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Teaching Science to Language Minority Students: Theory and Practice.
Judith W. Rosenthal.
Clevedon, England: Multilingual Matters, 1996.

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The changing demographics of American society have impacted education in more than one way: Not only have school enrollments soared, but the very nature of education has been and is continuing to be questioned. Higher education, it seems, has not escaped the far-reaching consequences of the growing number of students for whom English is a second language. Yet, while many ESL classes strive to help students cope with the language and content difficulties of their coursework, in order to insure the success of these students, content-area faculty need to learn how to adjust their teaching to the peculiarities of ESL students' needs. Fortunately for these educators, Judith W. Rosenthal has written a helpful book entitled *Teaching Science to Language Minority Students: Theory and Practice.* In this book, Rosenthal aims at helping science instructors understand the fundamental issues involved in making science accessible to all students, including those for whom English is not their primary language.

Students of limited English proficiency (particularly undergraduates) are rarely mentioned in the literature about science education and reform. This book helps to fill that gap by providing the reader with timely and useful information. Ms. Rosenthal is well qualified to deal with the subject of teaching science and English. She holds a BA in human biology, a Ph.D. in physiological chemistry, an MA in bilingual/bicultural education, and has had extensive teaching experience. Moreover, she presents her findings in a clear and precise writing style, with excellent organization and ample

substantiation. A theoretical background of second language acquisition and learning styles is presented as firm support to the author's recommendations of specific ways to improve science instruction for students of limited English proficiency.

The rationale for this book is provided in chapter 1, "Defining the Issues." Here, brief histories of language use in the U.S. and of educational issues related to the immigrant experience precede Rosenthal's five reasons for including undergraduate English language learners in plans for science education reform. Chapter 2, "Second Language Acquisition Theory and its Application to Undergraduate Science Teaching," focuses on what research tells us about the processes of second language (L2) acquisition. Key concepts in L2 pedagogy—such as S. Krashen's and J. Cummins' contributions to our present-day understanding of second language acquisition regarding the distinction between language acquisition and learning, comprehensible input, the affective filter, and error correction—are explained and considered alongside other topics such as age factors, accented English, the "gift" for L2 learning, and the difficulties encountered by ESL students when they are enrolled in mainstream content-area courses. Such theoretical background proves useful when considering its implications for L2 students in mainstream science courses.

Rosenthal's third chapter, "The Many Cultures of the Science Classroom," examines the various aspects of culture that pertain to the science classroom: what is appropriate to teach, from what perspective, and how students' prior knowledge affects the acquisition of new information. Although these culture-related topics may seem irrelevant to science instruction, the author emphasizes that there is no science without language, and that culture is deeply ingrained in language. This book could not ignore students' learning styles, which the author deals with in chapter 4, "Learning Styles, Science Instruction and Ethnicity". After a discussion of the theory and classification of learning styles, there follows a close look at how these learning styles affect students' achievement and behavior.

The remainder of the book concentrates on recommendations and suggestions derived from principles of good teaching and successful ESL practices. Chapter 5, "How Instructors Can Help Limited English Proficient Students in Traditional Sciences Courses," contains numerous strategies that faculty members can use to facilitate the instruction of science to English language learners. Designed in a question and answer format, this chapter addresses issues of lecture, text, laboratory, written assignments, testing, and resources that may or may not be available on campus. One sound reason for instructors to adopt the strategies presented here is the fact that most of the techniques described do not require any specialized

training to be put into practice, nor do they lead to the lowering of standards or the watering down of content.

The relationship between language and culture is further explored in chapter 6, "Issues Related to Rhetoric, Writing, and Reading." Explicit graphs, creative writing activities useful for learning science, and illustrative tables reinforce the author's argument that "language is so central to the teaching of science that it is impossible to imagine a 'language free' science classroom" (p.104). Chapters 7 and 9 provide in-depth case studies that describe how individual faculty members as well as college-wide programs have addressed the needs of English language learners enrolled in science classes. This information was made available by faculty, staff, and administrators whose names and addresses are cited at the end of each case study, should the reader want to obtain additional information.

Chapter 8, "The Theoretical Basis for Linguistically Modified Science Instruction," describes two approaches currently used to help science students while they are still learning English. One is content-based L2 instruction in ESL. In this approach, English and content-area instruction are linked in the adjunct, the sheltered, and the adjunct-sheltered models. The other approach is the bilingual mode of instruction, where introductory science courses are taught partially or completely in the students' native language. These theoretical approaches are brought to life in the last chapter, which documents many creative and unconventional ways of teaching science to undergraduates who are still learning English.

The layout of the book allows the reader to locate specific information easily. Numerous subheadings, succinct chapter overviews, sidebars that cover a variety of topics related to the main text, as well as a useful glossary, a detailed index, and comprehensive references to the most recent developments in the field all facilitate reader interaction. As part of a new position currently being expressed by the scientific community—one that dramatically departs from its previously prevailing elitism—this book is a refreshing "alternative" view on teaching science to all students in contemporary American society. Both the content and the format of the book make it extremely worthwhile reading.

Second Language Vocabulary Acquisition:
A Rationale for Pedagogy
James Coady and Thomas Huckin (Editors)
New York: Cambridge University Press, 1997

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Is vocabulary development so easy for ESL students that teachers can ignore it in their classes and focus instead on other areas? Although some teachers may believe this, many contributors to this book disagree. James Coady, one of the editors of *Second Language Vocabulary Acquisition,* maintains that ESL students who need to use English for academic purposes will benefit from attention to vocabulary development. The five parts of this book offer a carefully researched, broad view of vocabulary development for researchers, teachers, and teacher trainers.

Part I provides the background. Zimmerman (chapter 1) discusses the attention given to vocabulary in various approaches from the Grammar Translation Method to the Natural Approach and beyond. His conclusion is that "until recently…vocabulary instruction has not been a priority in…methodology" (p. 17). In chapter 2, Laufer points out that many second language readers, regardless of their academic abilities, are handicapped because of their insufficient vocabulary in English.

Laufer explains why vocabulary problems interfere with reading comprehension in L2, noting that learners need to reach a threshold level of 3,000 word families before they can transfer reading strategies from their first language to the target language. When they have learned 3,000 word families, or about 5,000 lexical items, learners will be familiar with about 90% to 95% of the words appearing in an average text, claims Laufer. Consequently, such learners may be better equipped to figure out most of the remaining words from context and to grasp the global meaning of new texts.

In addition, Laufer discusses many types of lexical problems that can interfere with learners' reading. One type of problem arises because learners think they know certain words when they do not. The largest class of these words is synforms (i.e., lexical forms that are similar in sound and form but do not have the same meaning, such as *accept* and *except)*. A persistent problem with synforms is that students often misinterpret one synform for another. A second type of lexical problem arises because learners cannot guess words from their context, despite training in guessing strategies. In chapter 3, Koda notes how learner's L1 writing system may influence the learner's choice of lexical processing strategies.

Part II of the book covers three case studies. Parry (chapter 4) focuses on two students' comprehension of texts and on the strategies they use when processing self-selected, unfamiliar words. She notes that different strategies work best for different purposes. According to Parry, a holistic (or "top-down") approach works well to develop recognition of high-frequency words in situations where grasping even an approximate meaning of these words is adequate. However, she continues, an analytic (or "bottom-up") approach is best for learning words used in academic texts because this strategy helps students more accurately understand these texts.

In chapter 5, Altman, examining her acquisition of Hebrew, focuses on the growth of her own productive vocabulary. Next, Grabe and Stoller (chapter 6) describe how a sojourner in Brazil was able to increase his receptive vocabulary, as well as his comprehension of the news genre, simply by reading news articles in Portuguese with a bilingual dictionary and by watching Brazilian news on television. This chapter shows how useful a systematic reading routine can be, even when the learner is not attending language classes.

Part III consists of empirical research. A study by Yang (chapter 7) describes the learning of an artificial language and the cognitive skills students achieved during five weeks. Arnaud and Savignon (chapter 8) describe the performance of four groups of French EFL learners on a vocabulary test of rare words and idiomatic phrases in English. The authors found that the most advanced group approximated the native control group in knowledge of rare words but lagged significantly in knowledge of idiomatic phrases. The researchers recommend that the teaching of idiomatic phrases be included in language programs.

Paribakht and Wesche (chapter 9) compared the performance of two groups of university ESL students on vocabulary tests after exposure to one of two treatments. One group read theme-based articles and relied on incidental vocabulary learning, while the other group completed theme-focused readings that were followed by vocabulary exercises on targeted

words. The researchers found that although both groups significantly improved in vocabulary, the reading-plus-vocabulary group significantly out-performed the reading-only group. The practical applications of this study include the endorsement of contextualized reading and of vocabulary exercises that consist of multiple exposures to the same words and to different types of processing.

Part IV focuses on pedagogy. Hulstijn (chapter 10) suggests that learners can be trained to use a keyword mnemonic technique to remember concrete words. This learning strategy applies both verbal and visual associations to new words. Coady (chapter 11) gives an overview of the research on extensive reading in L2 vocabulary acquisition. He concludes that findings on this topic are mixed. Readers clearly increase their vocabulary through extensive reading, but beginners need to have sufficient vocabulary to read with comprehension. To promote effective reading, Coady recommends the careful selection of books and, possibly, the use of graded readers.

Nation and Newton (chapter 12) offer research support for vocabulary development through carefully designed communicative tasks that lead to incidental vocabulary learning. Their research found that a tandem sequence of two communicative activities could be particularly effective: First, an information-gap task maximizes students' opportunities to negotiate the form of words; second, a ranking task results in further negotiation about word meaning. The authors offer additional suggestions about classroom activities.

Lewis (chapter 13) discusses the lexical approach, a new approach to language teaching, which "challenges a traditional view of word boundaries" (p. 17). Lewis notes that language consists of multiword chunks: polywords, collocations (word partnerships), institutionalized utterances, and sentence frames/heads. The lexical approach includes use of receptive, awareness-raising activities. Important assumptions concerning this approach are discussed in chapter 1 and methodological implications are listed in chapter 14.

In Part V, (chapter 14) Coady synthesizes the research on L2 vocabulary acquisition, listing attitudes that influence L2 vocabulary acquisition and critiquing the four main approaches to L2 vocabulary instruction. These approaches are: 1) context alone and incidental acquisition of vocabulary; 2) strategy instruction; 3) development plus explicit instruction; and 4) traditional classroom vocabulary activities. He also examines several areas of research: L1 vocabulary acquisition, collocation, reading research, bottom-up processing, lexicon size, and dictionary instruction.

Despite its many outstanding chapters, this book has a shortcoming: None of the chapters focuses on K-12 children. Thus, there is little discussion of children's vocabulary acquisition. Because some students enrolled in

teaching English as a second language (TESL) programs will become K-12 teachers or are already teaching in schools, they would benefit from chapters that examine limited English proficient children's vocabulary acquisition. Perhaps Coady and Huckin's next edition could meet this need.

Aside from this drawback, *Second Language Vocabulary Acquisition* addresses a neglected topic in ESL pedagogy by offering an excellent balance of articles on the four approaches to L2 vocabulary instruction; therefore, I highly recommend it to teachers and materials writers. It can also be used as a supplementary text in a graduate course on TESL theory and methods, especially with students planning to teach ESL/EFL in higher education.

Further, I recommend several chapters for use with undergraduates; students in my undergraduate TESL practicum class read chapters 2, 9, 10, 11, and 12 because these chapters are especially accessible, offer diverse views of the research, and include concrete teaching ideas. Clearly, this book is an excellent resource for TESL students and professionals.

Tapestry: The Newbury House Guide to Writing
M. E. Sokolik
Boston: Heinle & Heinle, 1996

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All teachers wish that their students would see writing as real communication, but very few writing texts help students to achieve this goal. M.E. Sokolik's *The Newbury House Guide to Writing* is one of these few. Claiming that audience, purpose, and culture are factors that influence written communication, Sokolik encourages students to develop themselves as writers. Presenting rhetorical forms in context, Sokolik provides authentic, culturally informative writing selections that can be used as the basis for a range of process-based activities designed to improve students' writing.

This book is part of a series that builds upon the concepts originally presented in Scarcella and Oxford's (1992) *The Tapestry of Language Learning: The Individual in the Communicative Classroom.* The volumes in this series are for designed for sequential use by ESL students at post-secondary institutions and range from beginning levels through advanced. The purpose of the entire series is to interweave the four skills of listening, speaking, reading, and writing into a mutually supportive whole so that students may transfer improvement in one language skill area to the others. Students work with information about American culture, history, and social concerns that is presented via authentic text selections emphasizing each of the four language skills.

This latest writing guide is tailored for "bridge" level students: i.e., those students ready to cross over into native-speaker English writing courses. In this volume there are short stories, journal entries, poetry, and letters illustrative of various rhetorical and narrative genres; all selections are accompanied by discussion questions from both a reader's and a writer's point of view.

The Newbury House Guide to Writing has ten chapters, logically grouped into three sections. Chapters 1 through 3 cover the skills a writer needs to generate ideas, to extract information from reading, and to decide on the purpose and the audience for a text. Chapters 4 through 7 present four different types of essays, and are the bases for student writing assignments. Each of these chapters is devoted to a particular strategy for writing (e.g., informing and persuading) that students are likely to encounter in various college courses.

These seven core chapters also include an introduction to various strategies, models, and activities for practice, a writing and revising plan, and additional longer readings by different authors. The writing assignments are developed using a "process approach". Preparatory exercises are used to generate writing topics; these are followed by exercises to organize first drafts. Next, peer response questions, revision plans, and finally, draft evaluation charts and checklists are used to complete the process as students work their way through the various stages of a text's composition. The result is an easy-to-follow path through the skills and responsibilities required of writers each time that they undertake a writing task.

Chapters 8 through 10 constitute a miniature grammar and style reference work, incorporating examples, exercises, and suggestions for improving writing. Familiar exercises, such as "quickwriting" and completing tables, offer a variety of ways for students to practice the material presented. In addition, a glossary of grammar terminology used in the *Tapestry* series is provided.

Several features recur throughout most of the chapters in this book. Small informative sidebars, called "Threads," provide definitions of unfamiliar terms, give brief biographical information about the authors of the reading selections, and offer additional information about the people and the places referred to in the readings. "For Discussion" sections follow each of the readings, posing questions related to the reading's content as well as to its rhetorical features such as purpose, audience, and style. Also, one- to three-line "Learning Strategies" appear in the introductory and writing sections of the chapters suggesting ways for students to work more efficiently.

Well-constructed charts and tables are prominent throughout the volume. Many concisely organize important information and examples; others provide useful outlines for organizing and revising, giving peer response to a partner, and self-editing. Ungraded "quickwrites" provide students with practice in writing without the pressure of evaluation. This variety of activities stimulates further thinking and provides grist for the students' writing mill.

A major strength of this volume is its general usability, a result of the thorough evaluation it received from approximately 40 pilot testing sites set up by the publisher to assess all materials proposed for the *Tapestry* series. The materials included were tried and critiqued before going to general

publication, and the large number of sites ensured a wealth of input from a range of users. The diversity of the readings and activities and the applicability of the strategies and skills to writing certainly reflect this care.

Another particularly strong feature of this volume is the use of extended, authentic "Additional Readings." Too often, language instruction can brush over meaningful communication in writing in favor of academic, formal, and vocabulary concerns. Especially when the student audience is at the near-mainstream level, attention to discourse strategies should begin to supplant the formal, grammar focus of many ESL programs. At every stage, language skills may be enhanced when students work with authentic readings about the communities that they are entering.

However, the readings also present a possible limitation for students using this book. The readings are all models of polished professional writing, approximately two pages in length in the first three chapters. In Chapters 4 through 7, the "Additional Readings" are at least triple the length of previous selections. One chapter's selection contains very erudite, persuasive rhetoric. Vastly different from the other readings, which are mainly narrative and expository, it is a genre with which few ESL students are likely to have had experience. Even though some ESL students may have spent a number of years in U.S. schools, multiple-page readings from unfamiliar genres can still present difficulties for advanced students, especially those oriented to technical fields of study such as engineering or mathematics. The students may feel pressure to match the style and caliber of the professional writing and they may become frustrated if they cannot.

Despite this potential drawback, *The Newbury House Guide to Writing* is a welcome addition to the resources available to ESL students who are getting ready to make the transition from non-native-speaker to native-speaker English writing courses. The interesting, culturally informative readings, relevant discussion questions, useful strategies, and comprehensible methods of practice and evaluation combine to make good writing skills accessible to students; in addition, authentic examples of different rhetorical strategies are provided to illustrate that these skills are valued in writing across many disciplines. Sokolik's coherent presentation of writing as a multiform medium of cultural communication makes this book a worthwhile addition to literacy instruction materials.

Reference

Scarcella, R. C., & Oxford, R. L. (1992). *The tapestry of language learning: The individual in the communicative classroom.* Boston: Heinle & Heinle.

Pronunciation Power, Version 1.0
English Computerized Learning, Inc.
South Edmonton, Alberta: Blackstone Multimedia Corporation. 1996.

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For learning pronunciation, it is generally acknowledged that nothing beats a private tutor. After all, a tutor can describe and model articulation, give immediate feedback, and provide all sorts of exercises – all to the learner's heart's content. Now there is pronunciation software available that simulates some of the advantages one would enjoy with a private tutor, giving it an edge over other forms of self-study.

Pronunciation Power, a CD-ROM designed for intermediate to advanced learners acquainted with phonetic alphabets, contains a variety of easy-to-use interactive activities. Users begin by selecting one of the 52 vowels, consonants, and consonant clusters. They hear it modeled, and can have it repeated as many times as they desire. Users then may choose from three activities related to the phoneme: "Articulation Lessons," "Speech Analysis," and "Exercises."

Articulation lessons begin with a computerized sagittal section (or cross-section of the vocal tract) showing the proper articulatory position of the speech organs (lips, teeth, tongue, palate, etc.). These lessons also provide an indication of voicing and manner of articulation ("full," "released," and "semi-obstructed"), in addition to a written description of the articulation (which can be heard with a click on the speaker icon). So, for example, if the selected phoneme is /d/, the program shows the tongue moving between the teeth, a purple wave indicating semi-obstruction coming out the mouth, and a wavy line representing the vocal cords as a symbol of voicing. Users can repeat the demonstration, and have control over the speed of presentation. The module also contains an option called "Front View" that allows users to see a pair of real lips articulating the phoneme or

cluster and an on-screen "Suggestion" box that provides further details on some aspect of the phoneme or cluster to help learners differentiate between similar phonemes.

"Speech Analysis" modules allow users to see a spectrogram representing sound waves of the phoneme or cluster they have chosen, to listen to the model pronunciation, and to record their own sample (assuming the availability of a microphone). This sample is then converted into a second spectrogram for comparison with the model. This is probably the most interactive part of the program in that the learner's input is given immediate feedback. Users can listen to both the model pronunciation and their own pronunciation repeatedly to analyze the points of similarity and contrast.

As a motivational tool, these spectrograms are very effective; for many users, the chance to see a visual representation of their own speech may be very exciting. The contrast between the phonemes in the consonants and consonant clusters in the model spectrograms is generally clear. However, it should be noted that some of the model waveforms (particularly those of the high and mid-lax vowels) look almost identical, and thus may not serve the desired feedback purpose.

The "Exercises" modules present the user with four choices: "Sample Words," "Sentences," "Comparative Words," and "Listening Discrimination". The latter two focus on minimal pairs. Each sub-section provides model words and sentences which users can listen to and repeat. Here, too, there is an option for users to record their own samples to compare against the models. Words are chosen that demonstrate a variety of spellings of the phoneme where possible. In addition, a highlighting function indicates in pink the phoneme or cluster in question within each word. The "Listening Discrimination" sub-section asks users to listen to a model and choose between two contextualized minimal pairs according to what they hear. They can listen as many times as needed before making the choice and getting feedback: a green check mark (correct) or a red X (incorrect) next to the sentence.

Despite the many laudable features of *Pronunciation Power*, some instructors may take issue with the ways that some of the phonemes and clusters are presented here. The developers are Canadian, so there may be some differences between their dialect and other North American dialects. The most salient example is the /aw/ phoneme, for which the 'suggestion' is: "Remember—this is two sounds blended together: /ə/ and /w/." This, of course, is probably not true for many North American dialects. In addition, no distinction is made between the stressed and unstressed schwa, or between /ɔ/ and /ɑ/. In the latter case, the former symbol is used, while the modeled sound seems to be closer to the /ɑ/.

There are also some unfortunate omissions. No reference is made to the flap, the glottal stop, or the velar /l/. The program has a conspicuous lack of adjustments in connected speech (reduction, blending, assimilation, etc.). Finally, in most of the models, unstressed medial and final t's are noticeably aspirated, thus resulting in what some may perceive as an overly careful, unnatural pronunciation.

It should also be noted that this program is limited to the segmentals; practice in stress, rhythm, and intonation is not offered. Of course, that would double the scope of the program—perhaps *Pronunciation Power, Part 2* is in order?

The program comes with an on-line user manual that describes in detail the various features (for example, it provides helpful illustrations of good and bad matches of waveforms). However, the program itself is very accessible and even without consulting the user manual, it is easy to navigate and understand its various components.

Overall, *Pronunciation Power* provides English learners with an original, entertaining, and visually stimulating way to practice most of the phonemes and clusters they will need in their English repertoire. Even with a few limitations and drawbacks, the program has great potential to motivate its users toward producing more nativelike pronunciation. Thus, although *Pronunciation Power* may not be as effective as a private tutor, it comes pretty close.

Grade Quick!
Jackson Software
www. jacksoncorp.com

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Do you love teaching, but hate grading? I do, and when I moved from teaching noncredit ESL classes to credit classes, I was faced with this "necessary evil." My initial paper gradebooks were cumbersome, multi-layered systems of attendance records, letter and/or number grades for quizzes, tests, and essays, and pluses and minuses for classroom participation and homework; trying to boil all the data down into one final letter grade was overwhelming. I knew I needed help and I turned to technology to find it. I downloaded the gradebook software *GradeQuick!* from the publisher's web site (http://www.jacksoncorp.com.) for a free 30-day trial period.

Two years later, I'm still excited about this program! It's easy to use, and it does more than just provide instant computations of final averages. *GradeQuick!* gives you the power and flexibility to design a grading system that fits your exact needs. Do you weight various types of work? Do you weight the first and second half of the semester differently? Do you lower grades for late or incomplete work? Do you give extra credit points? *GradeQuick!* will perform these types of calculations with one simple click. With minimal training, you can devise a grading system that is objective, consistent, understandable to students, and manageable to calculate.

A few of the helpful features of *GradeQuick!* are:
- *Keeps track of student information:* Enter nicknames, phone numbers, ID numbers, birthdays, anything you want.
- *Categorizes your assignments:* Set up your own categories (homework, in-class essays, quizzes, tests, midterm essay, etc.) and the software subtotals the scores for each one.

- *Sets the grading interval: Grade Quick!* allows you to set the grading intervals within the semester if you want to distinguish assignments and grades up to the midterm from those received after midterm.
- *Variety of weighting options:* You can use an unweighted grading system, or you can set the relative weight or importance by individual assignment, category, marking period, or all three. Best of all, if you are a novice at this, the program allows you to try out various weighting scenarios without making the changes permanent.
- *Customizes individual student reports:* You can easily print a wide variety of pre-formatted reports. I use one that includes the name of each assignment, the date, the total number of points possible, the number of points received, the subtotals for each category, and the grade received. I can add personal notes to individual students (*"Your written work has shown great improvement. Keep up the good work!"*) or a general memo that everyone receives (*"If you have questions about your grade, please make an appointment to talk with me about it."*) You can also print out blank gradebook spreadsheets to enter student scores manually before transferring them into the computer.

The software includes a myriad of other options, such as customizing your grade scales, using numbers, letters, symbols or your own grade names, tracking attendance, dropping lowest scores, graphing grade distribution and student progress, and using attendance to change the grade average. Last but not least, Jackson Software's Help Line is staffed by knowledgable people!