a fool talking to a machine (student 50).
   It is very artificial (student 16).
5. Comparison teacher versus computer:
   You can't learn as well as with the teacher (student 6).

With pronunciation isn't as good as a teacher (student 10).

6. Lack of personal relations:
   Working in groups helps (student 50).
   You don't have contact with other people who can help you and share tricks to learn (student 35).
   You work alone (student 10).

Most of the students' complaints were focused on boredom, pedagogical limitations, the comparison teacher-computer and the lack of personal interaction, as reflected by the fact that participants' responses fell repeatedly into these four categories. In fact, one of their main worries had to do with the lack of explanations (21 occurrences) provided by the software after having made a mistake.

5. DISCUSSION

The main objective of this study was to gather students' opinions about some CALL programs to which they had had access in the multimedia laboratory by comparing two groups whose learning experience falls within the domain of LSP. In the three hypotheses related to the closed questions, students were split into two groups so as to compare the effect of their different specializations, namely ESG versus OPG.

Our first hypothesis was not confirmed. Although the ESG significantly engaged in pronunciation tasks (as hypothesized), no differences were observed in the vocabulary exercises. However, the most striking results were those concerning grammar and listening. The explanation for the preference of the ESG for listening can be twofold. On the one hand, listening is the activity most used and enjoyed by the whole sample, as shown by the statistical analyses carried out on the closed questions (see also Lasagabaster & Sierra, 2003). On the other hand, there may be a washback effect due to the format of the examination these students have to sit at the end of the term, in which the listening paper has great importance. Contrary to expectations, grammar was more widely chosen by the OPG. The mixed ability nature of the intermediate group could explain their need to do remedial work in this particular area. Moreover, it is also important to consider that these students can find familiar grammar activities quite comforting.

Our second hypothesis was not borne out, either. As expected, there were no differences in writing, while reading and speaking were significantly favoured by the ESG. However, these results should be approached with caution, as it is not very clear what each group perceived as reading and

speaking. Activities such as fill-in-the-gaps (abundant in the software) may have been regarded as belonging to the reading skill, and those that required the repetition of sentences in dialogues seemed to have been perceived as speaking by the ESG, but not by the OPG. It is also possible that the use of the phonetics program by the ESG could account for this difference, as the OPG did not use this particular program. A reasonable explanation for these results could be that reading and speaking, together with writing, are the least common tasks in the programs used. Such a big difference between the two groups does not make much sense taking into account the small presence of these skills in the programs.

The results fully supported the first part of the third hypothesis, as 75.8% of the students favoured the teacher-computer option when deciding the best way to improve their command of English. Nevertheless, the 70.3% that chose the teacher option to correct mistakes did not confirm the second part of this hypothesis. The open questionnaire clarified this matter. Students definitely preferred the variety of strategies the teacher can use, as compared with the machine, whose limitation in this field was repeatedly underlined in the students' comments.

As expected, when the students reflected on the advantages and disadvantages of the computer/teacher dichotomy, the computer's drawbacks were much more abundant than those concerning the teacher (hypothesis 4). Students were free to criticize both the CALL programs and the teacher, as the questionnaire was anonymous and their lecturer was not present while they completed it. Students felt that the CALL programs they used had a long way to go to provide more enjoyable and interactive activities, supply efficient pedagogical tools and improve the didactic qualities of the programs to match the skills of a good teacher. For example, our students were very concerned about error correction. In their opinion, software programs should include a more versatile, personalised (language awareness based on contrastive analysis revisited) and comprehensive explanation of errors. Finally, they were also concerned about the lack of personal interaction when working with the computer.

Some authors (Appel & Gilabert, 2002; Levy, 2002; Meskill, 1999) have proposed different ways of facing these weaknesses, which should include group work with the computer and tasks that promote learner autonomy and enhance authentic communication.

6. CONCLUSION

The participants in this study used CALL programs in self-access mode. Therefore, the benefits of classroom interaction and explicit linkage to the

curriculum were missing. As a result of this, their answers might have been different if these programs had been fully integrated into the curriculum and students could have benefited from the presence of the lecturer.

We believe that this study could have a follow-up in which some more information could be gathered from the students. Thus, computer logs would allow us to see what software was used and for how long; students' diaries could provide us with more detailed opinions; finally, interviews would surely refine the students' and researchers' opinions. An interview could help us clarify what students understand by reading or speaking, a controversial issue as previously stated. Many students and researchers may consider the repetition of sentences, for example, as a speaking activity, whereas others would just regard it as reading aloud for pronunciation practice, as there is a lack of genuine communicative purpose or interaction.

In any case, and from our perspective, careful analysis of software programs carried out by the teachers involved in the courses, together with students' reflections, will undoubtedly help to refine the pedagogical quality of these materials and their usage to better meet our LSP students' needs.

REFERENCES

Allan, M. (1985). *Teaching English with Video*. Harlow, UK: Longman.

Allum, P. (2002). CALL and the classroom: The case for comparative research. *ReCALL* 14, 146–166.

Appel, C. and R. Gilabert (2002). Motivation and task performance in a task-based web-based tandem project. *ReCALL* 14, 16-31.

Burston, J. (1996). CALL at the crossroads: Myths, realities, promises, and challenges. *Australian Review of Applied Linguistics* 19, 27–36.

Dodigevic, M. (1998). Computer-assisted language learning: Is it here to stay? *EA Journal* 16, 22–33.

Felix, U. (2002). The web as a vehicle for constructivist approaches in language teaching. *ReCALL* 14, 2–15.

Geddes, M. and G. Sturtridge (1982). *Video in the Language Classroom*. London: Heinemann.

Kessler, G. and L. Plakans (2001). Incorporating ESOL learners' feedback and usability testing in instructor-developed CALL materials. *TESOL Journal* 10, 15-20.

Lam, Y. (2000). Technophilia vs. technophobia: A preliminary look at why second-language teachers do or do not use technology in their classrooms. *The Canadian Modern Language Review/La Revue canadienne des langues vivantes,* 56 (3), 388–420.

Lasagabaster, D. and J. M. Sierra (eds.) (2001). *Language Awareness in the Foreign Language Classroom*. Zarautz: Universidad del País Vasco – Euskal Herriko Unibertsitatea.

Lasagabaster, D. and J. M. Sierra (2003). Students' evaluation of CALL software programs. *Educational Media International* 40, 293-304.

Levy, M. (1997). *Computer-Assisted Language Learning: Context and Conceptualization*. Oxford: Clarendon Press.

Levy, M. (2002). CALL by design: Discourse, products and processes. *ReCALL* 14, 58-84.
Meskill, C. (1999). Computers as tools for sociocollaborative language learning. In K. Cameron (ed.) *CALL: Media, Desing and Applications.* Lisse: Swets and Zeitlinger. 139-162.
Patrikis, P. (1997). The evolution of computer technology in foreign language teaching and learning. In R. Debski, J. Gassin and M. Smith (eds.) *Language Learning Through Social Computing*. Parkville, Australia: Applied Linsguistics Association of Australia. 159-178.
Scholfield, P. and G. Ypsiladis (1994). Evaluating computer assisted language learning from the learners' point of view. In D. Graddol and J. Swann (eds.) *Evaluating Language: Papers from the Annual Meeting of the British Association for Applied Linguistics Held at the University of Essex, September 1992*. Clevedon: Multilingual Matters. 62-74.
Sierra, J.M. (1990). El vídeo: presupuestos teóricos y técnicas prácticas. *Didáctica de las segundas lenguas. Estrategias y recursos básicos. AULA XXI*. Madrid: Santillana. 194-217.
Stracke-Elbina, E. (1998). French for beginners: Computer-assisted language instruction. In W. Gewehr (ed.) *Aspects of Modern Language Teaching in Europe*. London: Routledge. 67-80.
Tomalin, B. (1984). *Using Video, TV and Radio in the Classroom*. London: Macmillan.

APPENDIX

Software Evaluation Questionnaire

The aim of this questionnaire is to analyse your opinions about the software you used in the multimedia laboratory. We believe that your responses will be beneficial in order to assess the suitability of the English language software programs. Please answer the questions below and try to be as honest as possible. There are no right or wrong answers. Thank you very much for your help. Please answer in the language you feel most at home.

THE QUESTIONNAIRE

1. How often do you use a computer?

   __ Never __ Little __ Sometimes __Often __ Very Often

2. Which software did you use in our Faculty's multimedia laboratory to improve your English? If you have used more than one, please give all the titles of the programs.

3. In general the programs I used were:

   Program 1 (title:) 1. Good 2. So and so 3. Bad
   Program 2 (title:) 1. Good 2. So and so 3. Bad
   Program 3 (title:) 1. Good 2. So and so 3. Bad

4. Was it difficult to use the program(s)?

   __ Very easy __ Easy __ Difficult __Very Difficult

   Why?

5. How many hours did you use the software?

   __ Less than 9 hours __ Between 9 and 15 hours __ More than 15 hours

6. With regard to the level of English of the program, I think it was:

   Program 1
   (title:) 1. Very difficult 2. Difficult 3. Easy 4. Very easy
   Program 2
   (title:) 1. Very difficult 2. Difficult 3. Easy 4. Very easy
   Program 3
   (title:) 1. Very difficult 2. Difficult 3. Easy 4. Very easy

7. Why did you choose the program(s) you used?

__ My teacher suggested it

__ The laboratory assisstant suggested it

__ My classmates suggested it

__ My own decision after trying several programs

Others:_____

8. What kind of activities did you do when using the software?

__ Reading __ Listening __ Speaking __ Writing

__Grammar __ Vocabulary __ Pronunciation __ Others

(specify):

9. Which kind of activities did you enjoy most?

__ Reading __ Listening __ Speaking __ Writing

__Grammar __ Vocabulary __ Pronunciation __ Others

(specify):

10. What kind of activities did you use most (choose only 3)?

11. After using the program(s) I think I have improved my English:

In general	1. Very little	2. Little	3. Quite	4. A lot
Reading	1. Very little	2. Little	3. Quite	4. A lot
Listening	1. Very little	2. Little	3. Quite	4. A lot
Speaking	1. Very little	2. Little	3. Quite	4. A lot
Writing	1. Very little	2. Little	3. Quite	4. A lot
Grammar	1. Very little	2. Little	3. Quite	4. A lot
Vocabulary	1. Very little	2. Little	3. Quite	4. A lot
Pronunciation	1. Very little	2. Little	3. Quite	4. A lot
Others (specify):	1. Very little	2. Little	3. Quite	4. A lot

_____

12. If you could choose, what would you prefer to improve your English?

__ Only a teacher __ Only software programs __ Both

13. If I could choose, in order to improve my English I would rather have:

Reading	1. Only a teacher	2. Only a computer	3. Both
Listening	1. Only a teacher	2. Only a computer	3. Both
Speaking	1. Only a teacher	2. Only a computer	3. Both
Writing	1. Only a teacher	2. Only a computer	3. Both
Grammar	1. Only a teacher	2. Only a computer	3. Both
Vocabulary	1. Only a teacher	2. Only a computer	3. Both
Pronunciation	1. Only a teacher	2. Only a computer	3. Both
Others (specify):	1. Only a teacher	2. Only a computer	3. Both

_____

14. When it comes to correcting mistakes, I think that the most effective correction is the one provided by:

__ the teacher __ the computer __ both teacher and computer

15. Have you used any program to improve your English at home? Which one(s)?

16. In the future I would like to use the Faculty's multimedia programs again:

__ Yes __ No

17. Have you used software programs to learn other languages?

__ Yes __ No Which ones?

Was your experience positive?

__ Yes __ No

18. List the advantages and disadvantages of learning English with a computer:

Advantages	Disadvantages
•	•
•	•
•	•

19. List the advantages and disadvantages of learning English with a teacher:

Advantages	Disadvantages
•	•
•	•
•	•

Chapter 11

USING THE INTERNET TO PROMOTE AUTONOMOUS LEARNING IN ESP[1]

María José Luzón Marco, María Isabel González Pueyo
Universidad de Zaragoza (Zaragoza, Spain)

1. INTRODUCTION

Computer-mediated communication and the use of the Internet for learning languages fit well with a learner-centred pedagogy based on the principles of constructivism and cognitivism (Frizler, 1995; Warschauer & Healey, 1998; Warschauer & Meskill, 2000). This pedagogy is suitable for ESP courses which place special emphasis on the promotion of autonomy.

ESP students can use the Internet to become immersed in their subject matter and to learn a language both by focusing on content and by performing tasks related to their discipline. Kimball (1998: 412) points out that "Internet-generated materials can be flexibly arrayed to engage students with topics and cognitive tasks relevant to students' professional futures". There is an increasing body of research concerned with the use of the Internet for teaching English for Specific Purposes (e.g. Bowers, 1995a, 1995b; Jor, 1995; Thalman & Vilmi, 1995; Kimball, 1998; Vallance, 1998; Peterson, 1999; Oakey, 2000; Luzón, 2001, 2002). Orr (1999) contends that a shift to high-tech autonomous learning systems, which will involve a change in the role of ESP instructors and in the way to deliver instruction, is likely to take place in ESP in the 21st century. This shift is already taking place in some ESP classrooms, and some ESP practitioners have already

integrated the Internet into their teaching (e.g. Bowers, 1995a, 1995b; Jor, 1995; Feldman, 1995; Kimball, 1998; Barahona & Arnó, 2001).

The objective of this chapter is, on the one hand, to explore the potential of the Internet for ESP teaching and, on the other, to analyse how the materials available on the Internet can be exploited by teachers to design activities that can be used by ESP students to develop their capacity for autonomous learning.

2. THE INTERNET FOR ESP TEACHING

There is an increasing body of research on the use of the Internet to teach ESL (e.g. Frizler, 1995; Graus, 1999; Warschauer, 1997, 1999; Warschauer & Kern, 2000; Warschauer, Shetzer & Meloni, 2000; Trenchs, 2001). All the tools and facilities used for teaching ESL can be applied to the teaching of ESP.

In order to evaluate the usefulness of the Internet for ESP instruction, we should consider the principles that guide the design of ESP courses (and, indeed, most ESL courses): use of authentic and up-to-date materials; real-world challenging tasks which motivate, interest and stimulate students; integration of different skills; activities which engage students in using language for authentic purposes; activities and materials which meet the students' learning objectives and needs and which are appropriate for the students' level; development of critical thinking skills; activities which allow students to use their knowledge on a topic and their skills; and collaborative learning.

The Internet can help the ESP teacher to design courses in accordance with the principles mentioned above. It provides a great amount of authentic material and retrieval of timely and abundant information. It also offers a wealth of reference materials (dictionaries, style sheets for writing different types of documents, discipline-specific professional mailing lists used by practitioners) and learning materials for ESL/EST (English for Science and Technology) students. Students can also use e-mail to interact with their peers and with native speakers. E-mail and computer conferencing enable students to take part in collaborative writing programs. For instance, students can use e-mail to work in international teams and find a solution to real world-problems (e.g. Thalman & Vilmi, 1995). The Internet also offers a forum for publication, which gives students the opportunity to write for a real audience and with an authentic purpose (e.g. Jor, 1995). Students become aware of the audience for whom they are providing information, which increases their motivation and forces them to ask each other about the applicability of that information (Frizler, 1995). The Internet promotes

learner autonomy and contributes to the development of general academic skills, such as separating important material from less relevant material, and of critical thinking skills (Frizler, 1995).

Another advantage of using the Internet in the ESP classroom is that, as Bowers (1995a) points out, the Internet can be used to provide EST students with "instruction on demand", allowing them to "set their own pace". This is important for ESP students, who, due to their academic and professional requirements, tend to feel they do not have enough time to improve their English by attending regular English classes. In other cases, the duration of the ESP courses is too short to meet the students' needs. The Internet can help the ESP teacher to implement a learner-centred syllabus, where the teacher is a provider of materials and adviser, and learners are responsible for their own learning.

3. AUTONOMOUS LEARNING AND TECHNOLOGY USE

Holec (1981: 3) defines "autonomy" as the ability to "take charge of one's own learning", that is, to take responsibility for various learning decisions. This implies deciding what, when, how, and for how long to learn: establishing learning goals, selecting materials and techniques to learn, choosing appropriate learning strategies and evaluating outcomes. Autonomy is not, however, an absolute concept (Nunan, 1997). There are different levels of autonomy, and the teacher must not assume that students can learn independently, but should work to develop learning skills in learners which will help them become increasingly more autonomous.

Researchers agree that using the Internet for learning languages can promote autonomy and help students develop learning skills (Frizler, 1995; Warschauer, 1996; Benson, 1998). Mak (1995) states that language learning on the Web differs from conventional classroom learning in that it fosters self-paced, self-access instruction vs. receptive learning and in that it is learner-controlled, rather than teacher-controlled. Frizler (1995) claims that using the Internet effectively requires changing the teachers' roles and attitudes toward teaching. As she puts it, "teaching online brings with it an underlying assumption or belief that the more students do for themselves, the more learning will take place (...). That is why the very nature of the Internet is conducive to student-centred learning." Using the hypermedia capability of the World Wide Web, students can not only "go at their own pace", but also follow "their own individual path" choosing the aspects that interest them and accessing authentic materials "exactly tailored to their own personal interests" (Warschauer, 1996: 4). However, there is general

agreement that this new technology does not guarantee by itself the promotion of autonomy. Benson (1998) considers that the Web is similar to access systems in that they both can encourage the development of autonomy in various ways: by facilitating browsing and exploration, by facilitating choice (through branching options) and comparison of materials, by encouraging user input. However, if the Web fails to do these things, it can discourage autonomy. Similarly, Oxford (1993) and Oxford *et al.* (1998) argue that technology will only be effective if some conditions are met: (i) if it deals with students' needs and interests and finds ways to increase learners' motivation; (ii) if the appropriate technology is used for each aspect of L2 learning and the educational goals and the kind of learners are considered; (iii) if it provides a meaning-focused learning environment and abundant authentic L2 input, and uses relevant themes and meaningful tasks; (iv) if the technology is effectively exploited in the particular instructional situation; and (v) if it deals effectively with the difficulties that individual students may encounter.

4. ACTIVITIES FOR ESP

In the context of ESP, there are four important features for Web-based activities designed with the purpose of helping students to develop autonomy:

(i) *Motivation.* Internet activities must deal with the students' needs and interests and find ways to increase the learners' motivation. The ESP syllabus must be based on a previous analysis of the students' needs, which includes not only an analysis of the situations in which the language will be used and of the language appropriate in these situations, but also an analysis of the students' wants and subjective needs. To motivate and engage the students, it is useful to present them with authentic materials and have them face authentic decisions and real world problems related to their disciplines.

The large number of authentic texts on the Internet makes it a valuable resource for a content-based approach to ESP. This approach is based on the idea that "real language learning is most likely to occur when the context of that learning is not only typical, but real, when the learners are not merely acting out roles, but trying to use their new language to fulfil genuine communicative purposes" (Eskey, 1997: 136).

An example of task that may be relevant to students of medicine is the following[2]:

TASK

You will take a survey of your metabolism, calculate the nutritional value of foods you've eaten in a 24-hour period, then calculate your energy expenditures in the same 24 hr period. Then, you will take an online nutrition quiz, take a look at the USDA dietary recommendations, and research some important nutrition topics. Based on your research you will produce a proposal for a diet plan that converts your current diet into a more healthy alternative

Adapted from: http://gamma.mhpcc.edu/t3/ccayetano/task.htm

Relevance to target needs may increase the motivation of ESP students, but there are other aspects which are also highly important, such as enjoyment, fun or creativity (Hutchinson & Waters, 1987). As Hutchinson & Waters (1987: 48) put it, "ESP, as much as any good teaching, needs to be intrinsically motivating. (...) Students should get satisfaction from the actual experience of learning, not just from the prospect of eventually using what they have learnt". The following task, for instance, could be interesting for Engineering students:

TASK

You have been chosen to lead expedition "Colonize Space". This expedition will require you to explore and gather information on all planets in our solar system in order to find a suitable place to establish a future space colony. After exploring the planets, you will be asked to choose that suitable planet for colonization, determine some needed facts, and convince the members of the space program that your choice is the best site for colonization.

From: http://www.berksiu.k12.pa.us/webquest/Anthony/index.htm

Collaborative learning also contributes to increasing motivation. Real world situations require a lot of people working together. Similarly, the Internet can be used to design activities in which learners have to collaborate to produce the final output. The activities can require students to perform different tasks. They should decide who must complete each task and then share their work before reaching a final conclusion. Collaboration allows the learners to choose one role/task or another on the basis of their own particular goals, interests or needs. The benefit is that, as Nunan (1997: 198)

puts it, "in developing attitudes of self-direction and autonomy, the actual task itself is less important than the act of choosing."

(ii) *Integration.* It is important to integrate Web-based activities within the learning curriculum, relating them to the goals and objectives of the course (Warschauer & Whittaker, 1997). When designing an Internet activity for ESP, it is necessary to take into account the educational goals, the language skills and sub-skills that students need to practice, the kind of learners, their linguistic competence and their knowledge of Internet skills. The teacher should use the type of technology and the tasks that best suit the learning objectives and the students' needs. For instance, tasks which involve the use of e-mail to interact with other students or with native speakers are appropriate if the students need to practice productive skills. It is also a good idea to make the students aware of pedagogical goals, by making these goals explicit at the beginning of the task. See the WebQuest in Appendix I.

(iii) *Learner-centredness and scaffolding.* The technology should be exploited to fit a learner-centred classroom. If we want to use the Internet for autonomous learning, the learner should be allowed to take control and construct his/her own learning. However, that does not mean that the teacher has no role and that students should be left to cope with the activity on their own. The role of the teacher is not to provide all the information, but to provide guidance as needed during the different stages of the activity. It is not enough to direct students to sites with authentic texts related to their discipline or to discussion lists where they can interact with others. Activities using the Internet should be highly structured and carefully designed, so that students do not feel overwhelmed by the great amount of information. In this respect, the teacher should adopt the following roles: (a) to provide a detailed description of the process to carry out the task and of the steps to follow; (b) to provide the students with links to the resources they may need to complete the task—the teacher should previously evaluate these sites and make sure that they give the students appropriate input to develop the task; and (c) to assist the students in choosing their own path, according to their level of linguistic competence, and their learning style. If students are working on their own, they will also need help to understand texts with unfamiliar vocabulary and grammar. This can be provided in the form of hypertext links to terms, definitions, explanations, and images.

(iv) *Student engagement in higher-level thinking and development of strategies.* Another important aspect of the activities is that they should teach students to act strategically. Therefore, appropriate activities are

those that require: analysing, synthesizing, comparing and classifying Internet resources of text, images, videos and audio; building one's own solutions and reflecting on the process followed to complete the task; and cooperative learning.

An important aspect here is training in metacognitive strategies. According to Wenden (1998: 34), "metacognitive knowledge includes all facts learners acquire about their own cognitive processes as they are applied and used to gain knowledge and acquire skills in varied situations". Metacognitive strategies are skills used for planning, monitoring, and evaluating the learning activity. To develop metacognitive strategies, an Internet activity could ask students to:

- identify their objectives
- reflect on what they already know and the knowledge they can use to achieve the objective
- reflect on what they need/ want to know to complete the task
- plan how to develop the task and assign roles (if there are several students participating in the task)
- reflect on whether they are following the right path, while doing the activity
- evaluate the outcome of the activity and assess what they have learnt

5. A MODEL OF INTERNET ACTIVITY FOR ESP: THE WEBQUEST

Taking into consideration the four features for Web-based activities described above, we regard the WebQuest format as appropriate to develop activities that help ESP students become autonomous learners. The WebQuest (http://edweb.sdsu.edu/webquest/webquest.html), originally developed by Dodge and March at San Diego University, is a type of activity in which students (usually working in groups) are presented with an authentic situation and a task, which usually consists in solving a problem, taking a decision or finding the answer to a complex question.

A WebQuest usually includes the following parts:

- Introduction. This part can be used to provide some background information, create interest and make the students reflect on the topic of the task.
- Task. Description of what the learners will have to do.
- Process. A step-by-step description of what the learners should do to complete the task. It may include a description of the different roles to play, with the tasks to be performed by the students playing each role. It is desirable to make suggestions which help students in the process

of planning, critical thinking (e.g. analysing and selecting information, deciding between different perspectives) and problem-solving.
- Resources. List of information sources.
- Evaluation and Conclusion. The student should evaluate the task and reflect on the process. This stage can also be used to generalize what has been learnt.

An example of WebQuest can be found in Appendix I. The WebQuest page (http://webquest.sdsu.edu/) includes a great amount of information on this format.

6. CONCLUSION

ESP students need to develop their capacity of autonomous learning for various reasons. In the first place there are practical reasons: they may not be able to attend regular classes, classroom instruction cannot cater for learners' individual needs, ESP courses tend to be short, and ESP students need to be able to continue learning the language once the course has ended. They can only be more autonomous if they have been helped to do it in the course and they have learnt how to learn (Jordan, 1997). There are also psychological reasons. As Sheerin (1997: 56) states, "learning is more effective when learners are active in the learning process, assuming responsibility for their learning and participating in the decisions which affect it". The effective use of Internet resources requires students to become less dependent on the teacher and take responsibility for many learning decisions: what to study, how to study, for how long to study. By using the Internet, language students can have access to resources adjusted to their needs and control and use great amounts of content-based material.

However, although the Internet may promote autonomy in language learning and help students develop learning skills, the use of this new technology is not without problems and does not guarantee by itself that students should become more autonomous. Teachers that decide to use the Internet as an educational resource for their students should take into account a number of important factors.

First, the sites and activities towards which students are guided should be relevant to the goals of the ESP course. The work with Internet resources should be integrated into the course curriculum (Warschauer & Whittaker, 1997). Internet activities should engage the students in higher-level thinking, and they should help students develop metacognitive strategies.

Second, in order to use the Internet for learning, students need the teacher's guidance, feedback and support. Thus, using the Internet to

develop the capacity of autonomous learning does not mean learning by oneself, without the teacher's help. The teacher should help the students to take responsibility for their own learning and to develop effective learning strategies which they may use in the future to learn independently. Warschauer & Whittaker (1997) state that "teachers' contributions in a learner-centred, network-enhanced classroom include coordinating group planning, focusing students' attention on linguistic aspects of computer-mediated texts, helping students gain meta-linguistic awareness of genres and discourses, and assisting students in developing appropriate learning strategies".

Third, teachers should take into account the students' language level and their abilities (Peterson, 1999). Teachers should evaluate resources and select those that are appropriate for their students. The teacher should also assess the degree to which students are able and willing to learn independently. It is important to provide a variety of learning materials which cater to the different needs of the students.

NOTES

[1] The research carried out for the writing of this paper has been financed by the Diputacion General de Aragon (the Regional Government of Aragon, Spain. Project code: P092-2000).

[2] The examples presented here are activities available on the Internet, which, although not originally intended for teaching/ learning ESP, can be used for that purpose.

REFERENCES

Barahona, C. and E. Arnó (2001). English online: A virtual EAP course@university. In S. Posteguillo, I. Fortanet, and J.C. Palmer (eds.) *Methodology and New Technologies in LSP*. Castelló de la Plana: Publicacions de la Universitat Jaume I. 181-194.

Benson, P. (1998). The semiotics of self-access language learning in the digital age. In V. Darleguy, A. Ding, and M. Svensson (eds.) *Educational Technology in Language Learning*. Centre de resources en langues. Lyon. Available at <http://www.insa-lyon.fr/Departements/CDRL/> in January 2003.

Bowers, R. (1995a). Web publishing for students of EST. In M. Warschauer (ed.) *Virtual Connections: Online Activities and Projects for Networking Language Learners*. Honolulu, Hawaii: University of Hawaii, Second Language Teaching and Curriculum Center. 363-364.

Bowers, R. (1995b). WWW-based instruction for EST. In T. Orr (ed.) *English for Science and Technology: Profiles and Perspectives*. Aizuwakamatsu, Japan: University of Aizu, Center for Language Research. 5-8.

Eskey, D. (1997). Syllabus design in content-based instruction. In M.A. Snow and D. Brinton (eds.) *The Content-Based Classroom*. New York: Longman. 132-141.

Feldman, M. (1995). Import/export e-mail business simulation. In M. Warschauer (ed.) *Virtual Connections: Online Activities and Projects for Networking Language Learners.* Honolulu, Hawaii: University of Hawaii, Second Language Teaching and Curriculum Center. 216-217.

Frizler, K. (1995). *The Internet as an Educational Tool in ESOL Writing Instruction.* Unpublished Master's thesis, San Francisco State University. Available at <http://thecity.sfsu.edu/~funweb/thesis.htm> in November 2002.

Graus, J. (1999). *An Evaluation of the Usefulness of the Internet in the EFL Classroom.* Unpublished Master's thesis, University of Nijmegen. Available at <http://home.plex.nl/~jgraus> in November 2002.

Holec, H. (1981). *Autonomy in Foreign Language Learning.* Oxford: Pergamon.

Hutchinson, T. and A. Waters (1987). *English for Specific Purposes: A Learning-Centred Approach.* Cambridge: Cambridge University Press.

Jor, G. (1995). Web Newsletter '95: A collaborative learning project for technical writing instruction. In M. Warschauer (ed.) *Virtual Connections: Online Activities and Projects for Networking Language Learners.* Honolulu, Hawaii: University of Hawaii, Second Language Teaching and Curriculum Center. 368-374.

Jordan, R. (1997). *English for Academic Purposes. A Guide and Resource Book for Teachers.* Cambridge: Cambridge University Press.

Kimball, J. (1998). Task-based medical English: Elements for Internet-assisted language learning. *Call Journal*, 11 (4), 411-418. Available at <http://www.fauxpress.com/kimball/res/task.htm> in December 2002.

Luzón, M.J. (2001). Information collection and analysis activities: The treasure hunt. *Teaching English with Technology: A Journal for Teachers of English*, 1 (4). Available at <http://www.iatefl.org.pl/call/j_esp4.htm> in December 2003.

Luzón, M.J. (2002). Using the Internet to develop writing skills in ESP. *The ESPecialist*, 23 (1), 53-74.

Mak, L. (1995). Language learning of a new kind. Available at <http://www.hku.hk/ssrc/newLearn.html> in October 2002.

Nunan, D. (1997). Designing and adapting materials to encourage learner autonomy. In P. Benson and P. Voller (eds.) *Autonomy and Independence in Language Learning.* London: Longman. 193-203.

Oakey, D. (2000). An EAP module via the Merlin Internet Learning Environment. In P. Howarth and R. Herington (eds.) *EAP Learning Technologies.* Leeds: Leeds University Press. 115-128

Orr, T. (1999). The trend toward autonomous learning in ESP. Available at <http://antpc1.ice.ous.ac.jp/Abs&Sums/AILA99abs.html4th Paper> in December 2002.

Oxford, R.L. (1993). Intelligent computers for language learning: The view from language acquisition and instructional methodology. *Computer-Assisted Language Learning*, 6 (2), 173-179.

Oxford, R.L., Y. Rivera-Castillo, C. Feyten and J. Nutta (1998). Computers and more: Creative uses of technology for learning a second or foreign language. In V. Darleguy, A. Ding, and M. Svensson (eds.) *Educational Technology in Language Learning.* Centre de resources en langues. Lyon. Available at <http://www.insa-lyon.fr/Departements/CDRL/> in January 2003.

Peterson, M. (1999). World Wide Web resources for the ESP practitioner. *English for Specific Purposes* 18, 75-80.

Sheerin, S. (1997). An exploration of the relationship between self-access and independent learning. In P. Benson and P. Voller (eds.) *Autonomy and Independence in Language Learning.* London: Longman. 54-65.

Thalman, L. and R. Vilmi (1995). International robot activity for advanced technical English. In M. Warschauer (ed.) *Virtual Connections: Online Activities and Projects for Networking Language Learners.* Honolulu, Hawaii: University of Hawaii, Second Language Teaching and Curriculum Center. 202-204.

Trenchs, M. (2001). *Nuevas tecnologías para el autoaprendizaje y la didáctica de lenguas.* Lleida: Milenio.

Vallance, M. (1998). The design and use of an Internet resource for business English learners. *ELT Journal*, 52 (1), 38-42.

Warschauer, M. (1996). Computer-assisted language learning: An introduction. In S. Fotos (ed.) *Multimedia Language Teaching.* Tokyo: Logos International. 3-20.

Warschauer, M. (1997). Computer-mediated collaborative learning: Theory and practice. *Modern Language Journal* 81, 470-481.

Warschauer, M. (1999). *Electronic Literacies: Language, Culture, and Power in Online Education.* New Jersey: Lawrence Erlbaum Associates.

Warschauer, M. and D. Healey (1998). Computers and language learning: An overview. *Language Teaching* 31, 57-71.

Warschauer, M. and R. Kern (eds.) (2000). *Network-Based Language Teaching: Concepts and Practice.* Cambridge: Cambridge University Press.

Warschauer, M. and C. Meskill (2000). Technology and second language learning. In J. Rosenthal (ed.) *Handbook of Undergraduate Second Language Education.* Mahwah, New Jersey: Lawrence Erlbaum Associates. 303-318.

Warschauer, M., H. Shetzer, and C. Meloni (2000). *Internet for English Teaching.* Alexandria, VA: TESOL Publications.

Warschauer, M. and S. Whittaker (1997). The internet for English teaching: Guidelines for teachers. *The Internet TESL Journal*, 3 (10). Available at <http://www.aitech.ac.jp/~iteslj/Articles/Warschauer-Internet.html> in December 2002.

Wenden, A. (1998). *Learner Strategies for Learner Autonomy.* London: Prentice Hall.

APPENDIX I: EXAMPLE OF A WEBQUEST

One of the units in the course *Technical English for Chemical Engineering* is "Evaluating and comparing". It is in this unit where this WebQuest is presented to students.

Paper or Plastic: recycling

Adapted from:

http://oncampus.richmond.edu/academics/as/education/projects/webquests/paper/

Introduction

'Paper or Plastic?' When going to a shop, you may get a plastic or a paper bag to keep what you have bought. Shop owners have lots of different reasons for choosing one over the other: some think about which type is cheaper, some think about which type is easier to recycle in their area, some simply think about saving trees or landfills.

Objectives:

In this activity you will learn to

- talk about advantages and disadvantages
- compare different alternatives
- evaluate information and use it to make choices
- find support for your viewpoint

The Task

You work for a big company which wants to launch a campaign emphasising their concern for the environment. You belong to a team who has been asked to research the feasibility of using and/or recycling paper bags and plastic bags.

You will be one of the following:

1. The paper advocate - a person who believes paper bags should be used.
2. The plastic advocate - a person who believes plastic bags should be used.
3. The recycling pessimist - a person who thinks that there are too many problems associated with recycling for it to be worth the time and money.

Then the three members of your group will come together to decide what might be the best answer.

Phase 1 - Pre-task

In order to get ready for this activity, you will need to know some facts about recycling.

1. What do you think that you will need to know?
2. What do you know?

In the following site, you can get some background information about paper, plastic, and recycling. Explore the information and pay special attention to information you might find useful later so that you fulfil your role.

*Virtual Recycling (http://www.virtualrecycling.com/)

If there is any word you do not understand, you can check it up in the following online dictionary: http://dictionary.cambridge.org/

Phase 2 - Looking from Different Perspectives

1. Decide which role you want to play.
2. Read the instructions and questions assigned to your role.
3. Explore all of the links used for your role.
4. Take notes on each site you visit.

5. Note down if you find contradictory information.
6. Answer the questions assigned to your role.
7. Use what you have learned from the links for your role to support your viewpoint.
8. If you find any information that could be used to reject your viewpoint, note it down and think how you can argue against it.

The paper advocate

Use the Internet links below to answer these questions:

1. What advantages come from using paper bags instead of plastic bags?
2. Can paper bags be reused? If so, give some ways how.
3. Can paper bags be recycled? If so, give some ways how.
4. How does the paper industry affect our trees and forests?

Resources

*Paper Please! - American Forest & Paper Association (http://www.afandpa.org/kids_educators/paper.cfm)
* 'Treecycle' Recycled Paper (http://treecycle.com/info.html)
* EcoRecycling - Paper Recycling (http://www.ecorecycle.vic.gov.au/aboutus/infosheet_paper.asp)

The plastic advocate

Use the Internet links below to answer the following questions:

1. What advantages come from using plastic bags instead of paper bags?
2. Can plastic bags be reused? If so, give some ways how.
3. Can plastic bags be recycled? If so, give some ways how.
4. Which types of plastics are the most easily recycled?

Resources

* Plastic Bag Association. Environmental issues. Paper or plastic (http://www.plasticbag.com/environmental/issues.html)
* How is Plastic Recycled? (http://crystal.biol.csufresno.edu:8080/projects97/92.html)
* EcoRecycling - Plastic Recycling (http://www.ecorecycle.vic.gov.au/aboutus/infosheet_plastic.asp)
*Plastics Resource (http://www.plasticsresource.com/)

The recycling pessimist

Use the Internet links below to answer these questions:

1. What are some major drawbacks for choosing and/or recycling paper?
2. What are some major drawbacks for choosing and/or recycling plastic?
3. Is there a more environmentally friendly choice than paper or plastic?

Resources
* The Rotten Truth About Garbage
(http://www.astc.org/exhibitions/rotten/rthome.htm)
* Talking Trash (from 'The Why Files' site)
(http://whyfiles.org/063recycle/index.html)
* How is Plastic Recycled?
(http://crystal.biol.csufresno.edu:8080/projects97/92.html)

Phase 3 - Discussing and Reaching Consensus

1. Each person in your group should share with the group what he or she learned from the viewpoint of his or her role.
2. Together, discuss what might be the best answer. Use information, pictures, movies, facts, opinions, etc. from the web pages you explored to convince your team-mates that your viewpoint is important and should be part of your team's answer to the question.
3. Your team should write an answer that everyone on the team can agree upon.
4. If your group decides that neither paper nor plastic bags are a good choice, write down an alternative you discovered or one that your group came up with together.

Evaluation

It is time now to reflect on the activity.

- Were you able to find support for your views on the Internet?
- Do you think that you have been able to effectively support your arguments for your "viewpoint" during the whole group discussion?
- Which problems did you find when trying to support your argument?
- Were you able to discuss the advantages of your choice over other alternatives?

The original document for this WebQuest was created by Michael Culp, and a redesign of this WebQuest was created by Aly Crandall, Marianne Kinney, Sarah Taylor, and Brenna Trauth who were all former students in the Education Program (http://education.richmond.edu) at the University of Richmond (http://www.richmond.edu). The original WebQuest can be found at: http://oncampus.richmond.edu/academics/education/projects/webquests/paper/.

Permission granted to adapt this WebQuest by Kimberlye P. Joyce and Patricia Stohr-Hunt, instructors at the University of Richmond. All inquiries and comments regarding the original document should be emailed to them at the following address: pstohrhu@richmond.edu or kjoyce@richmond.edu.

Chapter 12

INTEGRATION OF E-LEARNING INTO A TERTIARY EDUCATIONAL CONTEXT

Ruth Trinder
Vienna University of Economics and Business Administration (Vienna, Austria)

1. INTRODUCTION

A multitude of factors, some of them overlapping, some of them conflicting, will affect the development of any learning materials. The number increases even further in the case of electronic materials, targeted at students in a formal educational context, in the tertiary sector. We will present in this chapter first the developers' perspective, detailing considerations and constraints that influenced the design of an online component created to complement face-to-face ESP classes in Business English. The development process, however, is only the first step since before a new learning environment can become truly integrated, it has to undergo extensive evaluation processes on the part of the intended users. Consequently, we will also report on students' perceptions regarding the effectiveness of the online Business English program, attempting to identify factors responsible for frequent or irregular use of the electronic resource.

1.1 Context of the project

The Vienna University of Economics has always been a "mass university", granting, in accordance with Austrian educational policy, unrestricted access to everybody with A-levels or an equivalent qualification. Accordingly, class sizes had always been considerable, but, due to a restructuring of the programme of studies in 2001, they suddenly shot up to unprecedented levels (i.e., 150 in Business English classes).

To ameliorate this situation, the Ministry of Education agreed to fund the development of e-learning for 16 subjects, thus offering first-year students a "blended learning" experience. The project was underpinned by the aspiration to offset the educational "massification" process by the individualisation offered by a self-access computer-delivered learning environment. The e-learning component would afford opportunities for out-of-class learning, practising, and self-assessment, and, if exploited to its best advantage, would help to increase learner autonomy.

For the Department of English Business Communication, the e-learning project was an opportunity to reconsider the question of optimal distribution of control over learning: although the institutional context necessitated a standardised syllabus with specific goals, it seemed to be the right time to hand over some control to the student. By giving students choice, we hoped to encourage them to take responsibility for their learning – at least in terms of becoming aware of their learning preferences and selecting the appropriate resources to best accommodate them. In contrast to the old system, class attendance was no longer mandatory in the first semester Business English classes: students could choose to rely solely on the online support and required text books to reach the academic and professional goals of the new ESP program.

Reflecting the increasing emphasis on guided autonomy with the help of technology in the teaching of ESP at university level, our project was meant to serve a dual purpose. From the "autonomy perspective", benefits would involve enhancement of students' independence and of strategic skills including the meta-cognitive strategies involved in planning, timing and monitoring their learning; noticing their weak areas and choosing the appropriate remedies; as well as discovering their favourite routes and tools for the exploration and acquisition of the online content. From the "language teaching/ESP perspective", making an additional resource available meant a better chance for students to reach course as well as long-term objectives such as being able to cope on their own with authentic articles from economics books and business journals, to communicate effectively in business situations, and to be accepted for internships abroad.

2. DESIGNING THE E-LEARNING PROJECT

Chapelle (2001) considers the following criteria indispensable for design and evaluation of CALL applications: *Learner fit*, *language learning potential*, *meaning focus,* and *authenticity*. *Learner fit* refers to difficulty level and task appropriateness, whilst *language learning potential* and *meaning focus* postulate the necessity to focus on form and meaning, respectively. *Authenticity* refers to the connection between the CALL task and real life tasks, making it perhaps a particularly important concept in the ESP context. The following sections detail how these considerations manifest themselves in the e-learning application we developed.

2.1 Considerations concerning content, structure, and difficulty level

Although enhancement of learner autonomy was one of our aims, we took pains to provide sufficient guidance to cater for the type of learner who needs, at least initially, more external structure. Consequently, the overall aims of the course were broken down into ten units per semester, each with a clearly defined focus on a particular business field (e.g., types of business organisations, transport) and business communication (e.g., letters, memos, reports). These units include specific business vocabulary, synonyms, antonyms, collocations, lexical items and contrastive difficulties, and each is covered, though with slightly different emphases, in the classes, the course book, and the online program. According to Brandl (2002), such an approach to integrating web-based materials into the foreign language/ESP curriculum is teacher-centred, as the topics, reading materials and activities are selected by teachers/curriculum-developers. However, this constraint applies to any kind of material development at university level: the curriculum prescribes the academic targets and, in the ESP context, usually also the topics and lexical areas. As Levy puts it, "designers are often concerned primarily with meeting local needs, typically related to their own learners and curriculum" (2002: 59).

Since our students are recruited from a number of different school types with diverse language requirements, their command of the target language differs immensely. There is a fairly large influx of students from commercial and technical colleges who are, in contrast to grammar school students, well-versed in ESP terminology and business communication, but less assured when it comes to general vocabulary and basic grammar. In short, lecturers in Business English classes are faced with extremely heterogeneous groups of learners. It was hoped that an electronic resource would be the ideal way of coping with the diversity in proficiency by providing optional tools to

make input comprehensible, as well as by offering meaning- and form-focused practice opportunities.

The *Online English Mentor (OEM)*, the web-delivered course we developed within the framework of the project described above, is best used in conjunction with face-to-face classes, but can also be used as an independent resource. It is up to students' own assessment of their proficiency and their individual strengths and weaknesses to decide which type or combination of learning environment(s) benefits them most. Still, the concept for this program is rooted in "the need to achieve an optimal mix between *in-class* and *out-of-class* learning" (Pusack, 1999: 26). Thus one of the aims of the *OEM* is to draw attention to lexical fields only touched upon in class by recycling and extending related vocabulary, whilst simultaneously providing the individualisation of learning lacking in the contact hours.

2.2 Focus on individualisation

The main targets of the *OEM* are the following:

- to offer individualised practice on reading, listening, grammar, lexis, collocations and pronunciation in the Business English context
- to provide opportunities to expand existing knowledge and to address individual weaknesses in the areas grammar, specialised vocabulary, and business concepts
- to make available tools and resources learners need to make sense of general linguistic input and business terminology
- to reinforce the subject matter introduced in class
- to offer a variety of task types to suit different cognitive styles
- to present language in authentic context
- to integrate grammar and business content

The *OEM* follows an integrated syllabus, combining authentic business-related articles with an extensive grammar reference section in hypertext format and a multitude of interactive vocabulary and grammar exercises aimed at raising language awareness. Its main forte, compared to the classroom teaching context, is its ability to cope instructionally with the variation in proficiency by facilitating access to tools such as interactive glossary definitions and sound bytes or a grammar reference as and when needed.

The principle of individualisation of the learning process applies on a macro as well as on a micro level – students can pick out the unit they want and then decide which area they need to work on. Empirical studies on

learning strategies have confirmed what university teachers have long suspected: university students are good at using meta-cognitive strategies such as organisational planning, self-management and self-assessment ("standard academic strategies") as well as formal, rule-related processing strategies, and use them at the expense of affective and functional practice strategies (Nyikos & Oxford, 1993). It is our contention that if web-based learning environments are to be successful, they need to accommodate these strategy preferences: students must get sufficient information on the areas covered by the program to be able to make informed choices. As Hoven puts it, learners "need information, support, and the [necessary] infrastructure" to develop; they need to be "provided with the means by which to take control on their own terms" (Hoven, 1999: 157). This means that e-learning environments clamour for clear structuring, labelling, and sign-posting – requirements which were closely attended to in the design of the *OEM.*

2.3 Learner control and learner choice

Considerations concerning structure and navigation lead directly to the question of learner control. Boling and Soo (1999) categorise the degree of learner control according to who (learner or teacher/developer) structures content, pacing and sequencing. For our purposes, it seemed indicated to furnish our system with a level of control which is situated in the middle of the continuum between the two poles of *high teacher/developer control* and *high learner control.* This medium level of control seems ideal as it gives learners control over pacing and sequencing, while allowing the teacher/developer to determine the language input – a necessity in a teaching context with formal testing requirements. The design elements Boling and Soo (1999: 452) list as characteristic of software with a moderate level of learner control include:

- clear learning objectives
- constant and instant feedback
- navigation that gives the learner choice of what and how fast to learn
- content presented in independent modules
- clearly labelled content and selection menus

The reasoning behind our approach to control is largely determined by the educational context. This means, on the one hand, that users' previous learning experiences have to be taken into account – e.g., there is no tradition of truly autonomous learning in the Austrian school system, and learners need to get slowly accustomed to independent learning. On the other hand, the utilitarian aspect must not be neglected; if we want students to use

the system we developed, it needs to be geared towards exam preparation. In other words, students expect a program such as the *OEM* to provide exactly the content and the language that will help them obtain good grades.

Our research has shown that, although learner control is one of the buzzwords associated with the hype surrounding the "new media" in language learning, it is often used indiscriminately. More than that, lack of guidance and helpful instructions tend to be erroneously equated with independent learning. Many software products show such deficiencies and inconsistencies in presentation of content, interface control, feedback, and navigational options that they impede rather than promote learner control (Trinder, 2000). McCarthy (1999) observes that (especially risk-averse) students would need "a mental picture", a kind of map of the courseware if they are to make efficient use of it, since all information is concealed, in non-linear fashion, behind a single screen. Consequently, we paid special attention to this tricky area and organised content and navigation as follows:

Considering our learners would basically divide into two groups – regular users who would use the *OEM* unit-by-unit, parallel with their twice-weekly classes, and last-minute "before-the-exam" users – we provide access to the *Main Menu* (the starting page), *Units, Grammar (Reference)*, and *Learning Strategies* via a constantly visible horizontal navigation bar. We assumed that whereas regular users would use the *Units* menu, the other group would be more interested in brushing up their grammar in preparation for the exam. Offering a separate grammar menu also had another reason: though grammatical correctness is a requirement for passing the exam and the course book provides plenty of form-focused exercises, there is no time set aside in the face-to-face classes for actually going through and explaining grammatical rules. Students who feel insecure in this area are expected to acquire this knowledge from grammar books or the *OEM.* Finally, the fourth item on the top navigation bar, *Learning Strategies,* constitutes an attempt to encourage students to familiarise themselves with a number of learning and reading strategies in order to become more effective learners.

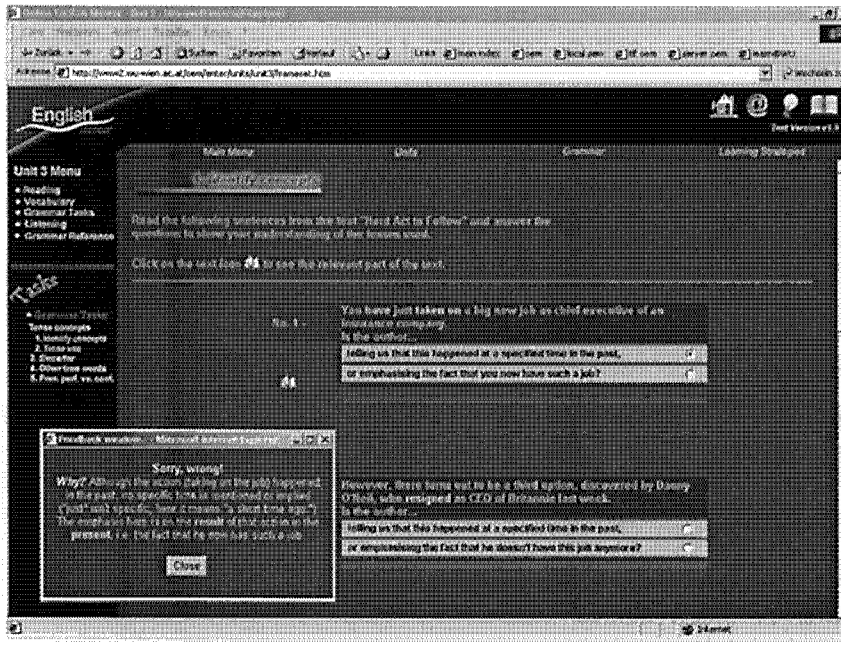


Figure 1. Screenshot of the OEM interface.

As can be seen from the screenshot (Figure 1), further orientation and navigational options are provided by a drop-down navigation bar on the left. Each unit is divided into the modules *Reading, Vocabulary, Grammar Tasks, Listening,* and *Grammar Reference*. On choosing a unit, learners are first presented with a page similar to a table of contents in a book: an index in hypertext format detailing the topics, grammar areas, learning objectives and activities of the unit. Students can thus explore the system either according to their needs and access directly the task that seems most promising for their purposes, or use the system unit-by-unit in a strictly linear way. At the bottom of each page a clickable *Next* button can take users on a pre-determined pseudo-linear default route to the next activity.

2.4 Description of the *OEM* modules: pedagogical considerations

As can be seen from the modules listed above, we decided to use the technology for what it lends itself to and concentrated on receptive rather than productive skills. However, this does not mean that we favour a passive "click-and-forget" approach. The *Reading* modules, always based on authentic texts from business journal to familiarise students with the register and lexis they will need in their professional lives, are introduced by *Pre-*

Reading tasks. These are typically meaning-focused multiple choice or true/false questions which are meant to prepare for reading by asking for predictions or activating general knowledge. The *Reading* text itself is an authentic (newspaper or journal) article that has to fulfil two requirements – to provide a good choice of ESP vocabulary, whilst addressing topics that are also of interest to a pre-experience target group. It is enhanced by multimedia elements such as an audio version of the text for extra listening practice, and interactive vocabulary definitions plus audio files on potentially difficult words or phrases. *Reading Comprehension* tasks range from globally-oriented activities, such as choosing the best summary or the best heading for a paragraph, to tasks requiring close reading and favouring an analytical approach. Since we want to promote comprehension rather than test memory, users can access the passage where the answer of the comprehension question can be found, with the relevant sentences highlighted, by means of a *Book icon.*

Both the *Vocabulary* and *Grammar Task* modules exploit the *Reading* texts as a source of input. The *Vocabulary* module offers tasks on collocations, synonyms and antonyms, phrasal verbs, semantic fields, word families, and registers. Any lexical items that can be attributed to the field of Business English tend to receive special attention. *Grammar Tasks* typically feature exploratory activities, with students being required to identify occurrences of the grammatical pattern in question and to detect conditions governing its use, as well as tasks allowing further practice on form and function. Non-text based grammar tasks aim at consolidating and expanding the topic-related specialised vocabulary introduced in the text whilst offering extra practice on the grammar focus of the unit.

The *Listening* module rounds off the activities part of each unit. *Listening* modules consist of unscripted interviews or statements of native speakers on the given topic. They vary a lot as far as accents and speed of delivery are concerned, but as always students can get the help they need to make sense of the input by accessing a written transcript with pop-up glossary entries. Whilst this module deals with a skill that is not tested in the final examination, it is of course of crucial importance in the real world, a good reason not to neglect it.

The *Grammar Reference* gives extensive information on form and function of grammatical patterns. Its structure is not dissimilar to traditional paper-based student grammar books, yet because of its hypertext format it has some possibilities denied to a linear grammar. For instance, where appropriate, it is enriched by hyperlinked cross references to other parts of the grammar. HTML anchors are used to link the *Grammar Tasks* directly to the relevant section of the *Grammar Reference* pages so as to make it easy for learners to find the answer to grammatical questions – in other words, to

access the rules practised in the grammar exercises they have completed or are about to tackle.

2.5 A question of feedback

The question of how to deal with feedback has received much attention in the computer-assisted language learning community lately. Pedagogues have come to agree that mere scoring of correct answers, all-pervasive in CALL programs only a decade ago and still far too salient today, does little to help learners self-evaluate their progress. Although a case can be made for the instantaneous and non-judgemental nature of any computerised feedback, today we are looking for more – we want to provide feedback that will facilitate "meaningful learning opportunities" (Bangs, 2002: n.p.). Types of feedback are situated along a continuum, ranging from confirmation feedback (correct/incorrect) and correct response feedback (the courseware provides the correct answer) to explanatory feedback, with adaptive feedback, the most ambitious form, so far only implemented in intelligent CALL programs.

The *OEM* feedback consists of remediation (an explanation of why an answer was assessed as wrong) and reinforcement (why correct). Feedback can be more or less comprehensive, depending on task type and task difficulty, and may be offered simultaneously in various degrees of complexity and specificity according to individual requirements, including hints, context-specific explanations, links to the grammar reference, and complete answer pages.

2.6 Learning style considerations

Learning styles are the "characteristic manner in which an individual chooses to approach a learning task" (Skehan, 1989: 237) and are believed to "reflect both nature and nurture" (Ellis, 1989: 250). Learning styles interact with other personal factors such as motivation, attitudes and beliefs, aptitude, etc. (Oxford, 1994), and situational factors such as formal/informal setting and instructional style (Ellis, 1994), in determining the choice of learning strategies and the learning outcome as such. With reference to e-learning environments, the question of *if* and *how* an e-learning course is used depends not only on the inherent quality of the program, but also on individual learner differences such as cognitive style and personality variables.

By virtue of their flexibility, e-learning materials can be conceived in such a way as to make them suitable for a variety of styles. Not every learner type inclines towards autonomous, exploratory, open-ended learning; quite

the contrary, style dimension variously named closure-oriented, sequential, reflective, concrete or risk-averse predispose learners towards a structure imposed from outside and a guided, step-by-step approach (Ehrman, 1998; Oxford, 1996; Skehan, 1989). In order to accommodate all learners, we have provided clearly sequenced and structured materials that allow linear navigation via a default route as well as picking out particular areas. Most *OEM* activities support a deductive as well as an inductive approach as users can choose between "examples first" or "rules first". The text-based nature of many of the tasks should appeal to context-dependent learners; the optional vocabulary explanations should satisfy risk-averse, analytical learners. In short, as far as receptive skills and grammar are concerned, the design of the *OEM* makes it possible, up to a point, for different types of learners to approach the learning process in accordance with their own preferences. What it cannot do is provide learners with opportunities for free linguistic output, so this is a task the face-to-face classes have to take on.

3. EVALUATING THE E-LEARNING PROJECT

"It is not possible to design an effective project *a priori*; usability testing is a must" (Nelson & Oliver, 1999: 112). "The learners perceptions of the program and their experience of the interaction are not simply factors affecting the outcome, but actually constitute the outcome" (Goodfellow, 1999: 110). We fully agree with the researchers quoted above about the all-pervasive importance of formative and summative user evaluations. Studies such as those carried out by Brett (1996), Laurillard (1998), Sercu & Peters (1999), and Trinder (2002) have illustrated how developers' and final users' views concerning effectiveness and usefulness of courseware may diverge.

3.1 User evaluation

We collected data in various ways, and for different purposes. In line with the considerations detailed in the previous sections, we were particularly interested in investigating the following areas:

1. Perceptions of usefulness and enjoyment relating to e-learning in general (question 1)
2. Perceptions of usefulness and enjoyment relating to different parts of the program (question 2)
3. Patterns of use: frequency and type of interaction (e.g., regular vs. sporadic use; linear vs. non-linear navigation) (question 3)

4. Perceptions of usefulness and enjoyment as well as patterns of use relating to different learning styles (question 4: Do different learner types use and evaluate the system differently?)
5. Perceptions of usefulness and enjoyment relating to patterns of use (question 5: Is there a relationship between how often learners use the program and how effective they find it?)

The instruments we used were an online questionnaire eliciting opinions with reference to questions 1 and 2 (to be completed on an optional basis; number of respondents: 160); paper-based surveys distributed in class (and thus slightly less optional) collecting data on learning style, user patterns and satisfaction with the program (questions 3, 4, and 5; number of respondents: 150); formal interviews as well as informal talks with users (questions 1-5); and an internet server log file giving hits per day. A later version of the online questionnaire included questions on learning preferences, too (see Appendix). The questions relating to learning styles are based on Ehrman's *Motivation and Strategies Questionnaire* (1998) and aim to establish analytical versus global tendencies as well as students' predisposition towards independent learning. We included this intra/interpersonal component in the questionnaire in order to extend the mainly cognitive dimension of the analytical/global dichotomy. This gave us four basic learning styles: Type 1 learners, as they display many of the characteristics identified as being conducive to effective language acquisition by researchers such as Naiman et al. (1978), will be referred to as "Good Language Learners" (GLL) in accordance with Naiman's nomenclature; analogously, Type 4 is simply the "Bad Language Learner" (BLL). Type 2 learners are analytic and therefore less good at making use of contextual clues while Type 3 learners display global tendencies, i.e. they are good at using context.

3.2 Results of the evaluation

Advantages and disadvantages of computer-assisted learning which were cited most often have been categorised in representative groupings (compare question 1):

strengths	weaknesses
independent learning (26)	no human interaction (22)
individualised pace (21)	internet connection needed (18)
choice of place and time (17)	technical problems (18)
Enjoyment (14)	too much computer work (15)
interactivity (12)	eye strain (11)

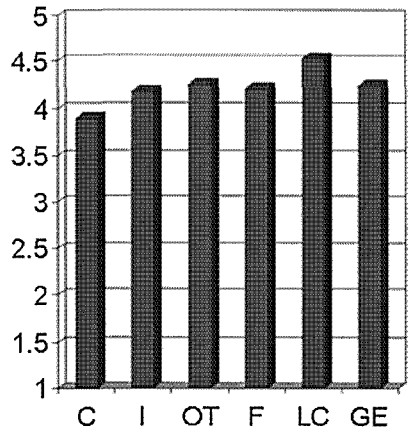
Online survey; n = 160 [1]

The most frequently mentioned features concerning question 2 (strengths and weaknesses of the *OEM*) included the following:

strengths	weaknesses
individualisation (25)	not everything printable (20)
variety of tasks (20)	difficulties listening to audio files (16)
grammar section (18)	long downloading times (15)
detailed feedback (13)	too many exercises (11)
vocabulary tasks (12)	not enough exercises (6)
glossary entries (10)	confusing (3)
hyperlinks (6)	

Online survey; n = 160

Figure 2 illustrates the results of the quantitative assessment of the *OEM*. The online survey, designed by the author, consisted of 33 questions referring to different areas and resources. Respondents indicated their satisfaction with the online program on a five point scale (5=excellent, 1=dissatisfactory). As can be seen from the graph, the point that was most appreciated was the program's ability of providing learner choice. The comparatively worst individual score was achieved by the *Reading texts* (subsumed under content). This could be explained partly by the fact that the reading of business articles also features strongly in the face-to-face classes, so that students feel that they have reached saturation point. Additionally, many students mentioned they did not quite like reading on screen, and preferred to print out the texts, even though that meant losing the interactive glosses. This suggests that although business articles are of primary importance for ESP teachers, as they represent authentic linguistic input and illustrate how terminology is used in context, there is a certain reluctance on the part of students to deal with the articles as online texts. Students definitely preferred tackling the form- and meaning-focused tasks based on the articles to studying the use of Business English in full context.



Scale:
5 = excellent/1 = dissatisfactory

C	content	3.90
I	implementation	4.18
OT	options & tools	4.25
F	feedback	4.21
LC	learner choice	4.53
GE	general evaluation	4.24

Figure 2. Quantitative evaluation of *OEM* (online survey - n=160).

As far as patterns of use were concerned (question 3), according to the self-report data of the classroom survey, 14% of the populations were regular users, 44% had used the program several times, and 28% just once. However, 95% planned to use the *OEM* intensively for exam preparation, which was confirmed by the log-file showing a dramatic rise in hits for the two days before the exam. The frequency in use is somewhat disappointing for us; however, we are confident that user figures will increase once students have come to terms with the concept that independent work on the computer is a necessary and integral part of their courses. Concerning navigational preferences, we found a positive correlation between frequency of use and linearity of navigation: although only 35% of the total population usually worked with the program in a unit-by-unit, linear fashion, there was a disproportionately large percentage of regular users in this sub-population. In other words, regular users tend to be linear users while sporadic users tend to pick and choose the area they want to work on.

It turned out that regular users are also often Good Language Learners (question 4). Results showed that GLLs tend to use the *OEM* more regularly than the total population (36% vs. 14%) (question 4). Overall, 93% of Good Language Learners use the system regularly or sometimes, whereas only 58% of the total population does so. These findings bear out the hypothesis that GLLs are more flexible and more open to experimenting with new ways of learning.

We found no significant differences between the results of strongly analytical and strongly global learners as far as assessment of enjoyment/usefulness was concerned, although the tendency was for the former to give slightly better ratings (see Figure 3). We had expected

analytical learners to be more positive towards online learning as they are more likely to be good autonomous learners and less dependent on structure imposed from the outside than global learning types. The similarity of the results can be taken as evidence that, by offering a large variety of task types coupled with sufficient guidance, the system does indeed accommodate different learning styles.

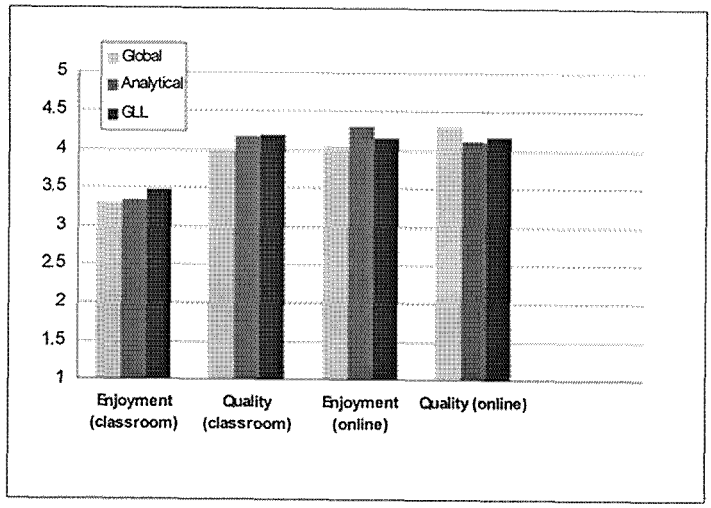


Figure 3. Quantitative assessment according to learning styles (classroom and online survey).

Another finding of the surveys was that students' evaluations of quality and enjoyment rose with the frequency of use. Thus, regular users found the *OEM* more enjoyable and valuable than users who had used it only sporadically (question 5).

4. CONCLUSIONS AND FURTHER IMPLICATIONS

In this paper, we first outlined the pedagogical principles and contextual factors influencing the design of an e-learning resource for Business English. We then switched from the designers' to the learners' point of view and summarised users' opinions of e-learning in general, as well as their evaluation of strengths and weaknesses of the application in question. Based on questionnaire data, we identified learner internal and external factors responsible for acceptance of the online component of the Business English programme by using ratings of effectiveness and enjoyment as well as frequency of interaction with the courseware as indicators of acceptance.

We found that learning style factors interact with learners' actual or perceived linguistic proficiency and knowledge of business concepts in determining user patterns. The data indicated that especially first semester students tended to overestimate their level of English, or, conversely, underestimate the challenging nature of ESP. However, students who had failed the course the first time round and thus had to review their self-assessment often responded with increased use of the online application.

Amongst learner external factors that appear to be relevant for the uptake of the courseware, we found recommendations by peers and teachers to play a considerable role. Comparisons between groups taught by different lecturers suggest that the influence of teachers' implicit or explicit endorsement of the e-learning component must not be underestimated. In fact, a higher percentage of regular users can be seen in those groups in which the lecturer regularly referred to online activities on the usage of specific terms or set assignments that involved using the *OEM* as a central part of the course. Thus, lecturers need to become aware of the role they play in the success of the entire blended learning experience.

Later investigations focusing on an updated version of the *OEM,* which differs concerning course requirements (e.g. compulsory class attendance), showed that the external structure imposed by regular class attendance had a positive impact on the use of the online component. These results can be interpreted in two ways: the more optimistic version is that students have progressed to become more experienced, self-directed learners who make well-considered use of the resources available to them and accept responsibility for their learning progress. An alternative view is that the use of the self-study component hinges on increased external pressure (challenging subject matter, regular classes, and difficult exam) and short-term accommodation of needs.

Summing up, we believe that the integration of an e-learning component into a degree programme involves a predisposition of the learner to exploiting it to its best advantage. This predisposition depends on learner internal factors such as

- perceived needs (e.g., self-perceptions of linguistic proficiency, non-familiarity with the ESP subject matter)
- learning style tendencies
- capacity for independent learning

which interact with contextual factors such as

- endorsement by opinion leaders (teachers or peers)
- external structure (such as tie-in with regular classes)
- degree of familiarity with learning and studying in a university context

and courseware intrinsic factors such as

- need significance, perceptions of effectiveness
- intrinsic motivation (perceptions of enjoyment and quality).

Learner autonomy is not an automatic by-product of granting learners independent access to electronic resources, but, rather like learning style tendencies, probably a product of nature and nurture. In a country like Austria, where the secondary education system does not usually prepare students to take control of the learning process, it is worth considering investing first in the "nurture" part by helping students to become independent learners. The above study has illustrated that most learners are not born with a fully-developed capacity for autonomy, but need some scaffolding to help them grow in the right direction. Following from that, it seems strongly advisable to promote the integration process by setting aside class time for induction sessions and learner training, rather than expecting first-year students to be able to cope on their own with the new challenges of university life as well as the demands of self-directed (e-)learning.

NOTES

[1] Figures in brackets refer to the number of answers; as not all respondents filled in the qualitative part of the questionnaire, figures do not add up to the total number of respondents.

REFERENCES

Bangs, P. (2002). Why is feedback dying of starvation? – let's try to revive it... Paper presented at EUROCALL Conference 2002, Jyväskylä, Finland.

Boling E. and K.G. Soo (1999). CALL issues: Designing CALL software. In J. Egbert and E. Hanson-Smith (eds.) *CALL Environments: Research, Practice and Critical Issues.* Tesol: Maryland. 442-456.

Brandl, K. (2002). Integrating internet-based reading materials into the foreign language curriculum: From teacher- to student-centred approaches. *Language Learning & Technology*, 6 (3), 87-107.

Brett, P. (1996). Using multimedia: An investigation of learners' attitudes. *CALL*, 9 (2), 191-212.

Chapelle, C. (2001). *Computer Applications in Second Language Acquisition.* Cambridge: Cambridge University Press.

Cohen, A., R. Oxford and J. Chi (1991). Learning style survey: Assessing your own learning styles. Available at <http://carla.acad.umn.edu/profiles/CohenPapers/Style_Survey.html>

Ehrman, M. (1996). *Understanding Second Language Difficulties: Looking Beneath the Surface.* Thousand Oaks, CA: Sage Publications.

Ehrman, M. (1998). Field independence, field dependence, and field sensitivity in another light. In J. Reid (ed.) *Understanding Learning Styles in the Second Language Classroom.* New Jersey: Prentice Hall.

Ellis, R. (1989). Classroom learning styles and their effect on second language acquisition: A study of two learners. *System*, 17 (2), 49-262.

Ellis, R. (1994). *The Study of Second Language Acquisition.* Oxford: Oxford University Press.

Goodfellow, R. (1999). Evaluating performance, approach and outcome. In K.C. Cameron (ed.) *Media, Design and Application.* Lisse: Swets and Zeitlinger.

Hoven, D. (1999). CALL-ing the learner into focus: Towards a leaner-centred model. In R. Debsky and M. Levy (eds.) *WORLDCALL: Global Perspectives on Computer-Assisted Language Learning.* Lisse: Swets and Zeitlinger. 149-168.

Laurillard, D. (1998). The TELL Consortium - formative evaluation report. Available at <http://www.hull.ac.uk/cti/eval.htm in June 2000>

Levy, M. (2002). CALL by design: Discourse, products and processes. *ReCALL*, 14 (1), 58-84.

McCarthy, B.N. (1999). Integration: The sine qua non of CALL. *CALL-EJ Online*, 1 (2), September 1999.

Naiman, N., H. Froehlich, H.H. Stern and A. Todesco (1978). *The Good Language Learner.* Clevedon: Multilingual Matters.

Nelson, T. and W. Oliver (1999). Murder on the internet. *CALICO Journal*, 17 (1), 101-114.

Nyikos, M. and R. Oxford (1993). A factor analytic study of language-learning strategy use: interpretations from information-processing theory and social psychology. *Modern Language Journal*, 77 (1), 11-22.

Oxford, R. (1994). Language learning strategies: An update. Eric Digest. Available at <http://www.cal.org/ericccll/digest/Oxford01.htm> May 2001.

Oxford, R. (1996). Employing a questionnaire to assess the use of language learning strategies. *Applied Language Learning*, 7 (1&2), 25-46.

Pusack, J.P. (1999). The Kontakte Multimedia Project. *CALICO Journal*, 17 (1), 25-42.

Sercu, L. and E. Peters (1999). Learning e-learning - a comprehensive investigation of course developers and language teacher trainees views regarding the usefulness and effectiveness of a multimedia self-tuition course. *ReCALL*, 14 (1), 32-46.

Skehan, P. (1989). *Individual Differences in Second-Language Learning.* London: Edward Arnold.

Trinder, R. (2000). *A Critical Evaluation of the New Media in Language Learning and Teaching with Special Reference to Multimedia CD-ROMs for Business English.* Unpublished doctoral dissertation, Vienna.

Trinder, R. (2002). Multimedia in the Business English classroom: The learners' point of view. *Computer Assisted Language Learning*, 15 (1), 69-83.

Wenden, A. (1991). *Learner Strategies for Learner Autonomy: Planning and Implementing Learner Training for Language Learners.* Hempel Hempstead and Englewood Cliffs, NJ: Prentice Hall.

APPENDIX

OEM online survey (version 2)

A. Classroom learning and teaching techniques

How helpful/useful do you find the following ways of teaching/learning? To what extent do you agree with the attitudes expressed? (1-5)

1. A written in-class exercise in which students fill in the correct forms of verbs in sentences.
2. Classroom discussions. The emphasis is on exchanging opinions.
3. Students read a number of sentences, finding and correcting the mistakes.
4. Teacher corrects all mistakes students make when speaking or writing.
5. Sometimes students are forced to use what they know to communicate, even though it's not exact.
6. Students do role-plays, simulations, pair-work in class.
7. Students listen to tapes or watch videos that are above their level.
8. Teacher offers a systematic approach; materials (course book, etc.) are gone through step-by-step.
9. Students choose what and how they study.
10. The teacher explains rules, and students practise them by using them in sentences.
11. Students try to find opportunities for informal language practice outside the classroom.
12. Students set their own goals for language learning.
13. Students guess the meaning of unknown words from context.
14. Students identify their own weaknesses are and decide what to do about them.
15. It is the teacher's responsibility to motivate and make the learning experience fun.
16. A lot of language learning can be done without a teacher.
17. I don't think self-study is suitable for language learning.
18. I expect the teacher to tell me exactly what to do and how.
19. I like to study for tests with other students.
20. Talking to native speakers is the best way of learning a language.

B. Online English Mentor

This part of the questionnaire refers to the OEM. To what extent do you agree with the following statements? (1-5)

1. Content: specific areas

1.1 I find the reading texts interesting
1.2 I find the grammar tasks useful/effective
1.3 I find the vocabulary tasks useful/effective
1.4 I find the listening comprehension useful

2. Implementation

2.1 The content is logically organised
2.2 It is clear what options/tools are available
2.3 It is clear how to get to the point where I want to be
2.4 Generally the navigation is well thought out
2.5 Generally the design of the program is attractive

3. Online help options and supporting components

3.1 I find the on-line vocabulary explanations useful
3.2 It is convenient to be able to link from activities to the appropriate grammar reference section
3.3 It is convenient to be able to link from activities to the appropriate section of the text/article
3.4 I find the grammar reference section informative and concise
3.5 I have had no problems using the sound

4. Input analysis and interactive feedback

4.1 The feedback makes it clear why something is correct/incorrect
4.2 The feedback shows me my weaknesses
4.3 The immediacy of the feedback is useful
4.4 It is useful to be able to look at the completed exercises
4.5 The hints are a useful option if I am unsure about a question

5. Learner choice and individualisation

5.1 I enjoy being able to choose my route through the program
5.2 I like being able to choose between different areas (vocabulary, grammar, reading...)
5.3 The program allows me to work at my own speed

6. General evaluation

6.1 I find working with the program enjoyable

6.2 Working with the program helps me consolidate existing knowledge
6.3 The program enables me to concentrate on the areas I have difficulties with
6.4 I feel I benefit from working with the program

7. Open questions:

A. In your opinion, what was the best thing about the program as a language learning tool?
B. What was the least helpful aspect?
C. Which aspects, do you think, could be improved?
D. What do you generally like/dislike about e-learning?

PART V.
TERMINOLOGY AND LEXIS: TEACHING AND TRANSLATION

Chapter 13

THE DEVELOPMENT OF A COMPUTER SCIENCE DICTIONARY, OR HOW TO HELP TRANSLATE THE UNTRANSLATABLE

Jordi Piqué-Angordans
Universitat de València (València, Spain)

Santiago Posteguillo
Universitat Jaume I (Castelló de la Plana, Spain)

Lourdes Melcion
University of Surrey-Roehampton (London, UK)

1. INTRODUCTION

We live in a computerized society and the knowledge of computing terminology has gradually become a must for everyone today. New terms are labeled each year to define newly-created computer-related devices. This is particularly true in English, which seems to offer fewer constraints than other languages when it comes to adopting a new word or expression, often transformed into a cryptic acronym. However, the problem appears when these newly-labeled words and expressions, which have arisen within a given discourse community and inside a specific culture, have to be

expressed in a language belonging to another culture, although sharing a similar conceptual discourse community.

Bronislaw Malinowski, in his extensive essay on language as an introduction to the second volume of his *Coral Gardens and their Magic* (1935), is often quoted when he speaks of the functions of speech in terms of their relationship to the particular context in which language is used, bringing up the concept of language as embodying a magic and a pragmatic element. The translator of literature, political oratory, or advertising, for example, deals with this magical aspect of language, while translators of science and technology texts have to come to grips with the more pragmatic aspects of language. In other words, they have to look for meaning as function within the context of situation. We are thus dealing with the problem of translating an utterance that, according to Malinowski, could only be determined by the response in the situation. As he says, "the real linguistic fact is the full utterance within its context of situation" (Malinowski, 1935: 11).

Culture has also much to do with the possibility or impossibility of translation. In fact, the greater the difference between two given cultures, the greater the chances of finding untranslatable words. Then the ultimate goal would be to understand what a given word, sentence, paragraph, or text means in the context of situation in which it is uttered or presented in written form. The parallelism can be established then with the pragmatic element mentioned above, an element which is so frequently found in technology texts. A given technical word or expression can only be said to have been adequately translated when it is uttered in a given discourse community and it is correctly understood by its members.

Translation takes into consideration all these elements in what Darwish (1989) calls "two sets of parallel linguistic and cultural repertoires." These repertoires, Darwish further adds, "move constantly to match and replace lexis, grammar, stylistics, phonology, cultural and situational equivalents and to give universal concepts language properties." He considers the translation process in terms of what he calls the "Concept Lens" as a "binary action-reflex mechanism" which he illustrates in the following figure, to which we think the concept of context should be added:

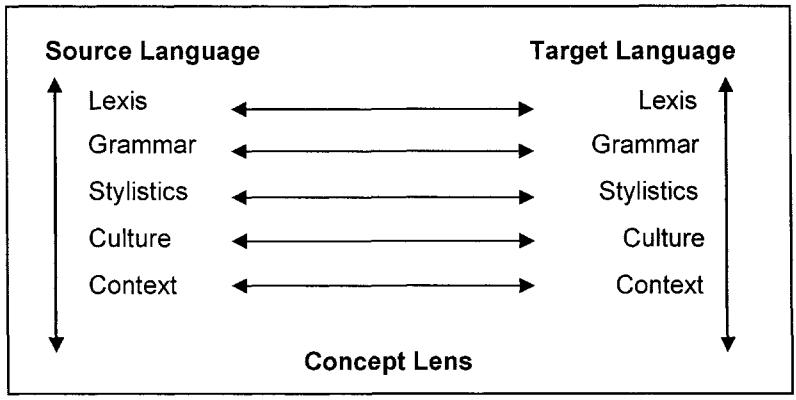


Figure 1. The Concept Lens (adapted from Darwish, 1989).

Through this illustration, Darwish (1989) seeks to emphasize that translation often takes a bidirectional travel, even when translation occurs in only one direction in a rather cumulative process in which a constant action-reflex movement takes place.

Bergenholtz & Tarp (1995: 60) speak of culture-dependent specialized dictionaries when "historically and culturally the dictionary has developed its own specific features within delimited geographical areas." Such would be the case, they add, of a Spanish-Danish law dictionary, since the Spanish law is based on Roman Law, while Danish law is rooted in German Law. Dictionaries of science and technology, particularly computing dictionaries, present different problems. Modern communications, for one thing, have made this sort of bilingual dictionaries culture-independent. As Bergenholtz & Tarp (1995: 70) contend, these dictionaries "comprise an extremely broad spectrum of subject fields and topics with widely differing user requirements for linguistic and encyclopedic information. The only common denominator in this host of possibilities is that the subject fields involved are invariably independent of culture."

Translators have indeed a difficult task to perform. They are faced with the problem of coming to grips with these often "untranslatable" words and expressions. It is not just a question of culture, or of placing function in the context of situation, in Malinowski's thinking, but it is also the fact that translators need fully active dictionaries to do their job. This chapter aims at unveiling and analyzing this issue especially related to problems with computer terminology and the development of specialized dictionaries. In it we will present the dichotomy between active and passive dictionaries as well as the relevance of grammar in bilingual dictionaries of LSP.

2. NEED FOR SPECIALIZED DICTIONARIES

There are only a few bilingual Spanish-English/English-Spanish dictionaries in computing and information technology, namely those published by McGraw-Hill, Oxford, Olivetti, Prentice-Hall, etc. as well as several online websites where similar dictionaries and glossaries can be found; examples of these web resources are Fernández Calvo's computer glossary[1], Ramsay & Lozano-Hemmer's (1998) "Comparative CyberLexicon," Anaya's *Glosario de términos informaticos Inglés-Español* and glossaries about common mistakes in translation and language use such as Ángel Álvarez's (2000) "Basic Computer Spanglish Pitfalls." In addition, numerous chats and newsgroups have been established in which terminology is being discussed on a regular basis. In other specialties, many dictionaries have appeared, such as the series of dictionaries on law, business and economics, tourism, etc. published by translators at the Universitat d'Alacant, under the direction of Alcaraz (1993, 1996, 1999, and 2000).

The bilingual computing dictionaries published until today, however, present several drawbacks, namely few and often irrelevant entries, lack of grammatical information, and an undeveloped Spanish-English section. The combination of limitations flaws these dictionaries from the outset, especially because they are tools of little use to either computer professionals or translators. Table 1 unfolds some of the existing bilingual dictionaries in the area of computer science and their current limitations.

Table 1. Dictionaries available in Computer Science: Comparison.

	On-line glossaries	Printed glossaries	Oxford, 1983	McGraw-Hill, 1992	Paraninfo, 1995	Prentice-Hall, 1999	Ariel, 2001	Collin et al., 2004
Approx. no. of entries	<1,000	<1,000	±4,000	±4,000	±2,500	±4,000	±6,200	±35,000
Technical information	[*]	[*]	√	√	[*]	√	√	√
Grammatical information					√			√
Collocations					√		√	√
Examples					√			√
Internet terminology	[*]	[*]				√	√	√
Quotations					√			√
Fully-developed Spanish section					√			√

[*] sometimes included

In our understanding, we feel there is a notorious "black hole" in specialized lexicography, particularly when it comes to resources for computer terminology users in general, students, teachers, translators, and IT professionals as well in relation to English-Spanish correspondences. This in turn has created a pseudo-technical *Spanglish*. This gap is all the more surprising when one considers that "the emphasis given to concepts such as that of the 'active' dictionary has made clear the basic importance of grammatical information for correct text production in the foreign language, for creative writing, and above all for translation into the L2" (Salerno, 1999: 209). Among these published dictionaries to date, Aguado's (Paraninfo, 1995) commented dictionary is an outstanding effort at showing, particularly from an etymological and pragmatic point of view, the word formation process of different computer science words. Many computer science terms are indeed waiting to be awarded lexical entity, as has been pointed out by Emilio Lorenzo in the prologue to Aguado's work.

3. PASSIVE VS. ACTIVE BILINGUAL DICTIONARIES

The concept of passive vs. active dictionary comes from the initial studies by Shcherba (1940), author of the first scientific typology of dictionaries. More recently, the issue has been taken up by Kromann et al. (1984), Marello (1989), Gak (1992), and Béjoint & Thoiron (1996), who also draw this distinction, which may be defined as follows: the 'passive' bilingual dictionary is designed to assist translation from a less to a more familiar language, while the 'active' bilingual dictionary is intended to support translation in the opposite direction. As Gak (1992: 335) explains, an active dictionary should be more than a simple dictionary, "il doit être une sorte d'encyclopédie de la lange dans laquelle on traduit."

According to Fuertes-Olivera & Velasco-Sacristán (2001: 37), in their evaluation of bilingual dictionaries of economics, "The construction of an active (Spanish-English) dictionary has to be based on the 'translation principle'. This means primarily two things: giving a real translation and taking into consideration phraseology and meaning in context." They further add that specialized bilingual dictionaries have systematically failed to touch upon these two approaches, thus offering inadequate information to their users.

In a nutshell, it can be said that the tendency nowadays should be to move from passive to active dictionaries, particularly for today's demands in a modern society. The encoding function of the active dictionary, mentioned by Salerno (1999), is what really makes a bilingual dictionary an

indispensable tool particularly for translators. Figure 2 shows the comparison between both types of dictionaries.

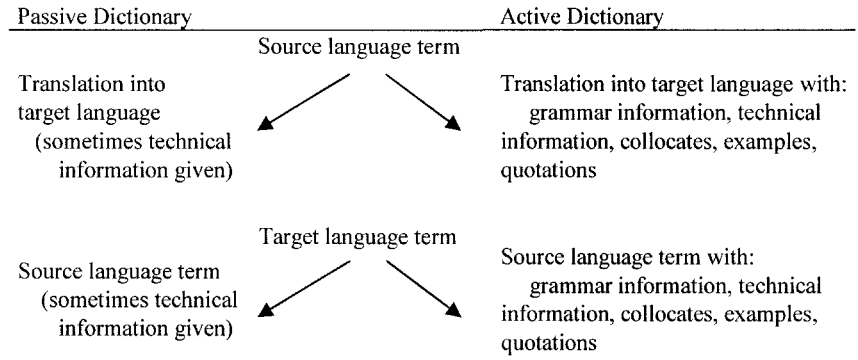


Figure 2. Passive versus active dictionaries in specialized contexts.

4. GRAMMATICAL INFORMATION IN DICTIONARIES

The inclusion of grammatical information, therefore, is an essential part of a truly active dictionary. In recent years, the issue of grammatical information in dictionaries has been the focus of growing interest among lexicographers and linguists. Although this has been implemented in some monolingual dictionaries, bilingual metalinguistic activity has lagged far behind, doing no more than touch the surface of the topic. This grammatical information is particularly important not only in traditional advanced learner's dictionaries, as mentioned by Leitner (1993), but also in bilingual dictionaries, and it is particularly useful for translation into L2. This therefore means that the dictionary we propose should contain, at least, information on word categories, gender, word compounds/clusters, collocates, including contextual information with full sentences (syntax information) and including technical (encyclopedic) information when necessary for clarity.

In this respect, Kromann et al. (1991: 2722-2723) insist on the need to have the necessary grammatical information not only on the part of the translators, but also in the tools used by them. They write, "Much grammatical knowledge is necessary for translation. In recent years it has also been shown that the need for grammatical information in dictionaries, including bilingual dictionaries, is greater than one might immediately assume."

This awareness in regard to the grammatical need, however, is not necessarily complemented with the existence of good bilingual dictionaries in which grammar is fully incorporated, particularly in the different LSP areas. We should, first of all, arrive at a consensus as to what grammatical items should be included in a dictionary, since not all the authors interpret in the same manner what is understood by 'grammar in the dictionary', as pointed out by Mugdan (1989). Jackson (1985: 54) summarizes the grammatical items that should be present in a dictionary as follows:

a inflection that a lexical item might have;
b word-class label, e.g. noun, preposition, verb, etc.;
c syntactic information, particularly in terms of the transitivity or intrasitivity of verbs; and
d syntactic information by means of illustrative examples.

Mugdan (1989), while expressing concern over the fact that little importance is given to grammar in most LSP dictionaries, takes up this description and refines it by introducing a two-fold classification according to both content and form, where content and elements like word class, inflection and syntax are given special consideration. This concern for grammar in the bilingual dictionary has also been expressed in terms of presenting the above-mentioned dichotomy as active versus passive dictionaries.

5. THE ROLE OF CONTEXT

This concern for grammar, however, should not deter us from the close study of a given word in context. As pointed out earlier, culture, situation and function have much to say in the outcome of translation. The importance we have placed on collocates by including many of them in our dictionary, along with numerous examples, is simply a reflection of a concern that comes from experience. Obviously, syntax should be our main guide in order to avoid making simple errors in the ordering of words, but also to combine them in such a way that we do not incur in solecisms, a term which can be interpreted as combining words improperly or, to put it another way, as establishing erroneous collocates. Latin and Greek philosophers had already placed a keen eye on their relevance. Hyman (2002: 5), speaking about the difference between a barbarism and a solecism, brings to mind a quotation from St. Augustine (*De Doctrina Christiana* 2.13.9) in which this Christian father says that "What is called a solecism is simply what results when

words are not combined according to the rules by which our predecessors, who spoke with some authority, combined them."

There is a wide range of users, such as non-linguist technicians, engineers, students in engineering and computing, as well as translators, whose main objective is not to obtain perfect definitions or *indefinables*, as cognitivists would suggest, but to obtain equivalents in their language of the terms they do not understand—equivalents or near-equivalents easy to recognize and use in their mother tongue. It is true that in providing these near-equivalents, however, lexicographers may simplify reality to generate definitions and to select terms in the target language which may not fully recall all the shades of meaning of the original source language term. Here the pragmatic relevance of context may help the lexicographer to, up to a certain extent, diminish the negative effect of not providing completely accurate semantic equivalents. The importance of context, supported by pragmatic linguists (Alcaraz, 1990) in the description of language and, by extension, for language teaching, had already been underscored by Malinowski for the specific task of translating in his introduction to volume two under what he calls "The Translation of Untranslatable Words,"

> Words do not live in a sort of super-dictionary, nor in the ethnographer's notebook. They are used in free speech, they are linked into utterances and these utterances are linked up with the other human activities and the social and material environment. The whole manner which I have adopted for the presentation of my linguistic and ethnographic material brings the concept of context to the fore. Not only have I tried in the definition of technical terms to show how these terms form groups of kindred entities, not only have I tried, by placing the linguistic account against an outline of real activities, to give them life and body; but the division of the linguistic material under headings which closely correspond to the chapters of the descriptive account keeps every word, every phrase and every text within its proper context of culture. (Malinowski, 1935: 22)

6. GENERALIZATION VS. SPECIALIZATION

Perea (1998), in an article entitled "De re lexicogràfica" on recent publication of Catalan dictionaries, points to the fact that from a few years back the lexicographical task has experienced an important advance, particularly in terms of two complementary tendencies: generalization and specialization. It seems true, however, that in human knowledge these two tendencies "són contràries i inabastables" (1998: 96); in other words, they

become contrary and unreachable, since the will to acquire exhaustive general knowledge somehow impedes specialization and favors superficiality. This limitation, however, has been, to a certain extent, overcome through lexicographical studies and, particularly, through the development of dictionaries based on different typologies.

Dictionaries may respond to different purposes. There are general dictionaries, on the one hand—typically monolingual and for the purpose of language learning—basically polysemic with information on orthography, on the meaning of words and aiming at offering linguistic correction in language use; and we may find specialized dictionaries basically monosemic, on the other. The question arises, however, whether this dichotomy can be established so clearly. However, the publication of recent specialized dictionaries is making this division less clear, causing a shift in the traditionally held opinion that a specialized dictionary should simply be a list of words which would offer no grammatical problems, since these were solved by the typical general or learners' dictionaries.

Today's bilingual dictionaries tend to offer more diversified and complete entries in an attempt to provide their users not only with as much general information as possible, but particularly with specific and grammatical information which may help users solve their translation problems. Alcaraz & Hughes' (1996) is a good example of this new trend in specialized bilingual dictionaries, as has been pointed out by Fuertes-Olivera & Velasco-Sacristán (2001). The basic realization and point of departure of lexicographers in the development of specialized bilingual dictionaries is summarized by Bergenholtz & Tarp (1995: 115): "General-language grammar is applicable to any LSP variety, perhaps with the qualification that certain grammatical phenomena occur with a comparatively higher or lower frequency." Among these phenomena we could point out, for instance, the sparing use of articles and also the higher percentage of use of passive verbal structures in scientific and technical English.

7. THE MECHANICS OF DEVELOPING A NEW BILINGUAL COMPUTING DICTIONARY

One of the many problems involved in the development of a dictionary in any technological area is how to adequately deal with the creation of new words which are often the result of newly created materials and functions related to those materials. The emergence of new technical fields, particularly computer science, in the sixties, seventies and especially the eighties, and the introduction of the Internet in the nineties has produced what Rodríguez González (1999: 105) called an "anglicized jargon." This

fact can be detected in a much higher percentage on the Internet itself, as suggested by Blanco (1997).

The problem of borrowings in computer science in languages other than English has become a crucial one. The obstacles and difficulties we have just mentioned above in regard to grammar and context seem to become diluted and gradually diminished when compared to borrowings. The effort of dealing with this issue has produced more than one long discussion within our translation team. There is no end in sight to the trend of admitting neologisms in information technology; they increase as computer science evolves and develops. However, the integration of newly created words into English is not equally corresponded by their acceptance in other languages; their inclusion in Spanish dictionaries, therefore, does not fully comply with this need and demand.

7.1 Criteria used in word selection

In order to accomplish the task of generating our bilingual dictionary (English-Spanish/Spanish-English), a group of four editors was established from two Spanish universities (Universitat de València and Universitat Jaume I), a British university (University of Surrey-Roehampton) and S. M. H. Collin (Peter Collin Publishing [PCP]). Word selection was based, following Alcaraz & Hughes (1999: X-XI), on the criteria of relevance, clarity and economy. By relevance we refer to the selection of terms in the specific field—Computing and the Internet in our case—along with more general words and collocates that, although not discipline-specific, are frequently used in these contexts. By clarity we address the meaning of words illustrating how they may be used in collocates, phrases, examples in complete sentences, including technical explanations and quotations from books and specialized publications when necessary. Finally, by economy we refer to a certain limitation in terms of words currently in wide use or not.

7.2 Corpus description and management

The initial corpus emerged from the set of PCP monolingual dictionaries on Information Technology, Computing and the Internet (Collin, 1996, 1997, 1998, 2000). To these corpora new entries related to IT and the Internet were added, along with extra material particularly for the Spanish-English section of the dictionary. In a first group of materials, we consulted recent publications in Spanish by authors such as Cebrián (2000), Castells (2001), Millán (2001), and Yus (2001), among others. In addition, different issues of *Ciberp@ís, PC Plus* and other popular publications were consulted for further examples. In a second group, texts were used from popular

translations of original English works, such as Hamacher et al. (1984) and Tanenbaum (1989), with the idea of ascertaining which neologisms were being used in their corresponding translations.

This compilation resulted in the following sub-corpora:
(a) a corpus of English technical IT texts from PCP dictionary terms and their corresponding definitions of 227,518 words;
(b) a complementary corpus from online glossaries (51,531 words);
(c) a complementary corpus of specialized English texts of 691,759 words;
(d) a corpus of specialized IT texts in Spanish of 68,969 words for the Spanish-English section; and
(e) a corpus of parallel texts English-Spanish of 85,991 words.
The sum of these sub-corpora makes a total of 1,125,768 words.

All these corpora were digitally managed using Microsoft Word, Explorer (for online material), and Scott's (1999) *WordSmith Tools*. This software was applied to organize the material and to extract the key terms in each of the sub-corpora described above. Finally, software specifically designed at Peter Collin was used in the translation process of the terms selected for the dictionary.

7.3 The translation process

Once this material had been established as our working corpora, each head letter in the dictionary underwent a systematic process of translation, updating of new entries, addition of examples and quotations, correction, galley editing and final revision. To be specific, each head letter was first translated in Spain (at the Universitat de València and Universitat Jaume I) using as a starting point the PCP dictionaries mentioned above. In the translation process, new entries, collocations, examples, and quotations were added, and each head letter would then follow a process of revision by other members of the team. Once revised, the translated bilingual version of the head letter was sent to the University of Surrey-Roehampton where it was again revised. All this process was carried out on encoded versions of the head letters which were returned in printed form for final revision. The final revision was then returned to the central office in London where it was stored as a final version for publication. The same process took place with each head letter until the English-Spanish section was complete.

Once this section was completed, a reversed draft Spanish-English version was automatically produced at PCP headquarters and then edited at the University of Surrey-Roehampton. This initial Spanish-English version of each head letter was emailed to Spain where it was fully revised and

complemented with new entries, examples, explanations and updated additions and quotations from the additional corpora accounted for above. This new complete, still encoded, Spanish-English version was then returned to PCP to obtain the print-out copy for final revision at the three universities. The same process was repeated for each head letter in this second section.

7.4 Translated entries

A few examples of entries will suffice to exemplify both issues: grammatical information, on the one hand, along with examples and collocates, and suggested integration of new words in the specialty, on the other. In the first place, Figure 3 shows an entry (from the English-Spanish section of the dictionary) in which the basic components in regard to grammatical information, collocates and examples can be clearly established, following the description of dictionary components provided by Bergenholtz & Tarp (1995: 176-181).

Description	Dictionary information
headword	database
grammatical category	noun
translation	base
gender	f
translation	de datos
collocation & acronym	database administrator (DBA) =
translation	administrador
gender	m
translation	de base de datos
technical information	(program that acts as interface)
collocation	database mapping =
translation	topología
gender	f
alternative translation	* configuración
gender	f
translation	de una base de datos
collocation	on-line database =
translation	base de datos en línea
quotation	This information could include hypertext references to information held within a computer database, or spreadsheet formulae.
source	Computing

Figure 3. Abbreviated example of the encoded entry 'database' in the English-Spanish section.

Although not necessarily in every entry, the following items were considered for inclusion throughout the translation process of the dictionary:

(a) head word; (b) part of speech; (c) gender (m/f); (d) translation; (e) semantic field; (f) collocations and acronyms; (g) examples; (h) quotations; (i) technical commentary; (j) notes; and (k) comments.

This encoded version would include most of these items: the code description appears on the left column,[2] while on the right column, the text as it should appear in the print-out version once the editorial work was concluded. This encoded version was then converted into print-out easy-to-read format in the final editing process, as shown in Figure 4. Notice that the inserted quotation from *Computing* appears clearly marked in the print-out version:

database *noun* base *f* de datos; **database administrator (DBA)** = administrador *m* de base de datos (*program that acts as interface*) **database mapping** = topología *f or* configuración *f* de una base de datos; **on-line database** = base de datos en línea

This information could include hypertext references to information held within a computer database, or spreadsheet formulae.

Computing

Figure 4. Printed version of the 'database' entry.

Figure 3 shows a typical example in which several of the items listed have been included, namely (a), (b), (c), (d), (f), and (h). In Figure 5 below (from the Spanish-English section), in addition to some of these items, a technical commentary (i) is also added:

Description	Dictionary information
headword	bomba
grammatical category & gender	nf
translation	bomb
technical information	(error de programación)
collocation	bomba lógica =
translation	logic bomb
example	el programador de sistemas instaló una bomba lógica cuando le despidieron =
translation	the system programmer installed a logic bomb when they made him redundant
comment	COMENTARIO: La bomba es un error de un programa que al activarse puede provocar la destrucción de datos.
quotation	Mandar una bomba es enviar a una dirección del correo electrónico una cantidad tal de datos que se colapsa el sistema del receptor.
source	Computer Hoy

Figure 5. Encoded version of the entry 'bomba' in the Spanish-English section.

In this case, both the commentary and the quotation could be interpreted as fulfilling the same function, i.e. by including technical information, our aim was to provide not only a substantial explanation as to the meaning of 'bomb' in computer science (a simple definition as it appears in any computer manual or technical dictionary), but also to show through a popular journal, such as *Computer Hoy*, some of its effects and illustrate the use of the term. Thus, the items in this entry are similar to those offered in the previous example, with the quotation set off by a solid line before and after, while the "Comentario" is framed on four sides in a rectangle.

bomba *nf* bomb; (error de programación) **bomba lógica** = logic bomb; **el programador de sistemas instaló una bomba lógica cuando le despidieron** = the system programmer installed a logic bomb when they made him redundant

COMENTARIO: La bomba es un error de un programa que al activarse puede provocar la destrucción de los datos.

Mandar una bomba es enviar a una dirección del correo electrónico una cantidad tal de datos que se colapsa el sistema del receptor.

Computer Hoy

Figure 6. Printed version of the 'bomba' entry.

8. CONCLUSION

Lexicology is subjected to continuous growth, just as a dictionary should be. Language in general keeps accepting new terms at the same rate as society and technology advance. Computer science is a paradigmatic example of this trend, since it has become one of the fastest-changing disciplines. This necessarily affects the introduction of new terms, first in English as the undeniable *lingua franca* in the world of technology, then in the translator's target language, and also in our everyday language.

A dictionary, therefore, is bound to collect words that had no meaning to our grandparents, such as *chip*, *software* and *hardware*. In a recent paper, Posteguillo & Gallench (1999) classified terms into three categories: integrated borrowings (i.e. terms that have been included in the *Diccionario de la Lengua Española* [DRAE, 1992]), such as *bit*, *escáner*, *interfaz* or *robot*; non-integrated borrowings (i.e. terms which appeared in more than five of the articles analyzed or terms included in *Nuevo diccionario de anglicismos* by Rodríguez & Lillo, 1997) such as *bitmap*, *bookmark*, *e-mail*, or *chat*; and code-switches, i.e. terms that appeared in less than five of the 17 articles analyzed and were not found in either of the two dictionaries mentioned, but which are used by both computer professionals and computer

users. Therefore, it is not surprising to see recommendations being made, in the case of Spanish professionals, to the *Real Academia de la Lengua* for a reconsideration of terms that either have not been included or whose definition requires modification (Camaño Puig & Piqué, 1999). In fact, the new DRAE (2001) version has already incorporated many English-origin computer terms that had not been accepted in the previous edition (DRAE, 1992).

To conclude, the problem is not only the enormous speed at which new terms are incorporated into English, but also the careless introduction of a large number of disguised English terms into Spanish by computer engineers and researchers. This generates a constantly widening gap between computer science texts and computer users who will have to struggle through often incomprehensible Spanish texts in which the so-called *Spanglish* has filtered in (or *Cyberspanglish*, derived from Internet language use). If we finally encounter words that could somehow be classified as 'undefinable'—to use Newmark's (1988) terminology—we will finally have to accept that the world is changing and that not all languages have the same level of flexibility. Perhaps it is time we made our own language a bit more flexible. It is indeed inevitable that words such as 'página web' for *web page* will sneak into our daily conversation and gradually be accepted in publications (as, for instance, in the 22nd edition of the DRAE, 2001), but we should not incorporate *link* or *firewall program* when in Spanish we can use 'enlace' and 'programa cortafuegos' which are easily understood by computer professionals.

NOTES

[1] Until recently, R. Fernández Calvo's *Glosario* (2000) could be accessed online; it seems, however, that the website has been closed. Part of Fernández Calvo's work can be found in the *Glosario de términos informáticos inglés-español*, which can also be accessed on the Internet (http://www.geocities.com/Athens/2693/glosario.html [09/02/05]).

[2] The publisher has its own coding system; it is not reproduced here in full to safeguard its copyright.

REFERENCES

Alcaraz, E. (1990). *Tres paradigmas de la investigación lingüística.* Alcoy: Marfil.

Alcaraz, E. and B. Hughes (1993). *Diccionario de términos jurídicos. Inglés-Español, Spanish-English.* Barcelona: Ariel.

Alcaraz, E. and B. Hughes (1996). *Diccionario de términos económicos, financieros y comerciales. Inglés-Español, Spanish-English.* Barcelona: Ariel.

Alcaraz, E. and B. Hughes (1999). *Diccionario de términos de marketing, publicidad y medios de comunicación, Inglés-Español, Spanish-English.* Barcelona: Ariel.

Alcaraz, E., B. Hughes, V.M. Pina and M.A. Campos (2000). *Diccionario del turismo, la restauración y el ocio.* Barcelona: Ariel.

Álvarez, A. (2000). Basic computer Spanglish pitfalls. Available at <http://maja.dit.upm.es/~aalvarez/pitfalls/index> [3/03/2003].

Anaya. *Glosario de términos informáticos inglés-español.* Available at <http://www.geocities.com/Athens/2693/glosario.html> [10/03/2003].

Ariel (2001). *Diccionario de informática y telecomunicaciones inglés-español*, by Arturo Moreno Martín. Barcelona: Ariel.

Béjoint, H. and P. Thoiron (eds.) (1996). *Les dictionnaires bilingues. Louvain-la-Neuve*: Duculot. Universités Francophones.

Bergenholtz, H. and S. Tarp (eds.) (1995). *Manual of Specialised Lexicography. The Preparations of Specialised Dictionaries.* Amsterdam & Philadelphia: John Benjamins.

Blanco, G. (1997). El anglicismo en Internet. Available at <http://platea.pntic.mec.es/~gblanco/anglicismo/> UNED, Departamento de Filología [5/09/2002].

Camaño Puig, R. and J. Piqué (1999). Concepto de Enfermería: Un análisis semántico. *Rol* 22, 539-543.

Castells, M. (2001). *La galaxia Internet.* Barcelona: Plaza & Janés.

Cebrián, J.L. (2000). *La red: cómo cambiarán nuestras vidas los nuevos medios de comunicación.* Madrid: Taurus.

Collin, S.M.H. (1996). *Dictionary of Information Technology.* 2nd ed. Teddington: Peter Collin Publishing.

Collin, S.M.H. (1997). *Dictionary of Multimedia.* 2nd ed. Teddington: Peter Collin Publishing.

Collin, S.M.H. (1998). *Dictionary of Computing.* 3rd ed. Teddington: Peter Collin Publishing.

Collin, S.M.H. (2000). *Dictionary of Personal Computing and the Internet.* 3rd ed. Teddington: Peter Collin Publishing.

Collin, S.M.H., J. Piqué, S. Posteguillo and L. Melcion (2004) *Diccionario bilingüe de Informática ingles-español español-inglés. Spanish Computing Dictionary English-Spanish Spanish-English.* London: Bloomsbury.

Darwish, A. (1989). The translation process: A view of the mind. Available at <http://www.surf.net.au/writescope/translation/mindview.html> [18/01/2003].

Drae (1992). *Diccionario de la Lengua Española.* 21st ed. Madrid: Real Academia Española, and 22nd ed., 2001. Available at <http://www.rae.es>.

Fernández Calvo, R. (2000). *Glosario básico inglés-español para usuarios de Internet.* New ed. Available at <http://www.at.es/novatica/glosario/glosario_internet> [25/01/2001].

Fuertes-Olivera, P.A. and M. Velasco-Sacristán (2001). A critical comparison of the macrostructure and microstructure of two bilingual English-Spanish dictionaries of Economics. *International Journal of Lexicography*, 14 (1), 31-55.

Gak, V.G. (1992). De la langue système à la réalisation discursive dans un dictionnaire bilingue 'de type actif'. In H. Tommola et al. (eds.) *Euralex '92 Proceedings.* Tampere: Tampereen Yliopisto, II. 329-335.

Hamacher, V.C., Z.G. Vranesic and S.G. Zaky (1984). *Computer Organization.* 2nd ed. New York: McGraw-Hill (Spanish version, *Organización de computadoras*, translated by M.L. Fournier).

Hyman, M.D. (2002). Bad grammar in context. Available at <http://archimedes.fas.harvard.edu/mdh/bad-grammar.pdf> [6/09/2002].

Jackson, H. (1985). Grammar in the dictionary. In R. Ilson (ed.) *Dictionaries, Lexicography and Language Learning.* Oxford: Pergamon Press. 53-59.

Kromann, H.-P., T. Riiber, and P. Rosbach (1984). 'Active' and 'Passive' bilingual dictionaries: The Scerba concept revisited. In R.R.K. Hartmann (ed.) *LEXeter '83 Proceedings.* Tübingen: Max Niemeyer Verlag. 207-215.

Kromann, H.-P., T. Riiber and P. Rosback (1991). Principles of bilingual lexicography. In F. J. Hausmann et al. (eds.) (1989-1991) *Wörterbücher. Dictionaries. Dictionnaires. Ein internationales Handbuch zur Lexikographie. International Encyclopedia of Lexicography. Encyclopédie Internationale de Lexicographie.* Berlin and New York: De Gruyter, vol. III. 2711-2728.

Leitner, G. (1993). Where to *begin* or *start*?: Aspectual verbs in dictionaries. In M. Hoey (ed.) *Data, Description, Discourse. Papers on the English Language in Honour of John McH Sinclair.* London: HarperCollins. 50-63.

Malinowski, B. (1935). *Coral Gardens and their Magic: A Study of the Methods of Tilling the Soil and of Agricultural Rites in the Trobriand Islands.* London: George Allen and Unwin (recent facs. ed., 1991).

Marello, C. (1989). *Dizionari bilingui, con schede sui dizionari italiani per francese, inglese, spagnolo, tedesco.* Bologna: Zanichelli.

McGraw-Hill (1993). *Diccionario de Computación. Inglés-español/español-Inglés* by A. Freedman. Madrid: McGraw-Hill.

Millán, J.A. (2001). *Internet y el español.* Madrid: Fundación Retevisión.

Mugdan, J. (1989). Grammar in dictionaries of languages for special purposes (LSP). *Hermes* 3, 125-142.

Newmark, P. (1988). *A Textbook of Translation.* New York: Prentice Hall.

Oxford (1983) *Diccionario Oxford de informática. Inglés-español/español-inglés.* Madrid: Ediciones Díaz de Santos.

Paraninfo (1995). *Diccionario comentado de terminología informática* by G. Aguado de Cea. Madrid: Paraninfo.

Perea, M.P. (1998). De re lexicogràfica. *Els Marges* 60, 96-120.

Posteguillo, S. and L. Gallench (1999). English code-switches and borrowings in specialized computer discourse. *Actas del XVII Congreso de la Asociación Española de Lingüística Aplicada.* Alcalá de Henares: Universidad de Alcalá de Henares.

Prentice-Hall (1999). *Diccionario de términos de computación* by B. Pfaffenberger. México: Prentice-Hall.

Ramsay, S. and R. Lozano-Hemmer (1998). Comparative CyberLexicon/Ciber-Léxico comparativo. Available at <http://www.telefonica.es/fat/elex.html> [10/05/2001].

Rodríguez, F. (1999). Anglicisms in contemporary Spanish. An overview. *Atlantis* 21, 103-139.

Rodríguez, F. and A. Lillo (1997). *Nuevo diccionario de anglicismos.* Madrid: Gredos.

Salerno, L. (1999). Grammatical information in the bilingual dictionary. A study of five Italian-French dictionaries. *International Journal of Lexicography* 12, 209-222.

Scott, M. (1999). *WordSmith Tools 4.* Oxford: Oxford University Press.

Shcherba, L.V. (1940). Opyt obshchei teorii leksikografii. *Izvestiia Akademii Nauk SSSR,* Otdelenie literatury i iazyka 3, 89-117. (Translated by D. Farina [1995] as Towards a General Theory of Lexicography. *International Journal of Lexicography* 8, 314-350).

Tanenbaum, A.S. (1989). *Operating Systems: Design and Implementation.* Englewood Cliffs, NJ: Prentice-Hall International (Spanish version, *Sistemas operativos: Diseño e implementación,* translated by F. Gómez Molinero).

Yus, F. (2001). *Ciberpragmática: El uso del lenguaje en Internet.* Barcelona: Ariel.

Chapter 14

THE IMPORTANCE OF KEY WORDS FOR LSP

Mike Scott
University of Liverpool (Liverpool, UK)

1. INTRODUCTION

This chapter starts by presenting and discussing the notion "key word", which will lead us down a number of roads, visiting sites concerned with language versus text, context, and the relationships between key words. At the outset I should apologise for the number of references to my own work in the list of references – the procedure I am describing grew out of a possibility I spotted serendipitously some time in the mid 1990s; a number of authors have subsequently taken it up, but the list of publications in the field is still quite small.

The term "keyword" is used in Information Retrieval (handling databases of text) and is also used by Raymond Williams (1976) to refer to words which are important to a given culture. Many of the notions I describe here also apply to these other uses of the term. However, for reasons of space, it will be necessary to concentrate here on one account of KWs, my own.

The second part of the chapter concerns the applicability of the notion for the LSP classroom, arguing that LSP students need to keep an explicit focus on key words, both in developing comprehension and writing skills. At the same time, there is a language awareness component, for it is only through student awareness of keyness that appropriate models of coping can be developed.

2. THE NOTION OF KEYNESS

For this chapter, it will be convenient to use the term "keyness", derived from "key". Key words (KWs), as we shall see, have a quality of keyness which others do not have, just as prime numbers have qualities not shared by other numbers. But there is a difference. 17 is always a prime number, since it can only be divided by itself and by 1 without remainder, whereas there is no table of KWs to be found in reference books. When *elephant* or *grateful* or *almost* is a KW, it is a KW in a given text. The rest of the time, such items are not key: in the text you are reading now, all three words occur – indeed they occur several times – but they are not key.

This notion, keyness, then, presupposes an interest in text and textuality as opposed to a desire to pin down the forms and structures of a given language. That is, a "key" item of some sort (a key word, a key person, a key position) is "key" and therefore has "keyness" because of some quality it has in the specific context in which it is found. Words by themselves, all alone and unaccompanied, outside any communicative context, words such as *elephant* or *grateful* or *almost,* have some meaning, which can be imperfectly traced via a dictionary, but they can only become key when found in a given text or other communicative event. For them to have keyness suggests that they somehow stand head and shoulders above the other words in that context. They have become prominent, they stand out, like the lumps of ice which happen to be above the water-line in an iceberg.

Speakers of many languages seem to employ the same metaphor, presumably derived from the power a key has to grant access, and speakers of these languages have a rough-and-ready idea of what they mean by claiming that Fulano is a key player or Beltrano holds a key position in such-and-such a company. All the same, there is a mystery about keyness, in that although we all know roughly what we mean by it, nobody knows very precisely.

The purpose of this chapter is therefore to discuss the notion of keyness, to identify problems in relation to this notion, and to consider applications of the notion for Languages for Specific Purposes. For teachers of LSP, the notion of textuality is central. The language teacher is naturally interested in descriptions of the language s/he teaches, but is also centrally concerned with texts and language events, whereas many linguists have focussed exclusively on the language (Scott, 2000a). In LSP, students need to grasp the point of a text, and to manage for example a service encounter successfully. In the last analysis, once they have graduated and are using the skills we have taught, they wish to manage communicative events and to read or write successful texts. Learning to deal with the complexities of the "language" needed for it is only a part of the learning process.

2.1 Aspects of keyness

Keyness has two main underlying aspects, namely importance and aboutness. Importance underlies our use of phrases like "a key player", "a key position", and links up with the metaphors of the key-and-lock and of the keystone of an arch. A key player is somehow more important than an ordinary player, perhaps because s/he scores or saves more goals, so that it is more of a problem if that player is unable to play in a given match. But that same player, later in life, is no longer key. It is the same with KWs: they are important here-and-now, in this text, but in the next they may be quite ordinary.

Aboutness (Phillips, 1989), the second aspect, concerns itself with what a communicative event is about, in other words with content as opposed to form. All words have form, but not all words reveal what a text is about. Function words such as *the, of, as,* etc. tell us almost nothing of what a text is about, and lexical words such as *elephant* or *grateful* or *almost* may or may not. This can best be shown using a cline:

no aboutness *(the, of, as, etc.)*	minor aboutness	great aboutness

Figure 1. Cline of aboutness and KWs.

Suppose we take a well-known literary work as an example: in Romeo and Juliet, items such as *love* and *death*, *Capulet* and *Montague*, *dagger* and *friar* might well turn out to be KWs at the right hand extremity of the cline. The play is "about" love, these two families are engaged in a vendetta which causes a number of deaths, some caused by daggers and mostly attended by a friar. At the left, we might find *here* and *almost* and *the*. In one minor section of the play, Act III, scene 5, Juliet's father insisting she must be married on Thursday, tells her "fettle your fine joints 'gainst Thursday next, to go with Paris to Saint Peter's church". (In this context, "fettle your joints" means dress your body, dress up. By focussing on her body, Capulet is treating her as mere property.) *Thursday* is a detail, probably only important in that it suggests the imminent need for action. *Thursday* and *fettle* and *joints* are only of minor importance in the play as a whole; at a level of great detail, the play is "about" fettling one's joints but this is very local, not global.

A summary of a text will concern itself with items from the right-hand side of the cline of aboutness. Note also that the cline of aboutness is also a cline of importance as far as the text we are considering is concerned.

To make this clearer, let us take a concrete example. The following is a text where the KWs have been identified by the procedure used in *WordSmith Tools* (Scott, 1996-) and here shown by the use of italics.

> It's all been going horribly wrong with pianos. In Australia, a recital started two hours late because the *pianist* had accidentally dropped a pencil into his Steinway. Considerably more embarrassing were events in Germany, where a nude man got his *penis* stuck in a *piano*. The man in question was stripper Günther *Dorth*, 32, of Berlin, who had been hired to *surprise pianist* Maria *Schwelber* on her 45th *birthday*. "I was *hiding* in the *piano*", he explained, "face down and *naked*, and was supposed to burst out at a *pre-arranged signal* and present her with a bunch of flowers." The *pre-arranged signal* duly came, and Mr. *Dorth* endeavoured to clamber from his *hiding* place. Unfortunately, however, as he did so he found his *penis* had become *trapped* between two of the *piano* strings, rendering movement impossible. Rather than a *naked* man with *flowers*, therefore, Mrs *Schwelber* was instead treated to the sight of a violently oscillating Beckstein grand and a muffled cry of "please help me, my nob's *trapped*."
> "It was a lovely *surprise*," admitted the *birthday* girl, "although not, perhaps, the one that was intended." (Big Issue Sept, 1997)

The items in italics share co-keyness. That is, the set (*piano, penis, hiding, pre-arranged, signal, Schwelber, Dorth, flowers, trapped* and *birthday*) share, in this text, a quality which other words such as *strings, instead*, etc. do not. This quality reflects both importance and aboutness: the KWs are important to the story because they give us an indication of what it is about in a way that the other words do not.

If the argument to this point is accepted, it becomes possible to agree that some procedure or other may be used to identify the items at the right-hand side of our cline (KWs), and then to consider what the relationships may be between such KWs and other items in the middle of the cline. Thus, it is possible to distinguish the relationship holding between all the items at the right (co-keyness) from that between any given KW and those in the middle. Existing theory (e.g. of collocation, colligation, grammar) suggests that any KW will contract relations of various kinds with its neighbours, the proximity needed for a word to be a "neighbour" being somewhat subjectively assessed. That is, proximity could be a span of say three words, or it could be co-occurrence in the same sentence, or some other defined degree of proximity. Co-keyness has no such restriction. Words which are key in the same text are not necessarily neighbours. *Love, death, Capulet, Montague, dagger* and *friar* are co-key because they are all important to the play, regardless of where they may be found in the play and regardless of

whether they are neighbours. (In the same way, it is largely immaterial whether the key players in a given company or football team live near to each other or not.)

There is one further kind of relationship, which will be mentioned here even if it is not central to the rest of the chapter. This concerns the relationship between KWs in the same text and KWs in other texts. In the pianist text above, *piano* and *penis* are co-key, but if one took a large number of texts and identified all those where *piano* was a KW, then took all the sets of KWs from each text, one would not expect (or want) to find *penis* recurring. Instead, items like *play, pianist, concerto* would recur – as well as, coincidentally, *key*. Such a set is termed KW "associates".

Keyness is thus a rather unusual textual relation, binding together items like *piano* and *concerto*, as well as *piano* and *birthday*. Linguistics is already familiar with general language relations, such as

- synonymy (*big – large*)
- hyponymy (rose – flower)
- antonymy (*big – small*)
- meronymy (*hand – arm*)

Such lexical relations may be found explicitly marked in dictionaries or other reference works and discussed in standard treatments of meaning e.g. Cruse (2000). Text relations, on the other hand, are a) not found in reference books, b) context bound. They are akin to the instantial relations discussed by Hasan (1984) who, considering children's stories, shows that *Daddy* and *sailor* may be equivalent in a given text.

2.2 The problem of context

Mention has already been made of the terms "context" and "context bound": it is important to be clear about what context means. Figure 2 below shows that a good number of different levels of context can be recognised.

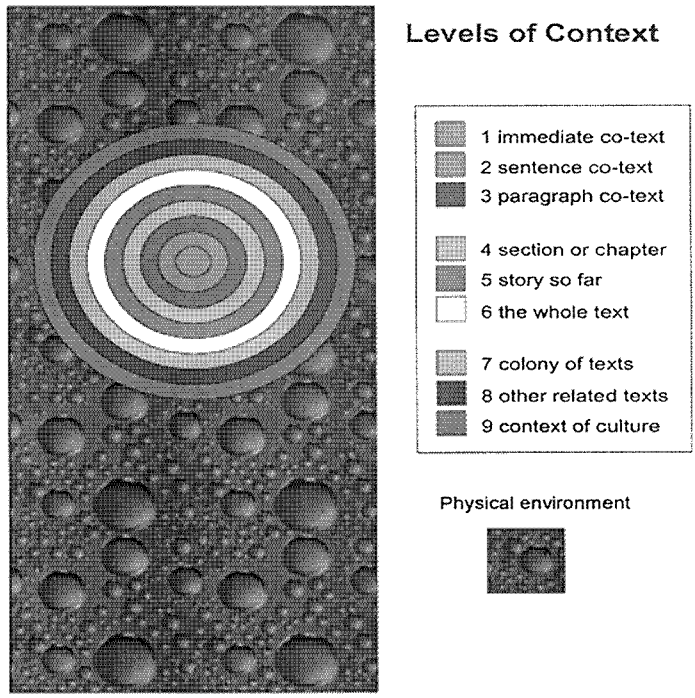


Figure 2. Levels of context.

At the centre, the context of a given word might be "immediate co-text", in other words, a few words on either side, the typical collocational span in computer processing of collocation. After that, the levels increase in size up to no. 6, the whole text, which is the level that KWs operate at. No. 7 refers to the "colony" (Hoey, 1986) of which a text may be a part, e.g. a newspaper story within its context of the newspaper. No. 8 refers to intertextuality: the links between texts common on the Internet and in references such as the ones to the writings of Hoey, Hasan, etc. given in this paper. No. 9 is the cultural context, whereby a word like "Romeo" is known by the reader to refer to the play by Shakespeare. Finally, there is the physical context in which the text is placed, as when one reads a book in the Metro, in a café, etc. All these levels of context can be important in assessing the meaning or use of a word or phrase and, as language teachers know, in remembering it.

2.3 Detecting keyness

No explanation has been supplied above about the procedure by which KWs are identified. The procedure in *WordSmith Tools* works by comparing

a wordlist for the text one is analysing, with a large "reference corpus wordlist", for example a wordlist based on the whole British National Corpus of 100 million words. When comparing, WordSmith took each word in the piano text – including *the*, *was* etc. – and matched its frequency in the two lists. In this case, the reference corpus was the whole of the Guardian newspaper from 1991-4. For example, the word *the* takes up about 6% of the words in a large wordlist and in the case of most texts like the piano text above also takes up about 6% of the running words. It is very frequent in both the piano text and in a large comparison corpus. Where the frequencies match, the item will not be considered key. Where the frequency stands out by a big difference, on the other hand, the item is a good candidate for selection as a KW. There is also a threshold of actual repetitions, in this case set at 2: no word can be considered key, even if it passes the first test above, unless it is repeated at least twice.

The whole process relies on comparison of simple verbatim repetitions; there is no attempt to determine that *piano* and *pianos* are in some way the "same" word. This procedure has been found (Scott, references cited below since 1997) to come up with fairly robust results.

Figure 3. KWs identified by WordSmith Tools.

N	WORD	FREQ.	S.TXT %	FREQ.	GUAR9194.LST %	KEYNESS	P
1	SCHWELBER	2	1.06	0		52.5	0.000000
2	DORTH	2	1.06	0		52.5	0.000000
3	PIANO	3	1.59	2,561	0.0027	32.3	0.000000
4	PENIS	2	1.06	691	0.0007	25.2	0.000001
5	PIANIST	2	1.06	1,112	0.0012	23.3	0.000001
6	HIDING	2	1.06	1,442	0.0015	22.2	0.000002
7	TRAPPED	2	1.06	1,879	0.0020	21.2	0.000004
8	NAKED	2	1.06	2,131	0.0022	20.7	0.000005
9	ARRANGED	2	1.06	2,252	0.0024	20.4	0.000006
10	SIGNAL	2	1.06	2,808	0.0030	19.6	0.000010
11	BIRTHDAY	2	1.06	2,902	0.0031	19.4	0.000010
12	FLOWERS	2	1.06	3,164	0.0033	19.1	0.000013
13	SURPRISE	2	1.06	6,171	0.0065	16.4	0.000051
14	MAN	3	1.59	55,705	0.0586	14.1	0.000177
15	PRE	2	1.06	11,523	0.0121	13.9	0.000188

Here, the frequency of each KW is shown in the % column. *Piano* occurs 3 times in the text, representing 1.59% of the running words in the text. In the reference corpus it occurs much more often (2,561 times) but that represents only 0.0027% of the running words. The computation, using the Log Likelihood statistic, throws up a keyness of 32.3, which is statistically significant with a very small p value indeed.

At the same time, computer analysis of KWs relies on word repetition, which leads it to detect not only aboutness but also style. For examples,

when a word like "shall" is found to be key as in Barbara & Scott's (1999) study of commercial tenders, this may indicate not so much aboutness as a recurrent feature of the text-type, especially where the text-type in question is so rare that no reference corpus will reflect its peculiarities adequately. A further limitation of computer-detected KWs, as opposed to ones human readers supply, is that proper nouns tend to be prominent in KW lists. This is because while items like *river* label whole classes or types of objects, proper nouns like *Rhine* label single individuals, a matter of type versus instance.

The alternative is human detection of KWs. Here, it is common to find that informants supply phrases as well as single words (e.g. *piano playing*), but there are other differences too. It is entirely possible for a human reader to come up with something which is non-verbatim, not being mentioned at all in the text, such as *embarrassment* or *plight*. Human informants do not typically cite proper nouns in a list of KWs, either. It is my belief that the two methods of detecting KWs complement each other, so that in LSP one may derive different benefits from each.

As we have seen, this new textual relation, keyness, is context-bound; we have also seen that context itself can mean at least ten different things. So, in analysing keyness it is important to determine which context level we are operating at, with level 6 presumably the default. Likewise, in the classroom, students and teacher need to be clear about whether they are working on text at the level of a single word, a sentence or a whole section in considering form and meaning.

3. PEDAGOGICAL ASPECTS

The rest of the chapter will contemplate the relationship between KWs and the LSP classroom. However, it must be stated at the outset that KWs do not necessarily have to be identified using software; often it may be better pedagogy to get students to identify their own KWs simply by reading and thinking and to defend their choices in group-work. It is more important to be aware of the importance of KWs and of the notion of keyness than to quibble about the KWs actually identified for a given text. The central claims are a) that LSP relies implicitly on the notion of keyness and b) that an explicit, language-aware handling of keyness can further student development.

In what follows, some activities will be referred to in order to illustrate these claims. There can be no claim, however, that these activities in themselves are "new", since many of our activities may be roses under another name, so to speak. The point is precisely in the naming of roses, that is in the language awareness which arises from such a focus on keyness.

Why is a focus on KWs of pedagogical importance? KWs are words which by definition are important to the text being read (or video being watched, etc.) and by focussing explicitly on KWs and explaining to students what they are and why they are worth focussing on, insights develop in the student too. It is vitally important for LSP students who may well otherwise tend to misuse the dictionary to realise that although all words are equal, like the animals in *Animal Farm*, some are more equal than others.

LSP is, by its very nature, a kind of study which is likely to attract those who are primarily interested not in the target language but in their own professional field and cognate areas. The LSP learner may not yet have thought much about how to learn a language, and may therefore proceed using certain default behaviours. For example, the common-sense default for tackling unknown vocabulary is to use a dictionary or ask someone; indeed, overuse of this default can even be seen in learners who are specialists in language. However, such a default reading or listening strategy is usually fatal to comprehension. The more one focuses on understanding individual words, it seems, the less one ends up understanding the text message. Li & Munby (1996) report on two students from China who, when first learning English, had "basically translated each word of the sentence into Chinese and wrote the Chinese words above or below the English sentence" (1996: 205), a process which seems common to many language learners in most countries but which makes comprehension extremely problematic. As an LSP student in Canada, one of Li and Munby's students, Shufen, developed, on her own, a notion of key words, corresponding well with that proposed here. In her own words,

> *Key words are those words, um... that important to understand and remember the meaning. For example, when I read the chapter about technology and policy making, I wrote down words like "innovation", "information", "society", "policy making", "impact". These words are not new, but key in my understanding. When I finish the chapter, I think about it [...] Nobody told me to use the key words. I just find that this help me.* (1996: 208)

Case & Gunstone (2002), in their investigation of 11 South African students learning Chemical Engineering, see metacognition operating on 3 levels. The most basic is information-based, where the student focuses on understanding some facts which might be useful for subsequent assessment; the next is algorithmic, where the student attempts to incorporate methods for solving relevant problems; and the top level is conceptual, "where the intention is to understand concepts" (2002: 465). Shufen, it seems, has reached the top level; the default common-sense approach she used as a beginner in China was clearly information-based.

3.1 Keyword activities in the LSP class

The remainder of the chapter considers some KW activities which the LSP teacher can use to encourage students to move towards Case & Gunstone's conceptual level. Nobody taught Shufen to use KWs; she ought not to have had to discover them by herself.

Before using any of these activities, I find it useful to raise awareness of the term "key word" by asking students whether or not the same metaphor, relating access to closed areas to importance, is also used in their L1 (it often is).

The first activity is for the teacher to supply the KWs without the text. The students predict and guess at the text. The rationale: this boosts confidence and reduces the tension of reading the text. It is a variant on the traditional (and very un-pedagogical) procedure where the teacher supplies a glossary prior to reading. There is some point to the list of KWs: they are selected as being useful, they are probably repeated numerous times in the text. After this, it makes sense to look at the text to see which of the predictions and guesses were right.

The second activity is to sort KWs into categories (people, places, processes etc.), usually after seeing the text. The rationale here is that this leads to Critical Reading. The object is to determine what was said and what was downplayed and what was omitted. A text whose KWs include *Philadelphia, drug, cancer, heart attack*, etc. privileges the USA and a number of common medical conditions, but thereby fails to benefit other parts of the world where medical research is done and other common medical conditions such as stroke. One might attempt to determine whether the drug being developed in Philadelphia would help patients with liver malfunction or stroke, for example. That is, the student reader is being led outside the text, to consider what inside is applicable and what the authors have chosen to omit.

Activity three is to predict which other text-types would typically contain a given set of KWs. The rationale is to focus on the notion of the colony (Hoey, 1986), on text-types, and intertextuality, thereby promoting genre awareness.

The fourth activity uses KWs as a basis for writing tasks. Students start from their own KWs and generate a text. The rationale is that this reduces the tension of writing a well-formed text and provides a basis for brain-storming. By ordering the KWs, perhaps in some kind of mind-map, students can see how to structure their text. A common problem in writing is uncertainty about what to say and what order to make the points in – by re-ordering their KWs students are better able to structure their work.

A fifth activity is to use KWs as a basis for oral presentations. In the Academic Speaking component of the University of Liverpool's pre-sessional course, students who come in the summer prior to starting a post-graduate degree have to prepare a 10-15 minute oral presentation. To practise for this, I have found it very useful to raise their awareness of KWs as a focussing device. In practice, this means asking students to list the KWs likely to be needed in their own academic field (levels 8 and 9 of the contexts discussed above), and in particular the KWs for a given speaking assignment (level 6, chiefly). The set of KWs on cards or on the whiteboard is a useful prop in delivery, and this activity naturally leads to ensuring that the specialist in malaria can pronounce KWs such as *prophylaxis* or *development* clearly. But most important of all, it forces them to consider whether and how to explain such terms to their audience (who are not all students of medicine) on the day of the presentation. This helps prepare the audience, prior to or immediately following an outline summary of the presentation. It also helps focus the presenter's mind towards the audience (away from the teacher) and increases his/her likelihood of being aware of difficulties the audience might face, as well as focussing on the essential as opposed to the incidental.

The last activity is to read or listen and note down the KWs. The rationale here is that this is preparation for note-taking but is less stressful, because it is not called "note-taking". Listening and reading are already hard without the worry that one needs have impeccable notes. KWs provide a good skeleton to build notes on gradually.

These six activities are deceptively simple and straightforward. They are very close to activities which have gone in LSP classrooms for many years. The point here, though, is that KWs can provide a further way of raising language awareness which, at the same time, will be seen by students as focussed on language learning. Through these six activities, students not only understand and produce well-structured and well-formed text, spoken or written, which is their major goal, but they also become more aware that

- vocabulary items are not all equally important (activities 1,2,5,6);
- it is better to concentrate on the KWs as opposed to non-KWs (1,3,4,5);
- KWs provide a text "skeleton" and can help view the text at levels of context going beyond the text itself (2,3,6);
- KWs are closely related to notes because they focus on aboutness (6).

4. CONCLUSIONS

The main conclusions reached at this point suggest that keyness and KWs can be useful concepts for LSP teachers as well as for researchers into text. KWs can be used in all four skills. Key words can be identified and explored using computational methods, and some initial promising developments are stemming from this, but they can also be identified by hand and it is not problematic for students to do this. They can provide a less stressful way of working in the LSP classroom. More important, they provide a means of enhancing awareness, helping the student in the transition through Case & Gunstone's (2002) three levels towards conceptual operation.

The fact that keyness involves textual relations means that it is not something which can easily be codified as in dictionaries of synonyms and antonyms. But the textual relations are the ones that matter most, in the last analysis.

REFERENCES

Barbara, L. and M. Scott (1999). Homing in on a genre: Invitations for bids. In F. Bargiela-Chiappini and C. Nickerson (eds.) *Writing Business: Genres, Media and Discourses*. Harlow: Longman. 227-54.

Case, J. and R. Gunstone (2002). Metacognitive development as a shift in approach to learning: An in-depth study. *Studies in Higher Education*, 27 (4), 459-470.

Collins, H. and M. Scott (1997). Lexical landscaping in business meetings. In S. Harris and F. Bargiela (eds.) *The Languages of Business: An International Perspective*. Edinburgh: Edinburgh University Press. 183-210.

Cruse, A. (2000). *Meaning in Language: An Introduction to Semantics and Pragmatics*. Oxford: Oxford University Press.

Hasan, R. (1984). Cohesion and cohesive harmony. In J. Flood (ed.) *Understanding Reading Comprehension: Cognition, Language and the Structure of Prose*. Newark, Del.: International Reading Association. 181-219.

Hoey, M. (1986). The discourse colony: A preliminary study of a neglected discourse type. In M. Coulthard (ed.) *Talking about Text - Studies Presented to David Brazil on his Retirement*. (Discourse Analysis Monographs 13). Birmingham: ELR/University of Birmingham. 1-26.

Li, S. and H. Munby (1996). Metacognitive strategies in second language academic reading: A qualitative investigation. *English for Specific Purposes*, 15 (3), 199-216.

Phillips, M. (1989). Lexical structure of text. *Discourse Analysis Monographs* 12. Birmingham: University of Birmingham.

Scott, M. (1996). (with subsequent versions ever since) *WordSmith Tools*. Oxford: Oxford University Press.

Scott, M. (1997). PC Analysis of Key Words – and Key Key Words. *System*, 25 (1), 1-13.

Scott, M. (1997). The right word in the right place: key word associates in two languages. *AAA - Arbeiten aus Anglistik und Amerikanistik*, 22 (2), 239-252.

Scott, M. (2000a). Focusing on the text and its key words. In L. Burnard and T. Mcenery (eds.) *Rethinking Language Pedagogy from a Corpus Perspective*. Volume 2. Frankfurt: Peter Lang. 103-122.

Scott, M. (2000b). Reverberations of an echo. In B. Lewandowska-Tomaszczyk and P.J. Melia (eds.) *PALC'99: Practical Applications in Language Corpora*. Lodz Studies in Language. Volume 1. Frankfurt: Peter Lang. 49-68.

Scott, M. (2001). Comparing corpora and identifying key words, collocations, and frequency distributions through the *WordSmith Tools* suite of computer programs. In M. Ghadessy, A. Henry and R.L. Roseberry (eds.) *Small Corpus Studies and ELT: Theory and Practice*. Amsterdam: Benjamins. 47- 67.

Scott, M. (2001). Mapping key words to *problem* and *solution*. In M. Scott and G. Thompson (eds.) *Patterns of Text: in Honour of Michael Hoey*. Amsterdam: Benjamins. 109-127.

Scott, M. (2002). Picturing the key words of a very large corpus and their lexical upshots – or getting at the Guardian's view of the world. In B. Kettemann and G. Marko (eds.) *Teaching and Learning by Doing Corpus Analysis*. Amsterdam: Rodopi. 43-50. CD-ROM within the cover of the book.

Williams, R. (1976). *Keywords*. London: Fontana.

CONCLUSIONS

Chapter 15

INFORMATION TECHNOLOGY IN LANGUAGES FOR SPECIFIC PURPOSES: PROSPECTS ON A BRAVE NEW WORLD

Elisabet Arnó Macià, Antonia Soler Cervera, Carmen Rueda Ramos
Universitat Politècnica de Catalunya (Barcelona, Spain)

> *"O brave new world," he repeated. "O brave new world that has such people in it. Let's start at once."*
>
> Aldous Huxley, 1932, *Brave New World.*

This volume provides the reader with a general overview of recent work in the field of Information Technology (IT) in Languages for Specific Purposes (LSP), dealing with some of the most prominent areas of research and pedagogy. Going beyond offering a background to the field, and with this twofold orientation on research and pedagogy, the different chapters in this book have been organized around five main areas of active enquiry, which cover a wide range of topics of interest for specialists in LSP and applied linguists in general. Specifically, the areas covered are corpus-based studies, computer-mediated communication, the development of specific technology-based projects in different educational and cultural settings, the relationship between technology and learner autonomy in higher education, and aspects of terminology and lexis.

Although no single collection can aim at providing an extensive review of the field, we have intended to group, under each thematic area, a series of articles which, taken together, can offer the reader a myriad of perspectives on recent research, pedagogical proposals, and development of applications

that explore the integration of IT in the many facets of LSP practice. The volume as a whole presents a broad view of the field and reflects the multiple interests of scholars, ranging from the analysis of specialized language to more general concerns of teachers and students in specific contexts, thus revealing the variety of backgrounds, settings and perspectives that can be found among LSP practitioners. Such multiple perspectives can in turn be useful to applied linguists working in fields other than LSP. Each of the main areas of the volume can serve as a starting point for the reader to undertake further research, derive teaching implications or develop new IT applications.

This thematic division does not mean that the different areas should be regarded as separate topics; rather, they are all part of a common ground for the advancement of the integration of IT into LSP research and pedagogy. Therefore, from the different perspectives offered, some general trends emerge across the different areas, which point to new prospects in the identification of further areas of enquiry and the development of innovative applications that will help us cope with the increasing demands of the new century.

1. THE ANALYSIS OF SPECIALISED LANGUAGE

One of the main foci of research in LSP is the analysis of both written and spoken genres. The chapters on corpus-based studies in this book point to a trend towards specialized corpora, which can lead to more specific research on the particularities of specialized languages. As for written genres, Rizomilioti (chapter 4) focuses on the analysis of research articles across different disciplines, noting the particularities of each and showing that rather than analysing "academic writing" as a single entity, one should look at the specific genres produced within each discipline. In this volume, however, special emphasis is placed on spoken language, particularly on interactive genres. Studies on the MICASE corpus of academic English have yielded some findings that deserve further exploration. Of particular interest is the blurred line between genres. For example, Swales's research (chapter 2) into the differences between academic writing and academic speech shows that the latter is more informal and conversational and thus more distinct from academic writing than from ordinary conversation. He also points to a wide range of aspects of academic speech that can be studied with the use of this corpus, such as politeness and formality, which are of crucial importance for international students. Also based on the MICASE corpus, Fortanet (chapter 3) reports on a quantitative-qualitative study on the functions of personal pronouns in interactive versus monologic lectures.

Again, from this study some pedagogical implications can be derived for teaching English for Academic Purposes (EAP), for instance, to design awareness-raising activities using samples from corpora for students to analyse.

We can point to many prospects on further applications of corpus-based studies. For example, Fortanet suggests working on corpora of academic lectures of other varieties of English. This idea opens up the possibility of compiling samples of native and non-native varieties of English, which in turn could lead to contrastive studies on oral genres, a territory still to be explored. Besides, compiling corpora of spoken academic genres other than lectures can broaden our perspective of academic speech, in which features of interaction deserve further attention. In the discussion on written and spoken genres, we should focus on emerging hybrid genres that combine features of orality and writing, such as cybergenres (Shepherd & Watters, 1998). For LSP students, it is more and more necessary to become familiar with cybergenres so that they can develop the competences that will allow them to succeed in the discourse community. Therefore, acquiring such electronic literacy becomes a central aim in LSP courses, helping students communicate online and write electronic documents. This twofold concern, both on research into the nature of those cybergenres and on their introduction in the curriculum, is attracting the attention of researchers (e.g. Posteguillo, 2003; Warschauer, 2002).

Technology has a prominent role in the analysis of specialised language, as a tool that allows linguists to manage large corpora. As Swales (chapter 2) points out, some of the practical problems that have existed so far in the use of computerized corpora to work on genre analysis are now progressively being solved, which will allow the reconciliation between corpus-based studies and more traditional work on genre analysis. Swales also notes that many of the elements of context that contribute to the full grasp of a text are still missing when spoken discourse is put into written form. The availability of a corpus like the MICASE through the Internet, together with its tools for analysis, makes it possible for researchers in academic settings to inquire into the features of spoken academic discourse. In this line, computer applications for language analysis like *WordSmith* tools (Scott, 1996), which have been widely used by researchers in the analysis of specialised language, reveal key words that provide relevant information about the organization of a text. Beyond research, Scott (chapter 14) also presents some guidelines for using these tools in EAP teaching. Such computer applications can not only help students develop effective strategies for dealing with the four skills of reading, writing, listening and speaking, but also lead to greater involvement on the part of the student, thus opening up possibilities for critical reading and even for students to take on the role of "researchers".

Another use of corpora and computer tools in specialized language is provided by Piqué et al. (chapter 13) in the field of lexicography. With a technical dictionary addressed precisely to a wide population of computer users, translators and learners, these authors show how the integration of computerized tools and corpora can meet the challenge of creating an active bilingual dictionary. This is an example of an application that goes beyond the realm of linguists, as the outcome of this process is to make a tool that is useful for non-native speakers who need to express themselves in English within the field of technology. From the process described by Piqué et al., and with the integration of corpus analysis and lexicology, useful tools can be derived for the development of online dictionaries and computer-assisted translation tools, particularly in an ever-changing field like computing, with the challenge of having to cope with neologisms and the pervasive influence of English in the translation of technical terms.

2. ONLINE COMMUNICATION: LEARNING TO COMMUNICATE AND COMMUNICATING TO LEARN

As mentioned above, cybergenres are playing a more prominent role, not only as the object of study but as an aim of LSP teaching, given that online genres are becoming more and more important in academic and professional communication. The significance of online communication reflects the distinction made by Warschauer (2001) between learning to communicate online and online communication for learning. One of the relevant innovations brought about by the incorporation of IT into LSP practice is that the use of online communication goes beyond learning, to cover a wide range of collaborative, creative and purposeful projects. This volume offers several examples of such projects.

One of the most apparent advantages of network-based communication is the possibility of carrying out distributed projects both for learners and teachers. In this volume there are two examples of how information technologies can help bridge geographical distances and cultural differences to create virtual communities for teachers. The first example is the Tunisia Oregon Project presented by Healey (chapter 9), a collaborative project between two countries whose main aim is to help Tunisian teachers incorporate IT into their teaching practice. This chapter shows how a multidisciplinary collaborative project can be set up to foster teacher development and, at the same time, contribute to bridging the digital divide by providing the appropriate technology, taking into account societal, economic and academic factors and considering teachers' and students'

needs. The second example of a distributed virtual community in which teachers can interact is presented by Devaux et al. (chapter 8). In this particular project, teachers not only create and share materials but develop a space for mutual support and collaboration among LSP teachers with similar needs and concerns. These two projects highlight some of the most common situations in which LSP teachers find themselves: adopting a multidisciplinary perspective and collaborating with teachers from other disciplines. Often this collaboration takes place among LSP teachers with similar needs and interests, who, precisely due to their specific profile, need to establish connections with partners from different geographical settings.

Some of the projects presented in this volume are not only meant for teachers. The main focus of Devaux et al.'s project is on promoting active learning in Asian students by means of the use of e-mail and learning environments. It also aims at reducing the digital divide by instilling attitudes and ways of learning among students who belong to a cultural background that has traditionally favoured a model of teaching and learning based on the transmission of knowledge—thus entailing a passive role on the part of the student. Hence, IT serves as a tool for facilitating students' engagement in the learning process through a distributed environment. Appel and Gilabert (chapter 5) also report on promoting purposeful communication and active engagement through on-line communication. Their study looks at students' performance in an e-mail tandem learning project, with LSP students in Barcelona and Dublin who are learning English and Spanish, respectively. In line with previous research into online communication among foreign language learners (Kern, 1995 and 1996; Warschauer, 1999), their findings show that those students who are assigned a specific task maintain communication over a longer period of time, are more regular in their messages, and produce more sophisticated messages than those who communicate without a clearly defined task. From these results some guidelines can be derived to design effective tasks to help LSP students communicate in authentic situations and with real goals, related to their field of study.

3. COMPUTER-ASSISTED LANGUAGE LEARNING IN LSP

The projects and classroom-based studies presented in this volume explore the possibilities and open up new perspectives offered by computer-based instruction within "integrative CALL" (Warschauer & Healey, 1998). The computer is regarded as a "toolbox" (Kern & Warschauer, 2000) that will allow LSP teachers and students to go beyond merely improving

performance, addressing socio-cultural issues, and enhancing collaboration and exchange between participants from different backgrounds (e.g. Appel and Gilabert, Hussin, and Devaux et al.). All these projects can thus be included within the "second wave of online learning", discussed in the first chapter of this volume.

Online communication is acquiring a more and more important role in LSP teaching as a tool to promote specific communication skills and language proficiency in authentic situations directly relevant to students' needs. A clear example in this volume is the case of the two online workshops that Hussin presents (chapter 6). The first focuses on the concrete needs of nursing students in an Australian university who are in an ESL context and have to adapt both to a new cultural and professional context, whereas the second centres on the needs of ESL Business students studying off-shore in Hong Kong. As Hussin shows, such a programme must place special emphasis on cross-cultural communication and effective workplace communication skills, which can be developed through an online environment.

In fact, given the clearly identified profile and background knowledge of LSP students, the Internet becomes both a useful source of meaningful materials that are relevant to their specific needs and an appropriate medium for interacting with others. Thus, appropriate tasks that encourage the use of authentic materials—so pervasive on the World Wide Web—together with collaboration among learners, can promote the role of LSP learners as "experts" in their field, which in turn can boost their own sense of ownership of the target language. This collaboration among LSP learners has an added dimension in that the group effort, in addition to the mastery of their own area of expertise, allows them to participate in the joint construction of knowledge through continuous electronic communication, which may promote affective factors beyond those inherent in the nature of online communication itself.

Focusing on the exploitation of the Internet in LSP, Luzón and González (chapter 11) place special emphasis on the use of the Web as a source of authentic materials specifically relevant to the students' field of study. With meaningful tasks that motivate and engage students in the exploration of web materials, Luzón and González show how students can be provided with guidance to develop appropriate skills for autonomous learning so that they can incorporate the use of the Internet as an integral tool not only as language learners but also as specialists in their discipline. This approach to the design of web-based activities is in keeping with Warschauer's (2001: 210) remark on "the contradictory nature of the Internet", in that such activities are open-ended and encourage creativity but at the same time are structured enough to guide students in making sense of the chaos.

With this mediation of technology in learning, what comes to the fore is that the learners' task is no longer to acquire a body of encyclopaedic knowledge that must be internalised, but rather to decide on what needs to be learnt, how the input relates meaningfully to each individual's needs, and how the learning experience is shaped and adapted over time, within a constructivist view of learning. Lévy (1998) describes the role of the Internet in relation to this new learning paradigm using the metaphor of cyberspace as a "second Flood". He points out that instead of having a unique body of knowledge, with the essentials of a discipline as a big "Ark", each learner constructs his or her own "boat", according to individual needs and meaningful relationships, so that the shared construction of knowledge becomes a "fleet" of small interrelated boats, all varied, different and constantly changing. This use of the Internet as a learning resource is especially appropriate in an LSP context, given that it is in LSP settings where students' role as experts of a discipline is more apparent. Taking into account that the relationship between LSP learners and teachers is less asymmetric than in general language teaching, students and teachers can use the Internet to engage in meaningful interaction to share information and learn from each other.

So far we have looked at interaction through computers, but this volume also takes into account interaction with computers. With the design of SMAIL, a hypermedia project, Caballero and Ruiz (chapter 7) propose a dialogic approach to a self-access computer-assisted system by which students can communicate with the machine following different routes according to each individual's learning styles. Using travelling metaphors, the learner is regarded as a traveller who embarks on a journey or a short trip with different tools, guides and baggage. Much like travellers who enjoy exploring the world on their own, as opposed to others who prefer to be led, learners have the opportunity to gain self-awareness thanks to the feedback provided by the machine, which in turn serves as the basis for the computer to make specific suggestions and guide the learner throughout the journey. Another project which presents an e-learning environment is described by Trinder (chapter 12). The materials created for this self-access learning resource, *Online English Mentor* (*OEM*), which were meant to complement face-to-face teaching, seek to provide Business English students with extra and out-of-class practice, to introduce them to online language learning, and to get them used to independent learning. Taking into account different learning styles in the design of materials, the creators of the *OEM* also analyse the learner factors (both internal and external) that play a key role in their students' acceptance and effectiveness of online resources. These two projects underline some central issues in distance education, particularly

those that point to the new roles of LSP students as they interact with the instructional material.

4. DISTANCE EDUCATION: NEW PARADIGMS FOR THE LSP CLASSROOM

A central focus of attention in this book is distance education. The term distance education is not a homogeneous label but covers a wide range of situations. Throughout the different chapters in this volume, distance education is approached from the perspective of web-delivered instructional materials in a self-access mode (Caballero and Ruiz, chapter 7); a course combining classroom-based and virtual sessions (Trinder, chapter 12); courses and modules entirely delivered online (Hussin, chapter 6); and a web-based environment designed to complement a writing course, which supports students' learning and reinforces affective factors (Devaux et al., chapter 8). All these examples of online teaching projects go beyond the mere concept of designing materials for students to work "at a distance" and take into account what Warschauer et al. (2000: 84) point out as requisites for online courses, namely that they should be designed and implemented "with teachers' and students' interests in mind", and based on a view of learning as "a social endeavor", without "los[ing] sight of the human factor in learning". The varied situations of distance education in this book illustrate many concerns that LSP practitioners face when confronted with the challenge of integrating online teaching.

One of the issues that designers of online courses should take into account is whether the materials are more or less high-tech. There are varying degrees of sophistication in the resources used, which can range from documents or simple webpages and e-mail facilities to highly developed multimedia and communication tools. Another factor that course designers should take into account is the amount and type of interaction that takes place. This interaction may include communication with the materials (in terms of the feedback provided by the system), with course participants and other external users, which then covers both synchronous (like chats) and asynchronous communication (like bulletin boards or e-mail), on the one hand; and two-party and multi-party communication (i.e. student-teacher interaction or students working in pairs versus group or whole class interaction), on the other. Other important factors include materials design and the roles of teachers and learners in their implementation, as regards, for example, the type of mediation conducted by the teacher. The chapters in this book offer multiple perspectives on the design and implementation of

online materials and courses, all of which are clearly approached from the identified needs of learners and demands of the learning situation.

The proliferation of online courses over the last few years in universities worldwide has inevitably affected LSP practice. From the point of view of educational institutions, online courses and materials have sometimes been regarded as a solution to increasing numbers of students, who can have relatively easy access to online tuition. This situation raises a series of questions related to the design and implementation of programmes. Some institutions see the creation and distribution of online courses as a commercial possibility or simply as a way of reducing costs in terms of staff and premises. Noble (1998) refers to this trend as "the automation of higher education", in which education is seen as a commodity, with added pressure on faculty in terms of productivity, constant availability beyond normal working hours, the control exercised by authorities and administrators, and the demand of constant personalised feedback by those students who have the illusion that they are alone in the virtual classroom (see also White, 2003). Other central concerns are related to materials design and questions of ownership (Noble, 1998; Warschauer et al., 2000; White, 2003). The fact that online courses are sometimes equated with prepackaged materials ready for their delivery often leads to what Warschauer (2000: 10) calls "a bifurcated system", which means that "the development of courses is separated from their delivery, with those educators fulfilling each role (either development or delivery, and especially the latter) working under temporary part-time contracts". This situation points to the need to carefully plan the design and implementation of online courses, to apply the same quality standards as in traditional education, and to recognize the role of teachers both as materials designers and as mediators in the teaching-learning process. For this reason, it is of utmost importance to support and encourage teachers' participation in such programmes.

In fact, materials creation within the context of a growing digitalisation of LSP teaching can be clearly connected with the traditional role of the LSP teacher as a materials creator. The new electronic medium in which the student works does force the designer to carefully consider the demands of the new context in which teachers and learners interact. Materials developers should consider the fact that an LSP group can be quite homogeneous in terms of needs, but it is heterogeneous in terms of students' backgrounds and profiles. This heterogeneity calls for the materials designer to provide guidance so that the materials cater for a variety of learning styles within the group. On the other hand, authentic materials can be especially meaningful for students, as a gateway to the specific contents, skills and genres of their discipline, thus fostering creativity and critical thinking. Internet-based material in particular can be especially motivating as it can boost LSP

students' role as experts in their discipline, and if delivered with appropriate and sufficient guidance to enable students to manage their own learning, then it can promote learner autonomy.

5. IT AND LEARNER AUTONOMY IN LSP CONTEXTS

An area of central interest in language teaching in general and LSP in particular, learner autonomy plays a prominent role in this volume. The recent literature has extensively examined the relationship between IT and learner autonomy (Kenning, 1996; Shetzer & Warschauer, 2000; Benson, 2001; White, 2003). Over time, as CALL applications have gone through different stages, emphasis has been placed on encouraging a higher degree of learner control over learning processes through the choice of materials and different learning routes (Warschauer & Healey, 1998). The scope of the concept of autonomy has broadened with the evolution of technology, even beyond the interaction with technology *per se*. Technology, particularly the Internet, now offers learners new possibilities for interaction, but at the same time it should be taken into account that technology as such does not enhance autonomy. Rather, learner autonomy entails key notions like responsibility, control, learner training, collaboration and critical reflection, which have appeared frequently in works on autonomy, whether or not related to the use of technology in education (Holec, 1981; Dickinson, 1987; Little, 1991; Benson, 2001; White, 2003). Specifically, Holec (1981: 3) defines autonomy as "the ability to take charge of one's own learning", which involves making decisions about different aspects of the language learning process (determining objectives, monitoring progress, or evaluating performance, among others). Similarly, Little (1991: 4) views autonomy as "a capacity—for detachment, critical reflection, decision-making, and independent action", with an added psychological dimension, so that "the learner will develop a particular kind of psychological relation to the process and content of his learning".

In keeping with this view of learner autonomy and IT, Luzón and González (chapter 11) focus on the use of the Internet to promote autonomy in the LSP classroom. Centred on the relevance of authentic Internet materials to LSP students' needs in relation to their discipline, their proposal places emphasis on the ways in which LSP students can take advantage of the Internet: the hypermedia structure of the World Wide Web, which can facilitate different routes for learners to engage with relevant materials, an increase in intrinsic motivation, and the possibility of interacting and collaborating with other users. At the same time, Luzón and González also

discuss the conditions that should be met in task design in order to promote autonomous behaviour, which basically consists in integrating web-based activities in the curriculum, providing appropriate scaffolding, and helping students engage in higher-level thinking and strategy development. With the Webquest as an appropriate format, they exemplify these principles. From a different perspective, Lasagabaster and Sierra (chapter 10) deal with an essential aspect of learner autonomy: EAP learners' perceptions of the use of multimedia material for language learning, both in combination with classroom learning and in a self-access mode. Looking at students' views and expectations on the use of this technological material can provide course designers and teachers with useful information that can help integrate technology for independent learning into the syllabus, thus bridging the gap between the self-access centre and the regular classroom. An example of such integration is an e-learning environment that can be adapted to different needs and styles (Trinder, chapter 12), which aims at "nurturing" students to cope with the demands of independent learning. Trinder also proposes specific guidelines for helping students develop the skills and strategies that can help them become more autonomous.

6. IT IN LSP: SOME DRIVING FORCES

This volume tries to reflect the reality that information technology is an inherent part of LSP teaching and research in many different ways. Therefore, the chapters in this book do not discuss whether, or even how, to integrate IT in LSP practice; rather, they focus on the concerns derived from the everyday use of technology and the different ways in which LSP specialists can make the most of this technology to enhance LSP teaching and research. Throughout the different perspectives in this book, some reflections emerge which point to some of the main driving forces that make us adapt to the changes brought about both by IT and other contextual factors in LSP. These forces, in turn, also allow us to innovate in our practice and to provide an adequate response to the demands of such a changing environment. Thus, it is no longer a matter of how to incorporate technology, but rather how to adapt LSP practice to a context of constant technological changes. As we have seen in different chapters, when LSP teachers have to design a course and create materials, they no longer design a course and then incorporate technology as a complement to that course; instead, it may be delivered (whether in part or completely) online, using interactive multimedia materials.

The forces listed below are a combination of the technological and contextual changes mentioned before. These driving forces are mainly

related to the fact that technology is a commodity item that forms part of our daily lives and to the new practices that nowadays pervade the many facets of LSP teaching and research:

1. *The need to adapt LSP practice to technological changes.* Technology is in constant evolution and presents us with the challenge of adapting to these new changes as part of our daily lives. It is not only that we have to catch up with technology, but also that technology changes the way we view LSP practice. Such influence is reflected in the adoption of new patterns of behaviour and new user roles, as well as the setting of new research objectives. As an example of the latter, having access to corpora of oral English through the Internet allows us to do types of research that would not be possible otherwise.
2. *The need of LSP teachers to catch up with students' technological skills.* Apart from being part of the everyday life of the LSP teacher, IT is even more present (at least in a Western culture) in our students' lives, especially those in technical settings. Often it is the students themselves who "push" their teachers into engaging in the constant innovation of their practice. Sometimes students even take the initiative in technological innovation and, when assigned a creative task, submit their work in the form of a webpage instead of a plain text or choose to use online communication to collaborate with peers and the teacher, for example.
3. *Technological innovation and collaboration among LSP practitioners.* Technological innovation in LSP usually stems from collaboration at different levels. The traditionally collaborative dimension of LSP practice has especially favoured the implementation of IT projects and applications in LSP teaching and research. Collaboration can range from working with peers or specialists from other disciplines to wider projects involving institutions or individuals in different settings, including international collaboration.
4. *External factors that make LSP practitioners adopt technology.* External demands also play an important role in the adoption of technology by LSP specialists. These external factors include institutions like universities and governments, which impose or promote in some way the use of information technology, as well as more general societal factors that also exert an influence. These external demands make LSP practitioners adopt technology in different degrees, according to each individual's profile and each particular setting. Ultimately, it is this gradual adoption of technology, with different individuals and groups, that will bring about change. This idea can be related to the reflection made by Healey (chapter 9) on the diffusion of innovation theory. In order to promote change and make it possible for people with different

backgrounds and attitudes to adopt technology, it is necessary to take a flexible approach. Therefore, institutions should promote its implementation by deploying the means to cater for all types of adopters, with those agents at the leading edge carefully paving the way for those who have to decide whether or not to adopt the technology. In other words, any approach to technological change should be challenging enough to allow "innovators" (in the diffusion of innovation theory) to be as creative and engaged as possible so that they can in turn be models for others to follow. Yet at the same time, technology should be presented purposefully and in a user-friendly way to those who are more reluctant to adopt change, that is, the technophobe LSP practitioner or student.

7. PROSPECTS ON A BRAVE NEW WORLD: THE DOUBLE-EDGED NATURE OF IT IN LSP

This constant change does not imply a dichotomy between incorporating the technology or not; rather, we are in a dynamic context for the natural integration of technological advances into our everyday practice. Once we adopt these advances in our profession, it pays off and there is no turning back, so the initial technophobe—or simply the lay practitioner—will not be able to do without them. In turn, those who today may be more reluctant to technological innovation, if properly motivated, may even become future agents of change. The ultimate aim is to bring about change to improve our LSP practice by making the most of the new advances that gradually enter our lives. In the case of LSP practitioners, whether more or less technophiles or technophobes, we have the advantage that we are used to responding to needs and thus constantly find new ways to cope with challenges and demands.

Technology can provide these new ways, and the chapters in this book are examples of how LSP researchers and teachers make the most of technology to face these specific demands. Swales (chapter 2) and Fortanet (chapter 3) use specific corpora to explore spoken academic language, looking at genre features, while Rizomilioti (chapter 4) sheds light on differences and similarities between corpora of written academic language belonging to different disciplines. As regards LSP teaching, Appel and Gilabert (chapter 5) use technology to "find common ground in LSP" by engaging students in online communication across frontiers. Hussin (chapter 6), on the other hand, presents the development of two specific web-based applications tailored to the clearly identified profile and needs of her LSP students. Rather than focusing on students from a specific field, Caballero and Ruiz's project (chapter 7) is intended to offer alternative and flexible routes for different learner styles. Devaux et al. (chapter 8) and Healey

(chapter 9) propose collaborative teaching applications and projects involving different cultural and geographical backgrounds. On the other hand, within individual institutions different authors study or develop different technological applications in LSP. Lasagabaster and Sierra (chapter 10) shed light on students' perceptions of self-access multimedia learning material, Luzón and González (chapter 11) explore the use of the Internet in an English course for engineering students, and Trinder (chapter 12) presents an e-learning environment for Business English students. Finally, Piqué et al. (chapter 13) and Scott (chapter 14) also show how IT can be used to deepen into the study of words and their role in the construction of meaning in specialised languages. In sum, this volume tries to provide a picture of how different LSP specialists around the world reflect on and develop new tools to cope with teaching needs as well as to offer new insights into specialised uses of language.

It is a brave new world in which LSP specialists, whether technophiles or technophobes, have to confront the challenges posed by the double-edged sword of integrating IT into research and pedagogy. Technology may be fascinating at first sight, which means that practitioners sometimes may be tempted to plunge into the use of new applications without reflecting on how they can be exploited to enhance LSP practice, simply carried away by the illusion of innovation when in fact they may be merely putting old wine in new bottles. For those on the technophobe side, though, technology becomes a burden that involves the effort of constantly adapting to and trying to catch up with all the technological demands posed by the different driving forces presented above. However, when discovering the potential of IT, the initial technophobe may then be rewarded by its outcomes. LSP practitioners have the tools to face the challenge and make the most of technology. With the tradition of overcoming isolation and sharing that characterises LSP specialists, we can cope with this brave new world and open up new prospects. Many LSP researchers and teachers are working on this endeavour, and with this volume we have gathered a variety of approaches and insights into IT in LSP that, we hope, can inspire other LSP colleagues around the world, in the same way that this contribution is indebted to a long tradition in LSP and different branches of applied linguistics.

REFERENCES

Benson, P. (2001). *Teaching and Researching Autonomy in Language Learning.* Harlow, UK: Longman.

Dickinson, L. (1987). *Self-instruction in Language Learning.* Cambridge: Cambridge University Press.

Holec, H. (1981). *Autonomy in Foreign Language Learning.* Oxford: Pergamon.

Kenning, M.M. (1996). IT and autonomy. In E. Broady and M.M. Kenning (eds.) *Promoting Learner Autonomy in University Language Teaching.* London: Association for French Language Studies/CILT. 121-38.

Kern, R. (1995). Restructuring classroom interaction with networked computers: Effects on quantity and quality of language production. *Modern Language Journal,* 79 (4), 457-476.

Kern, R. (1996). Computer-mediated communication: Using e-mail exchanges to explore personal histories in two cultures. In M. Warschauer (ed.) *Telecollaboration in Foreign Language Learning.* Honolulu, HI: University of Hawaii, Second Language Teaching and Curriculum Center. 105-119.

Kern, R. and M. Warschauer (2000). Theory and practice of network-based language teaching. In M. Warschauer and R. Kern (eds.) *Network-based Language Teaching. Concepts and Practice.* New York: Cambridge University Press. 1-19.

Lévy, P. (1998). *La cibercultura, el segon diluvi?* (Translated by M. Llopis, *Cyberculture*). Barcelona: Edicions de la Universitat Oberta de Catalunya & Edicions Proa.

Little, D. (1991). *Learner Autonomy: Definitions, Issues and Problems.* Dublin: Authentik.

Noble, D.F. (1998). Digital diploma mills: The automation of higher education. *First Monday.* Issue 3.1. Available at <http://firstmonday.org/issues/issue3_1/noble/index.html>

Posteguillo, S. (2003). *Netlinguistics: Language, Discourse and Ideology in Internet.* Castelló de la Plana: Publicacions de la Universitat Jaume I.

Scott, M. 1996). *WordSmith Tools.* Oxford: Oxford University Press.

Shepherd, M. and C.R. Watters (1998). The evolution of cybergenres. *Proceedings of the Thirty-First Annual Hawaii International Conference on System Sciences* (HICSS' 98), vol. II. Hawaii. 97-109.

Shetzer, H. and M. Warschauer (2000). An electronic literacy approach to network-based language teaching. In M. Warschauer and R. Kern (eds.) *Network-based Language Teaching. Concepts and Practice.* New York: Cambridge University Press. 171-185.

Warschauer, M. (1999). *Electronic Literacies: Language, Culture, and Power in Online Education.* Mahwah, NJ: Lawrence Erlbaum.

Warschauer, M. (2000). The changing global economy and the future of English teaching. *TESOL Quarterly.* Available at <http://www.gse.uci.edu/markw/global.html>

Warschauer, M (2001). Online communication. In K. Carter and D. Nunan (eds.) *The Cambridge Guide to Teaching English to Speakers of Other Languages.* 207-212.

Warschauer, M. (2002). Networking into academic discourse. *Journal of English for Academic Purposes,* 1 (1), 45-58.

Warschauer, M. and D. Healey (1998). Computers and language learning: An overview. *Language Teaching* 31, 57-71.

Warschauer, M. and R. Kern (eds.) (2000). *Network-based Language Teaching: Concepts and Practice.* Cambridge: Cambridge University Press.

Warschauer, M., H. Shetzer and C. Meloni (2000). *Internet for English Teaching.* Alexandria, VA: TESOL Inc.

White, C. (2003). *Language Learning in Distance Education.* Cambridge: Cambridge University Press.

INDEX

U

W

EDUCATIONAL LINGUISTICS

---

1. J. Leather and J. van Dam (eds.): *Ecology of Language Acquisition*. 2003 ISBN 1-4020-1017-6
2. P. Kalaja and A.M. Ferreira Barcelos (eds.): *Beliefs about SLA. New Research Approaches*. 2003 ISBN 1-4020-1785-5
3. L. van Lier: *The Ecology and Semiotics of Language Learning: A Sociocultural Perspective*. 2004 ISBN 1-4020-7904-4
4. N. Bartels (ed.): *Applied Linguistics and Language Teacher Education*. 2005 ISBN 1-4020-7905-2
5. E. Llurda (ed.): *Non-Native Language Teachers: Perceptions, Challenges and Contributions to the Profession*. 2005 ISBN 0-387-24566-9
6. M.C.M.d. Guerrero, *Inner Speech - L2: Thinking Words in a Second Language*. 2005 ISBN 0-387-24577-4
7. E. Arnó Macià, A. Soler Cervera, C. Rueda Ramos (eds.) *Information Technology in Languages for Specific Purposes: Issues and Prospects*. 2006 ISBN 0-387-28595-4