

OPTIMAL PSYCHOLINGUISTIC ENVIRONMENTS FOR DISTANCE FOREIGN LANGUAGE LEARNING

Catherine J. Doughty and Michael H. Long

University of Maryland

ABSTRACT

Rational choices among the numerous technological options available for foreign language teaching need to be based, in part, on psycholinguistic considerations. Which technological advances help create an optimal psycholinguistic environment for language learning, and which may be innovative but relatively unhelpful? One potential source of guidance is offered by the 10 *methodological principles* of Task-Based Language Teaching (TBLT; Long, 1985, and elsewhere), each realizable by a variety of *pedagogic procedures*. Interest in TBLT derives from several sources, including its responsiveness to learners' precisely specified communicative needs, the potential it offers for developing functional language proficiency without sacrificing grammatical accuracy, and its attempt to harmonize the way languages are taught with what SLA research has revealed about how they are learned. TBLT's 10 methodological principles are briefly defined and motivated, and illustrations provided of how the principles can inform choices among technological options in the particular case of distance learning for the less commonly taught languages.

INTRODUCTION

In this paper, we motivate and define 10 methodological principles for Task-Based Language Teaching (TBLT) and illustrate their implementation in the particular case of foreign language distance learning for less commonly taught languages (LCTLs). Interest in TBLT derives from several sources, including the potential it offers for producing courses designed systematically in response to learners' precisely specified communicative needs, for developing functional foreign language proficiency without sacrificing grammatical accuracy, and for harmonizing the way languages are taught with what SLA research has revealed about how they are learned. Our primary focus is on the role of the methodological principles (MPs) in the design of psycholinguistically optimal L2 learning environments, with special attention to the use of technology to realize the MPs. We provide a brief rationale for each principle, followed by one or more examples of how the principle informs choices among the dizzying array of technologically feasible options in distance learning.

BACKGROUND

Several proposals for task-based language teaching have appeared over the past decade, but most have been limited to suggestions for materials and pedagogy for a miscellany of single tasks, unmotivated by the findings of a learner needs analysis. Some have been little more than "communicative" practice devices for the covert delivery of structural syllabuses -- tasks replacing drills, with very little else changing -- not task-based at all, in other words. On both counts, the same is true of many computer-assisted language learning (CALL) materials and, more recently, the delivery of distance learning foreign language programs. In contrast, right or wrong, Task-Based Language Teaching (see, e.g., Long 1985, 2000a, in press a, b; Long & Crookes, 1992, 1993; Long & Norris, 2000; Robinson, 2001b) constitutes a coherent, theoretically motivated approach to all six components of the design, implementation, and evaluation of a genuinely task-based language teaching program: (a) needs and means analysis, (b) syllabus design, (c) materials design, (d) methodology and pedagogy, (e) testing, and (f) evaluation.

A major consideration in the development of distance learning programs is how to make principled choices among technology options. To be effective, distance language programs, like any other language courses, must be carefully planned on the basis of a clear understanding of learner needs, since the appropriate technology for the delivery of such courses can only be selected once these elements are understood in detail. In addition, there is a clear distinction between classroom-connected uses of technology (e.g., CALL) and distance learning. CALL is typically just one component of an L2 curriculum that also includes classroom, and sometimes community, activities. Furthermore, the teacher who integrates CALL into L2 courses still interacts with and observes students and their requirements on a daily basis. In contrast, distance learning is often the only element of a student's L2 learning experience (for instance, in the case of distance learning of an uncommonly taught language). And, by definition, distance learning is remote and also is primarily asynchronous. These two factors are potentially problematic for foreign language learning, which depends crucially upon the nature of the interaction in the L2. We argue that careful distance learning program design decisions may (and must) compensate for the asynchronicity of communication and the lack of proximity between instructor and learners. On a more positive note, if the distance learning *is* an extension of a classroom L2 learning experience (e.g., as a part of an in-country internship or study abroad), then it can be seen to offer many advantages. Considering these among other factors that distinguish classroom lessons, CALL, and distance learning, we focus on TBLT as an approach to foreign language distance learning with the potential to motivate rational choices among the many technological options available when attempting to create a psycholinguistically optimal instructional environment.

METHODOLOGICAL PRINCIPLES AND PEDAGOGIC PROCEDURES

A distinction is made in TBLT between methodological principles (MPs) and pedagogic procedures (see Long, to appear, a). Together, they guide and constitute the way a genuinely task-based syllabus and task-based materials are implemented in the classroom.

Methodological Principles

Methodological principles are putatively universally desirable instructional design features, motivated by theory and research findings in SLA, educational psychology, and elsewhere, which show them to be either necessary for SLA or facilitative of it. The theoretical and empirical support make them features which should probably characterize any approach to language teaching, task-based or otherwise. Advances in knowledge may eventually show some or (hopefully not) all of them to be wrong, but as in any other field, practitioners must rely on, and are limited to, current understanding of theory and research findings.

TBLT is rooted in cognitive and interactionist SLA theory and research findings (see, e.g., Doughty, 2001b; Doughty & Long, 2003; Long, 1996b, 2000a, in press a; Long & Robinson, 1998; Robinson, 2001a; Schmidt, 2001; Skehan, 1998). Not all the MPs fall out of a single theory, however, or should be expected to do so. TBLT is an embryonic theory of *language teaching*, not a theory of SLA. And, whereas theories generally strive for parsimony, among other qualities -- to identify what is *necessary* and *sufficient* to explain something -- a theory of language teaching seeks to capture all those components, plus whatever else can be done to make language teaching *efficient*.¹ Language education is a social service, after all, and providers and consumers alike are concerned with such bread-and-butter issues as rate of learning, not with what may or may not eventually be achieved through a minimalist approach motivated exclusively by a theory of SLA. Some language teaching components (e.g., negative feedback) may not be necessary to learn certain target language features, given learners who are native speakers of a particular language, but may facilitate the process, nevertheless, and so be included on the basis of efficiency. Some components may not be motivated by SLA theory at all, but by work in education, general psychology, and more. Some components may derive convergent validation from work in two or more fields.

There are at present 10 MPs in TBLT (Table 1). Some (e.g., "Use task as the unit of analysis," "Elaborate input," and "Focus on form") are original to the approach, while others (e.g., "Learn by doing," "Provide negative feedback," and "Individualize instruction") are based on long traditions and the work of numerous scholars in philosophy, SLA, psycholinguistics, language teaching, curriculum theory, and educational psychology. The middle column of Table 1 provides some classroom-based examples of the MPs, and the rightmost column lists exemplary CALL applications. Unaltered, some of these CALL applications are potentially relevant for distance learning. However, as will be discussed further below, special consideration must sometimes be given to the primarily asynchronous and remote nature of distance learning when choosing among them in this context.

Table 1. Language Teaching Methodological Principles for CALL

	Principles (adapted from Long, in press a)	L2 Implementation	CALL Implementation
ACTIVITIES			
MP1	Use tasks, not texts, as the unit of analysis.	task-based language teaching (TBLT; target tasks, pedagogical tasks, task sequencing)	simulations; tutorials; worldware
MP2	Promote learning by doing.		
INPUT			
MP3	Elaborate input (do not simplify; do not rely solely on "authentic" texts).	negotiation of meaning; interactional modification; elaboration	computer-mediated communication / discussion; authoring corpora; concordancing
MP4	Provide rich (not impoverished) input.	exposure to varied input sources	
LEARNING PROCESSES			
MP5	Encourage inductive ("chunk") learning.	implicit instruction	design and coding features
MP6	Focus on form.	attention; form-function mapping	design and coding features
MP7	Provide negative feedback.	feedback on error (e.g., recasts); error "correction"	response feedback
MP8	Respect "learner syllabuses"/developmental processes.	timing of pedagogical intervention to developmental readiness	adaptivity
MP9	Promote cooperative/ collaborative learning.	negotiation of meaning; interactional modification	problem-solving; computer-mediated communication / discussion
LEARNERS			
MP10	Individualize instruction (according to communicative needs, and psycholinguistically).	needs analysis; consideration of individual differences (e.g., memory and aptitude) and learning strategies	branching; adaptivity; autonomous learning

(This table is adapted from Doughty 2000b, 2001b.)

Pedagogic Procedures

Whereas MPs are language teaching universals, pedagogic procedures (PPs) comprise the potentially infinite range of local options for realizing the principles at the classroom level. Choice among PPs is determined by such factors as (a) teacher philosophy and preference; (b) learner age, proficiency, literacy level, aptitude and cognitive style; (c) the class of target linguistic features for which the procedures are to be used; and (d) the nature of the learning environment, the last being especially important in a distance learning context. Selection among the myriad PPs available should vary, albeit rationally and systematically. Many of the choices have to be made spontaneously as a lesson unfolds, and so are best left to the classroom teacher, who is almost always the most reliable source on local circumstances, and in many cases (e.g., manner of response to unforeseen learner difficulty) the only source. Whereas MPs can be assessed as most likely right or wrong at any particular time, given the current state of knowledge, there are no constant "right answers" where PPs are concerned. Choice among them is a matter of judgment, with different choices potentially justified at different times with the same learners or at the same time with different learners.

By way of illustration, let us consider [MP7](#). While some controversy remains as to the *necessity* of negative feedback in adult SLA (for opposing views, see, e.g., Long, 1996b; Schwartz, 1993), there is good evidence, and widespread agreement, that feedback on error is *facilitative*. "Provide negative feedback," therefore, has the status of a methodological principle in TBLT. *How* that feedback is best provided in any particular classroom is a matter of local circumstance. Options range from overt and explicit procedures (e.g., use of a rule or explanation delivered in oral, manual, or written mode, in the L1 or L2, or repetition of the correct response, followed by an elicitation move of some sort designed to test for incorporation), through less intrusive ones (e.g., teacher "clarification requests" in the absence of any real communication breakdown, designed to elicit learner re-runs with self-repair), to covert and implicit ones (e.g., manipulation of input frequency to increase perceptual salience, or the use of corrective recasts, of which students, and even teachers themselves, may sometimes barely be aware). Different pedagogic procedures for providing negative feedback may be needed for literate and illiterate learners, for children and adults, and so on, or with the same group of learners for different classes of problematic target-language forms (e.g., free and bound morphology, meaning-bearing and communicatively redundant items, or forms that are learnable and unlearnable from positive evidence alone). While the PPs chosen will vary, all will instantiate the same MP: "provide negative feedback."

THE DISTANCE LEARNING CONTEXT

The use of technology in language teaching clearly falls within the domain of pedagogic procedures. Whereas practical circumstances often favor -- or even dictate -- distance learning for LCTLs, there is nothing inherently necessary or sufficient psycholinguistically about any use of technology, as evidenced by successful foreign language learning without it. Most successful foreign language learning takes place with no technology support at all, in fact. Moreover, it has been demonstrated empirically that it is design principles that underlie successful learning rather than any particular delivery system (Clark, 1985, 1994). Nonetheless, the current generation of network-based technology, in many cases, does offer advantages over the traditional classroom in terms of ease and range of access to materials, interlocutors, and domain experts. This is especially true in the case of the LCTLs, for which budgetary considerations may preclude the offering of regular courses for what are often small numbers of students in any one location. Still, where language teaching takes place entirely out of the classroom, this is not without difficulty. For instance, the classroom teacher -- who is, as noted above, (a) ordinarily the most reliable source on local circumstances, (b) the one who can best make decisions as a lesson unfolds, and (c) a major source of native L2 input and feedback on error -- is now removed in space and time from the learners, who may, in turn, be removed from one another.

The question, then, when considering which technology options are appropriate in distance learning, is how, in accordance with the language teaching MPs, to integrate the advantages of network-based

technology while compensating for the difficulties posed by the absence of real-time, face-to-face interaction. Rational decision-making in this area has the potential not only for appropriate realization of the MPs concerned, but also for making use of technology itself more principled than is often the case.

TBLT FOR LCTLs

Existing Resources

In this paper, we exemplify the application of TBLT's 10 MPs in selecting appropriate technology for the distance learning of foreign languages. We wish that we could point to an *existing* distance learning TBLT course or program for any LCTL. However, to our knowledge, none exists. While there are many useful links to online and print materials resources for the LCTLs existing online (e.g., at the Web sites of [Michigan State University](#), [National Foreign Language Resource Center](#) at University of Hawai'i, the [Center for Advanced Research on Language Acquisition](#) at the University of Minnesota, or [UCLA](#)), materials tend to fall into the following categories: phrasebooks, dictionaries, translation aids, metalinguistic grammar instruction, reference grammars, authentic video, authentic texts (e.g., literature), and tests. Nor do there appear to be any internet task-based courses for LCTLs (classroom or distance) in any online university catalogs (most are traditional language-as-object courses, even when given a special purpose title such as "Business Korean"). Useful examples for TBLT are language for specific purposes courses, and there is a vast literature on English for Specific Purposes (see [Eric database](#); [ESP Journal](#); [ESP on the Web](#); see also Dudley-Evans & St. John, 1998; Hutchinson & Waters, 1987; Jordan, 1997; Robinson, 1981). However, for the LCTLs, the small number of such special purpose materials which exist are either classroom or one-on-one tutorial courses (e.g., "Japanese for you-specify-the purposes" -- a model, in fact, ideally suited for TBLT); content-based courses (e.g., understanding [Chinese culture for entrepreneurship](#)); or little more than phrase lists (e.g., what to say when [exchanging business cards](#)).

Examples of TBLT-Like Materials

As a consequence of this state of affairs, our discussion will necessarily be based on a combination of existing examples of materials which exhibit some but not all of the features under consideration, and one logical but not yet implemented example which incorporates them all (see [Table 2](#)). A useful service for the field would be the identification and archiving of any LCTL materials that are genuinely task-based, distance courses, or both.

Table 2. TBLT in the Distance Learning of LCTLs

	Level	TBLT?	LCTL?	Distance Ed?	Exists?
Dustin Simulation	beginning	nearly	no	yes	yes
Korean TBLT Following Directions Module	beginning	yes	yes	no, but adaptation will be discussed	yes
Longitudinal assessment of a smoking prevention program in Wuhan, China	advanced	yes	yes	yes	no

The first TBLT-like example in [Table 2](#), a CALL program, is a simulation ("[Dustin](#)") which was developed for L1 Spanish-speaking employees of the Anderson Consulting Firm preparing to attend a training session at the parent company site in Illinois (Ohmaye, 1998). The strengths of this example are its "learning by doing" approach (see [MP2](#)), espoused by the Institute for Learning Sciences at Northwestern University, where the simulation was developed ([Schank & Cleary, 1994](#)), and the proximity of computer simulations to TBLT.

The second example is one from our own Korean TBLT materials development project for the University of Hawai'i's [National Foreign Language Resource Center](#) (Long, Doughty, & Chaudron, 1999-2001; go to http://nflrc.hawaii.edu/project_home.cfm and search on "Korean"). While these materials were not

developed for distance learning, we will discuss logical ways in which they could be implemented as such using technology. For example, we will show that a tagged corpus linked to audio could provide learners with the opportunity to listen to target task discourse for extended periods of time.

The third example we mention simply illustrates the potential for distance foreign language learning where students are involved in a research project in a country where the target language is spoken. In 1998, the University of Southern California began a [smoking prevention program](#) in Wuhan, China, using a protocol already developed at USC. The aim of [the study](#) is stated as follows by project director, Johnson:

In addition to smoking, the IPR [[Institute for Health Promotion and Disease Prevention Research](#)] will assess alcohol abuse, stress, diet and nutrition, physical activity, the quality of the environment, and health programs, as the region undergoes rapid economic development and social change. (Guttman, 1998)

The final component of the program is a longitudinal study to monitor the effectiveness of the smoking prevention protocol. We are not aware of what kind of language preparation, if any, students in this USC program actually receive. One could envision that, after a period of preparation at USC for in-country experience (in and of itself a candidate for a Chinese TBLT course), learners would then engage in the research project with distance learning support of their L2 teachers, for instance using Web cameras, sound cards, and a video conferencing program such as [iVisit](#). This example illustrates a case in which the technology of distance learning is a necessary component for the in-country phase of a TBLT course.

The Importance of Needs Analysis

Taking a TBLT approach to the distance learning of LCTLs entails a number of advantages, as well as challenges. First, TBLT's emphasis on meeting the real-world needs of learners offers a motivating alternative to the dismal prospect of a grammar-based, drill-and-practice distance foreign language program, a format known to be ineffective in print, classroom, and CALL versions of materials. Furthermore, TBLT emphasizes *variety* in resources relevant to these needs (see [MP4](#)) and *individualization* of instruction (see especially [MP8](#) and [MP10](#)), both more easily accomplished with than without technology. Finally, given that using technology is often likely to be an intrinsic part of many L2 learner needs, some of the integral components of distance learning will, in and of themselves, *be* target tasks.

Nonetheless, course developers taking a TBLT approach will face certain challenges, some of which are already becoming well known in distance learning. For instance, given that the results of pre-course and ongoing learner needs analyses lay an essential foundation not only for syllabus design, but also for many pedagogic decisions in TBLT, an important consideration for program developers is that of how the learner needs analysis is to be carried out in the distance learning context. This issue is vital since distance learning already shows signs of mass commercialization that will far exceed the existing market for irrelevant print-based language teaching materials. Universities tend to see distance learning as a way of handling large course enrollments economically or of increasing tuition revenues by reaching out to large numbers of students not physically present on campus. Also, universities make information technology (IT) system-wide decisions to purchase distance learning course management software for all their courses, software which may not be suitable for TBLT.² Most recently, distance educators have become concerned about Microsoft's emerging and expanding corporate control of course management software, such as Blackboard ([Arnone, 2001](#)). The essence of TBLT is its relevance to learner needs (both communicative and psycholinguistic), and distance learning clearly has the potential to contribute in this area, provided those needs are kept in mind at all times during program development, and provided language courses are not packaged into ill-fitting courseware management programs.

All three of our examples in [Table 2](#) employ a learner needs analysis. As noted above, [Dustin](#) is a computer simulation program designed to prepare international employees for a training session at the

home office in Illinois. Computer simulations of real-world tasks are potentially the ideal environment in which to build a needs-based TBLT program. In this case, the *Dustin* program designers conducted a needs analysis by participant observation of the following aspects of the Anderson Employee training program: arriving at the U.S. airport, clearing customs, traveling from the airport to the hotel, checking in, and using the hotel facilities, including restaurants and shops (Ohmaye, 1998). The simulation is built to enable learners to try the target tasks, with some assistance available from the interface (e.g., a translation button, the capacity to view video interaction, and simplification of input). More will be said about this trial-and-error approach and the available help options below in the discussion of the remaining MPs.

The Korean TBLT "Following street directions" module was developed to meet a pervasive need identified using semi-structured interviews, plus task-based L2 use questionnaires based on those interviews (see Chaudron et al., in press). Over 90% of students studying Korean at UH had already been and/or planned to travel to Korea for a variety of purposes, ranging from academic, through occupational and religious, to social. Thus, an important target task for them was understanding and following street directions. As described in greater detail below (see *MP1*), the necessary and optional elements of the target task were further investigated via collection and analysis of samples of target discourse surrounding completion of the same task in Honolulu and Seoul.

Finally, an in situ and ongoing needs analysis of the hypothetical longitudinal assessment of the smoking prevention program in Wuhan, China would be the foundation for the distance learning portion of a TBLT Chinese course. Such a course would start out at USC and continue via the internet in country. Learners would report their needs as they encounter them, and L2 teachers and domain experts would be available as resources.

TEN METHODOLOGICAL PRINCIPLES FOR TBLT IN DISTANCE LEARNING OF LCTLs

We now briefly discuss the rationales for, and examples of, the 10 MPs listed in *Table 1* (for more detailed explanations and reviews of empirical findings, see Long, in press a). Illustrations of PPs are taken from the simulation and TBLT examples cited in *Table 2*, as well as from the CALL applications in *Table 1*.

MP1: Use Task, Not Text, as the Unit of Analysis

For several independent reasons (see Long, in press a), "task" is the appropriate unit of analysis at every stage of a language teaching program. At the level of methodology, our present concern, it meets the requirements of an analytic approach (Wilkins, 1976), and, unlike "approach," "method," or "technique," for example, is also known to be a meaningful unit around which teachers can plan, deliver, and recall lessons (Shavelson & Stern, 1981; Swaffer, Arens, & Morgan, 1982). The focus in TBLT lessons is on task completion, not study of a decontextualized linguistic structure or a list of vocabulary items -- and not the same phenomena at the supra-sentential level, *text*. Spoken or written texts are static records of someone else's (previous) task accomplishment (i.e., a by-product of tasks). Building lessons around texts (as in most content-based language teaching) means studying language as object, not learning language as a living entity through using it and experiencing its use during task completion. Learners need to learn how to do a task themselves. There is a world of difference, for instance, between learning to make a particular kind of social, business, or emergency medical telephone call through acting one out, as in a role play and/or making a real one to given specifications, on the one hand, and on the other, in a text-based program of some kind, listening to or reading a "dead" script of someone else's effort.

A number of issues arise when task is selected as the unit of analysis, the most problematic of which, currently, is sequencing of course material. This problem exists, but is rarely addressed scientifically, regardless of the kind of syllabus used. The solution implicit in most materials is some intuition-based and question-begging notion of linguistic complexity (e.g., teach the "simplest" structures first). Another frequent approach to sequencing, and the one taken in the *Dustin* simulation, is to allow learners themselves to select the order in which they proceed through materials. Since L2 learners are neither

applied linguists nor domain experts, the efficacy of learner self-direction is also questionable. We believe that the ultimate solution, which is an important component of TBLT, will lie in the development of series of *pedagogic tasks* sequenced in terms of (inherent, unchanging, and objectively measurable) *task complexity*, with *task difficulty* (which varies for specific learners according to such factors as their L2 proficiency) modifiable as needed by alterations to *task conditions* (the circumstances under which the tasks are carried out). By working through the series of pedagogic tasks, learners can build up the abilities needed eventually to perform the *target tasks* identified by the learner needs analysis at the levels required. The characteristics of tasks which predict complexity, and the effects of task complexity, difficulty, and conditions on interlanguage use, are currently areas of intensive research in SLA (see, e.g., Kong, 2002; Lee, 2002; Robinson, 2001b; Skehan, 1998). Robinson (2001a, and elsewhere) defines task complexity in two ways, with one dimension involving resource-directing elements of a task and the other dimension constituted by resource-depleting task demands. (For a promising model of relationships among task complexity, task difficulty, and task conditions, and of all three to interlanguage accuracy, complexity, and fluency, see Robinson, 2001a.)

The process of sequencing pedagogic tasks is one component of the previously mentioned Korean TBLT project at the University of Hawaii (Long et. al., 1999-2002). As noted above, the results of the needs analysis (Chaudron et. al., in press) revealed that over 90% of learners had already visited and/or intended to travel to Korea for a variety of reasons. Accordingly, the first module of TBLT materials developed for one group of students, near zero beginners, was a series of pedagogic tasks leading to the *target task* of "Following street directions." The series of seven pedagogic tasks shown below was developed and sequenced to prepare students eventually to comprehend and follow directions in Seoul. The eighth pedagogic task listed below is under consideration for development. (See [Prototype Directions Module](#) which provides a rationale and illustrates the process of pedagogic task development in English. This template was used to develop the Korean materials.)

Target Task: Following Street Directions

Pedagogic Tasks

1. Listen to numerous examples of target discourse surrounding target-task completion (i.e., genuine examples of Korean native speakers [NSs] giving directions).
2. Listen to fragments of elaborated directions while tracing them on a very simple, 2-D map. Within this task, the fragments increase in complexity.
3. Listen to ever more complex fragments while tracing them on a more complex, 3-D map, periodically answering questions such as "Where are you now?"
4. In collaborative pairs, read scripted (first pair) and follow (second pair, collaboratively) directions on a simple map.
5. Using real maps of Seoul, listen to elaborated target discourse samples and follow routes already marked on the map with colored lines.
6. Given a starting point, follow an unknown route, with periodic comprehension checks such as "Where are you now?" along the way and at the end.
7. Do the same as in PT 6, but in one "go" (i.e., without breaks or comprehension checks along the way, but labeling the building/space/etc. on the maps at the end of each route as evidence of having successfully reached the destinations).
8. This is a virtual reality map task. Using video from the target location and audio of the target discourse, complete a simulation of the target task. (This can be used as the exit test if the physical location of the learners is not in the target community; see, e.g., the program [En busca de Esmeraldas](#) and a discussion of its development, [González-Lloret, 2003](#)).

MP2: Promote Learning by Doing

The basic, time-tested idea reflected in such contemporary slogans as "learning by doing," "child-centered," and "educating the whole person" is that practical hands-on experience with real-world tasks brings abstract concepts and theories to life and makes them more understandable. New knowledge is better integrated into long-term memory and more easily retrieved if tied to real-world events and activities. Unrecognized by many, an important precursor to such ideas was the notion of "integral education." Integral education is a straight English translation of the French *l'éducation intégrale*, a long-standing principle of curriculum design in Europe, the USA, and elsewhere. It was the guiding principle for all libertarian educational philosophy and practice, exemplified in the writings and experimental schools of Charles Fourier, Paul Robin, Madeleine Vernet, Sebastian Faure, Leo Tolstoy, and Francisco Ferrer, among others, and subsequently in the educational philosophies of such writers as Dewey, Goodman, Holt, Illich, and Freire. Faure's *La Ruche* (The Beehive), founded in 1904, is a famous example. In a rational, liberating, non-coercive, co-educational environment, "problem" children rejected by the traditional French education system learned mathematics, science, and other academic subjects effectively through operating an on-site agricultural co-operative, producing eggs, milk, cheese, vegetables, and honey, and then selling them in nearby Paris to help support the school. (For histories and rich sources of references on integral education, see Avrich, 1980, pp. 3-68; Shotton, 1993, pp. 1-32; and, especially, Smith, 1983, pp. 18-61.) Maria Montessori's (1870-1952) child-centered, teacher-decentered, philosophy, and advocacy of *exercices de la vie pratique*, or "exercises in daily living" (see, Kramer, 1978), reflect much of the same tradition. Use of the exercises in so-called "Montessori" schools (whose practices around the world increasingly tend to vary, despite bearing the same name) has stood the test of time. For example, the December 2002 issue of the National Education Association's [Advocate Online](#) discusses *problem-based learning* (PBL), which "is based on the premise that students will 'want to know' and solve problems when the problem is presented in a context that simulates real-world, and thus personally relevant, situations [and furthermore that] acquiring knowledge in the context in which it is meant to be used facilitates recall and application of concepts and skills learned" (Gijssels, 1996). PBL has been used in the education of medical students for some time, but has recently become widespread in undergraduate courses in all disciplines.

TBLT is an example of learning by doing, and of integral education, at several levels. It aims to equip learners to meet their present or future real-world communicative needs, as identified through a task-based learner needs analysis, the first step in course design (for detailed discussion and examples, see Long, in press b, c). Then, inside the classroom, instead of studying the new language as object in order to use it to communicate at some later date, *students learn language through doing pedagogic tasks*. As illustrated above in the Korean TBLT module on following directions (MP1), a sequence of pedagogic tasks of gradually increasing complexity culminates in one or more target tasks for those learners. Pedagogic tasks, like the target task-types that motivated their inclusion in a syllabus, combine language learning and action at various levels. Almost all pedagogic tasks have a hands-on, problem-solving quality designed to arouse learners' interest and hold their attention. Following taped street directions from a native speaker by tracing out a route on a road map of Seoul is more likely to prepare learners to find their way when lost in Korea than studying a narrative "reading passage" describing the route that someone else took from A to B or a "dialog" showing someone asking for and receiving directions. Actually *doing* a task, or initially a simple version thereof, is more relevant, comprehensible, and memorable than reading about someone else doing it.

Computer simulations of target environments and tasks constitute a good example of the promotion of learning by doing. The basic idea is that a learner on his or her own can gain experience in a simulated environment under conditions of reduced stress and without real consequences to their actions. For example, [Cyberpatient](#) presents several cases in which learners try to save a patient by making the right decisions during a simulated crisis (e.g., acute coronary syndrome and acute leg-swelling cases). Like [Dustin](#), the general model is one of trial-and-error, with optional assistance from the simulation. Although

sharing much in common with simulations, TBLT offers the advantage described above of an ordered sequence of pedagogic tasks. The weakness of *Dustin* (see example 1, [Table 2](#)) and other simulations is that, rather than working through a series of graded *pedagogic* tasks, learners are immediately required to do the *target* tasks (e.g., have a video-based interview with a U.S. customs agent or diagnose an illness) before they have developed the necessary ability to do so. This is often the case with simulations and is done in the name of "authenticity" of materials, an issue which arises with regard to a number of the MPs (Long, 1996a). Early attempts at target tasks generally result in failure, followed by the simulations' provision of help, so that learners can determine where they went wrong. The argument is that since this is done independently and not in a public fashion, such trial and error is beneficial. Furthermore, since the simulation provides help options, the learner can obtain models, hints, opportunities to try the target tasks repeatedly, and so forth. Although such assistance is potentially beneficial if timed properly (as discussed below concerning other MPs), the difficulty is that, in the name of learner control or individualized instruction, learners simply are not given adequate guidance. In the sequencing of series of pedagogic tasks gradually approximating the complexity of the full target tasks, TBLT attempts to resolve this.

MP3: Elaborate Input

Both genuine and simplified texts are psycholinguistically inappropriate for learners. Quite apart from their undesirable status as units of analysis for language teaching (see [MP1](#)), *genuine* (popularly known as "authentic") texts, originally written by and for native speakers, are usually too complex for all but very advanced learners. As a result, they typically require explicit metalinguistic study to render them comprehensible, which leads, in turn, to the study of language as object rather than development of a functional ability to use language. The traditional language teaching alternative, *simplified* texts, are unnatural and unrealistic in their tendency to be self-contained, with little or none of the usual implicitness, open-endedness, and intertextuality that characterizes authentic discourse. Also, while simplified texts are (in most cases) easier to understand than genuine texts, the improved comprehensibility comes at the cost of much of their value for language learning. How are learners to acquire items that have been removed from the input, and how are they to learn real NS use of new items if presented with something far less and unrepresentative? (For further details and discussion, see Long, 1996a.)

Fortunately, there is an alternative to genuine and simplified texts: *elaborated* input. *Elaboration* is the term given to the myriad ways NSs modify discourse (i.e., in language use for non-native speakers [NNSs] to make meaning comprehensible, as revealed by studies of foreigner talk discourse). Most of the modifications occur during negotiation for meaning (i.e., when NS and NNS are focused on achieving communication while working cooperatively on a task). They include partial and complete, exact and semantic, self- and other-repetition; confirmation checks, comprehension checks, and clarification requests; rearrangement of utterances so that order of events and order of mention are iconic; paraphrase; lexical switch; decomposition; a preference for intonation and yes/no questions over WH questions; use of redundancy of various kinds; and many other "scaffolding" devices (see, e.g., Doughty, 2000a; Gass, 2003; Long, 1983, 1996b). Over 20 empirical studies have compared the comprehensibility of simplified and/or elaborated and/or genuine spoken and written texts. The general finding is that simplified and elaborated texts, whether spoken or written, achieve roughly comparable levels of comprehension among NNSs, and that both achieve higher levels of comprehension than genuine texts (see, e.g., Yano, Long, & Ross, 1994). Since elaborated texts do this while retaining the new lexical and grammatical items learners need to encounter in the input if they are to learn them, while preserving the semantic content of the genuine version (Long & Ross, 1993), and while presenting L2 samples that are closer to authentic target-language use than simplified versions, elaboration is clearly superior to simplification as a way of modifying input for foreign language learners. Elaborated input can be provided in advance (e.g., in the pre-scripted materials sources for pedagogic tasks), but also occurs naturally in teacher speech and in learner-learner discourse, as long as participants are focused on task completion and, therefore, on communication (see, e.g., Pica, Lincoln-Porter, Paninos, & Linnell, 1996).

The provision of pre-scripted materials in distance learning poses no greater difficulty than is the case with classroom materials. The course developer simply has to follow the elaboration procedures that have been shown empirically to facilitate comprehension while at the same time providing rich input. Unfortunately, the typical approach in online materials is to require learners to manipulate scripted materials (fill-in-the blank, matching, correction, etc.) rather than to present them with elaborated text to process. For example, in a course called [English for Medical Purposes](#), there are activities that deal with the [taking of a medical history](#). While this would seem to be an ideal task from which to develop simple versions leading up to a complex history, these materials instead present a list of words on the right-hand side of the screen and require learners simply to type them into the doctor-patient discourse.

At least some attempt is made at facilitating the comprehension by L2 learners using [Dustin](#) of the English that they will need to know when they arrive at the Anderson Consulting home office. Nonetheless, it must be said that the elaboration of input is the weakest component of the [Dustin](#) simulation. This is not due to any limitations of technology, but rather to the apparent lack of any SLA research findings or language teaching MPs guiding development of the help options. As noted above, learners attempt target tasks on a trial-and-error basis. When they feel a task is too difficult, or realize that they have failed, they may select any or all of the help options at any time. For instance, in attempting to check into a hotel near the company (a sort of role play, with the clerk on video and the learner playing the guest), learners may (a) view a model of the entire check-in interaction, (b) proceed step-wise through it themselves, (c) obtain an L1 translation, (d) see a written version of the spoken input, (e) see the text of what they should say, or (f) press a *Huh?* button. Unfortunately, while an ideal context for elaboration, this last option provides simplified input, as can be seen in the example which follows. The learner has just managed to complete giving the necessary check-in information, and a video clip of the desk clerk appears:

Clerk: Ok, here are the keys to Room 5116. To get there, you go down the hall, turn left past the weight room, and take the elevator to the fifth floor.

[Learner presses *Huh?*]

Clerk: Take the elevator to the fifth floor.

[Learner presses *Huh?*]

Clerk: (said very slowly) The *fifth* floor.

To reiterate, the idea of the *Huh?* button is not at issue. What is at issue is that much of the information needed to *find* the room to which the hotel clerk is giving directions is lost in each successive pressing of the *Huh?* button. Having a *Huh?* button is rather like a well-known feature of spontaneous interaction, the clarification request, which interlocutors frequently use when they have not entirely understood an utterance. Had the *Huh?* video clips been based on actual target discourse, and produced elaborated input, the entire sequence would have had considerable potential for language learning.

In fact, the elaboration of input in oral communication requires special attention in distance learning, owing to the frequently asynchronous nature of distance communication. Where interaction is synchronous and spontaneous, interlocutors tend almost automatically to provide one another with the elaborations needed to reach mutual understanding (for an overview, see Doughty, 2000a). Recently, computer-mediated communication (CMC) has engendered a considerable amount of research in this regard. At first, particularly with regard to language learning, it was assumed that, by virtue of increased opportunities for interaction and lessened inhibition with regard to L2 production, CMC would be very beneficial for SLA. However, it is now clear that it cannot simply be asserted that the opportunity for *more* interaction is *sui generis* beneficial. Studies have shown that chat-room discourse, for instance, is very different from face-to-face interaction. When a group of learners chat online, it is difficult for them to follow normal turn-taking rules or even to know which contributions are relevant to others, since they do not appear contiguously on the screen (Negretti, 1999). Learners adopt all sorts of strategies just to

figure out who the addressee is or which prior turn the incoming contribution to the CMC comments upon. On the other hand, if learners participate in CMC discussion with one conversational partner, the interaction is very much like that observed in SLA research on negotiated interaction, particularly if task goals are clear (Salaberry, 2000). The following example, from Blake (2000), illustrates a typical negotiation sequence that took place via a [remote collaboration tool](#). (Note that this is learner language presented verbatim.)

Lexical Negotiation with an Explicit Correction

X: Cuales son en común ? [What are in common?]	[TRIGGER]
Y: como se dice comun en igles? no comprehende [How do you say "common" in English? no understand]	[INDICATOR]
X: común es cuando algo y una otra algo son el mismo; entiendes mi explicacion? ["Common" is when something and another thing are the same; do you understand my explanation?]	[RESPONSE]
Y: si, gracias... [Yes, thank you...]	[REACTION]

Since chatroom interaction is one of the standard ways of overcoming teacher-learner and learner-learner distance in Web-based courses, these issues pertaining to the quality of the L2 discourse and its potential for facilitating language learning are of vital concern.

MP4: Provide Rich Input

Linguistically simplified input, which goes hand in hand with synthetic (especially structural, or grammatical) syllabuses, also tends to be *impoverished* input. Controlling grammar, vocabulary and sentence length results, intentionally and by definition, in a more limited source of target-language use upon which learners must rely in order to learn the code. The often tiny samples are worked and reworked in class, whether practiced until rote-memorized, milked meta-linguistically, or both, and learners are expected to learn the full language on the basis of access to such limited data. It is analogous in some respects to the task that confronted plantation-era children of immigrants forced to develop their L1 on the basis of the functionally and formally restricted pidgin (L2) spoken by their parents. The children successfully creolized the limited input, but robust evidence of the existence of maturational constraints on language learning (for review, see Hyltenstam & Abrahamsson, 2003) strongly suggests that sort of linguistic creation to be a process of which adult foreign language learners are no longer capable.

Elaborated texts (in the sense of [MP3](#)) go a long way towards remedying the situation. They alone are insufficient, however. Adult foreign language learners require not just linguistically complex input, but *rich* input (i.e., realistic samples of discourse use surrounding NS and NS-NNS accomplishment of target tasks). This will usually mean task-specific and domain-specific target-language use not typically found in commercially published language teaching materials, not even those allegedly designed for language-for-specific-purposes programs. Commercial materials writers and publishers generally aim for the *least* context-, domain-, and task-specific texts possible, in order to boost the potential market for a book. This is the opposite of what is needed, especially if advanced, functional proficiency is the goal. Numerous studies have shown large discrepancies between the models presented in "general" textbooks and genuine NS use on real tasks in particular domains, even when those domains are relatively ordinary and "non-technical" (see, e.g., Bartlett, to appear; Cathcart, 1989).

Learners need (a) elaborated texts, (b) plenty of them, (c) texts derived from a far greater range of target tasks and discourse domains than is currently typical in commercial language teaching materials, and

most important of all, (d) texts motivated by tasks of the specific kinds a needs analysis has shown to be relevant. The examples will usually need to be based upon "field work" of various sorts by course designers (e.g., in situ audio or video recordings of NSs performing target tasks, and the gathering of authentic written documents relevant to those target tasks). Unless the learners are very advanced, those genuine texts will then need to be elaborated before they are used with learners (for examples with Korean as a foreign language, see Chaudron et al., in press). *Rich* input, in sum, is not just a matter of linguistic complexity, but of quality, quantity, variety, genuineness, and relevance.

It is in the area of provision of rich input that technology is most relevant in all of these respects. However, a number of cautionary notes are in order. Whereas technology offers seemingly infinite (e.g., Web) access to rich input, without any pedagogical intervention. Internet input is overwhelming (often even for native speakers). Consequently, activities like Web-based [scavenger hunts](#) or [Internet searches](#) are ill-advised. Rather, well-constructed input archives in the form of audio, video, and text-based corpora, the components of which are tagged for task complexity and perhaps controlled in terms of learner access could provide rich input that is, indeed, accessible. For example, in debriefing interviews with students conducted as part of the formative evaluation of the [Korean street directions](#) materials, some participants commented that the first and second pedagogic tasks, which, by design, contained prolonged, repeated exposure to target discourse samples, were tedious. While it may be the case that "massive" exposure to input is beneficial, attempting this in one extended session appeared to be inappropriate, at least in this case. The street-directions target discourse samples, already digitized for the purpose of removing excessive background noise, could be made available online for self-access, with guidance as to the order in which to proceed through the extracts (see [MP2](#) on sequencing). Online audio banks of target discourse samples, tagged for complexity, would allow students to listen to input in differing quantities and at their own pace, rather than in uniform quantities in groups in the classroom, thereby catering to differing learner requirements in this regard. The key to designing corpora for self-access to rich input would be to build in some sort of performance assessment, such that learners would be able to ascertain when they had spent sufficient time listening to examples (e.g., monitoring success at pedagogic tasks [5](#), [6](#), and [7](#) "Follow the route"). Learners could then determine on their own when they are able to proceed to the next pedagogic task in a sequence. In our classroom-based Korean TBLT materials, this is the responsibility of the teacher, who periodically checks learner comprehension using such questions as "Where are you now?" or "What building are you next to?"

Specific-purpose corpora already developed for language courses may be relevant to particular learner needs. More likely, however, it will be necessary to construct and tag a corpus which provides sufficient quantity and quality of input and which is also relevant to a target task, for example, using abstracts of articles on the medical database, [Medline](#). Such a corpus has been analyzed to extract data about side-effects and the type of terms used to describe them ([Verweyveld, 2001](#)). Another cautionary note is perhaps in order at this juncture, since the topic of using corpora for language teaching has been raised. Training language learners to use concordancing programs and corpora for the metalinguistic study of language samples is not at all what is being proposed here, although such programs certainly abound (see, e.g., [LLT Special Issue Vol. 5, Num. 3](#)). Rather, it is the course developer, not the learner, who should use these tools to build corpora that will have specific relevance to the pedagogic tasks that comprise the foreign language distance learning course ([concordances and corpora tutorial](#)). If a learner is to use concordancing tools, then this should be in the service of a generally non-language-based task, such as the work by Weeber in the Medline example cited above. Weeber's tool allows a search of thousands of on-line publications in order to track the side effects of drugs and to connect them with diseases which might be treated by the same chemicals that cause difficulties in the original patients. Such an activity requires massive exposure to and processing of rich input and could be expected to promote inductive learning as well (see [MP5](#)).

MP5: Encourage Inductive ("Chunk") Learning

The ultimately superior L1 and L2 attainment of child starters may reflect a greater tendency on their part to analyze input at the morphemic level, due to their more limited processing capacities (e.g., short-term memory) preempting treatment of larger units. Not as limited in these respects, adults, conversely, may attend to the meaning of more extensive "chunks," helping their immediate comprehension, but in the long run hindering mastery of the full complexity of the new language because attention to message deflects attention from code. This contrast has been proposed as an explanation for consistently observed child-adult differences in L2 ultimate attainment, and termed the "more is less hypothesis" (Kersten & Earles, 2001; Newport, 1990).

Nevertheless, children do seem to learn many items, such as phrasal verbs, gender-marked modifiers plus nouns, and numerous lexical collocations, as "chunks," or "formulaic sequences" (Wray, 2000), as evidenced by their quick and accurate mastery of thousands of such items. Adults, by comparison, typically have great difficulty recognizing or producing the same elements correctly, even at very advanced proficiency levels (see, e.g., Spadaro, 1996), suggesting that whether or not their initial processing of input is for meaning, which involves parsing larger segments at a time, they subsequently analyze and/or store at smaller levels than children (e.g., potential collocates analyzed as separate lexical items only). If not, why do so many adults have to try to remember if various French or German nouns are masculine, feminine, or neuter, if one says "arrive at" or "to" or "Toby pushed James off" or "from" the rails? Even allowing for their rarity in the world's languages, why is it that so many adult starters seldom produce phrasal verbs accurately in utterances such as "I dumped all the books out," "Put it away," "My hair's dried off," "I'm sticking this in here," "When you fall, I'll come and take care of you," "The train's not working -- it ran out of battery," or "When you open it up, the light will come on. Then you take it out," whereas a two-and-a-half-year-old child of our acquaintance produced all of them and more in his L1, and did so effortlessly, fluently, and almost always accurately, from the very beginning? If adult foreign language learners are to sound like natives, they need to be exposed to realistic (genuine or elaborated) samples of target language use (see MP3 and MP4), for example, as input components of pedagogic tasks, and then helped to incorporate, store and retrieve whole chunks of that input *as whole chunks*. When performing tasks, that is, they must be encouraged to plagiarize.³

To the extent that TBLT relies upon implicit learning processes, it can be proposed that adults will abstract the language chunks that they need during the course of learning to perform the task at hand. Some support for this is found in the research on implicit learning of complex systems (see Berry, 1997; Berry & Dienes, 1993; and Stadler & Frensch, 1998, for extensive discussion). In such studies, subjects are given input values and are told to arrive at particular output values by attempting to manage the system through trial and error. They are provided no information whatsoever concerning the underlying structure of the system, but are usually given feedback as to the effect of their input to the system. Some examples of complex systems often cited are the management of a sugar factory (variables are workers and amount of production), city traffic flow management (variables are bus schedules and parking lot fees), and interaction with a computer "personality" (where the computer person's mood is dependent upon the input from the subject). The basic and consistent finding of this research is that subjects become highly skilled at managing complex systems long before they are able to explain the rules underlying those systems. Given enough time, they can be made to verbalize the rules that guide their own performance, but the ability to express the rules always develops *after* that, and, crucially, is not necessary for the improvements in performance evidenced in doing the tasks (see Doughty, 2003, for further discussion).

To date, distance learning materials, like many published materials, promote the explicit analysis of foreign languages. This approach results in declarative knowledge when what is needed is the development of language ability that is deployable during spontaneous interaction. Thus MP5 is largely ignored in the design of distance learning programs, a situation which will need to change if distance foreign language courses are to foster language learning rather than the study of language as object.

MP6: Focus on Form

Older children, adolescents, and adults learn much of an L2 grammar incidentally, while focusing on meaning or communication. Research has shown, however, that a *focus on meaning* alone is insufficient to achieve full native-like competence. Thus, after as much as 12 years of classroom immersion, Canadian French immersion students' productive skills remain far from native-like, particularly with respect to grammatical competence (Lapkin, Hart, & Swain, 1991), exhibiting, for example, a failure to mark articles for gender accurately, despite the fact that such items have been in the input all the time, although possibly with insufficient saliency (see, also, Pavesi, 1986). Comprehensible L2 input is necessary, but not sufficient. A focus on meaning, moreover, can be improved upon, in terms of both rate and ultimate attainment, by periodic attention to language as object (Long, 1988). This is best achieved not by a return to discrete-point grammar teaching, or *focus on forms*, where students spend much of their time working on isolated linguistic structures in a sequence predetermined externally and imposed on them by a syllabus designer or textbook writer, in conflict with the learner's internal syllabus. Rather, during an otherwise meaning-focused lesson, and using a variety of pedagogic procedures, learners' attention is briefly shifted to linguistic code features, in context, to induce "noticing" (Schmidt, 1990, and elsewhere), when students experience problems as they work on communicative tasks (i.e., in a sequence determined by their own internal syllabuses, current processing capacity, and learnability constraints). This is called *focus on form* (Doughty & Williams, 1998a; Long, 1988, 1991, 1997, 2000a; Long & Robinson, 1998). Focus on form has established a respectable empirical track record in the relatively short time since its conception, despite the fact that most of the research comparing its efficacy against more explicit focus-on-forms instruction has consisted of short-term, experimental, or quasi-experimental studies targeting easy grammar items, factors strongly favoring focus on forms. (For a statistical meta-analysis of 45 studies comparing focus on form with other types of instruction, see Norris & Ortega, 2000, and for further discussion, Doughty, 2003.)

Doughty & Williams (1998b) describe six decisions to be made when choosing among PPs, in general, and a range of PPs for focus on form, in particular. The decisions primarily concern whether and when to attend to a particular learning problem and, once the decision has been made to do so, how explicitly. Examples of focus-on-form techniques, ranging from less to more explicit, include (a) input flood, where texts are saturated with L2 models; (b) input elaboration, as described in MP2; (c) input enhancement, where learner attention is drawn to the target through visual highlighting or auditory stress; (d) corrective feedback on error, such as recasting; and (e) input processing, where learners are given practice in using L2 rather than L1 cues. The most difficult practical aspect of focus on form is that, to be psycholinguistically relevant, it should be employed only when a learner need arises, thus presenting a difficulty for the novice teacher, who may not have relevant materials to provide. Where face-to-face interaction is the norm, as in L2 classrooms, recasting is an obvious potential PP. For reasons discussed below concerning MP7, recasting may not be the best choice for distance learning, where communication is usually asynchronous (but see Ayoun, 2001; Choi, 2000). Once an L2 problem has been diagnosed for a learner, then PPs may be decided upon and materials developed for use when the need next arises. Since shifting learner attention to form in such materials may often be accomplished primarily by making information relevant to the L2 problem perceptually salient, the many coding options technology offers for altering text appearance will be useful (Doughty 1991, 1992). Examples of these coding features include input enhancement (through highlighting, font changes, animations, or other special effects), pop-up windows that provide lexical assistance or very brief explanations of material that is not understood by learners, and input flooding (e.g., by preparing materials with a concordance tool). In the same way that corpora can be built to provide rich input, elaborated and enhanced texts can be tagged such that materials can be developed practically at the moment the learners need to access them on line. An example of online materials that eventually will incorporate focus on form is [LangNet](#), a distance learning site for the improvement of reading ability in Arabic, Chinese, Farsi, Spanish, and other languages.

MP7: Provide Negative Feedback

As noted earlier, argument persists as to the necessity of negative evidence in language learning. White (1989, and elsewhere) has suggested its value in drawing learners' attention to the non-occurrence of L1 options in the L2. She claims this is especially important where native language structures are ungrammatical in the L2 but communicatively successful, as in the case of SVAO (subject-verb-adverb-object) constructions in English (e.g., L1 French *"*He closed quickly the door"* or *"*I drink every day coffee"* in ESL). Schwartz (1993), conversely, has claimed that such data are unusable by learners (but see Doughty & Williams, 1998b, for discussion of this notion of "usability"). Such important debates notwithstanding, recent work on both traditional explicit teacher "error correction" and implicit negative feedback in the form of corrective recasts (see, e.g., DeKeyser, 1993; Long, in press d) suggests strongly that negative feedback can be facilitative, at the very least, with certain classes of L2 structures, thereby justifying MP7.

Providing negative feedback poses the greatest challenge in distance foreign language education, principally due to the well established fact that effectiveness tends to diminish as distance between triggering event and feedback increases (see, e.g., Annett, 1969). If the value of negative feedback lies in drawing learner attention to some problematic aspect of their interlanguage (i.e., inducing "noticing," Schmidt, 2001), then the timing of that feedback is critical. Where corrective recasts are concerned, the information must be provided within some as-yet-little-understood cognitive processing window (for instance, but not necessarily, in working memory), such that learners can make some sort of comparison between the information provided in the feedback and their own preceding utterance (Doughty, 2001a). Recasts are proposed as an ideal (but not the only) form of negative feedback in TBLT for some classes of grammatical and lexical problems, at least, because they are not intrusive on the processing of meaning during task accomplishment and do not depend upon metalinguistic discussion of a language problem. Recasts are pervasive in child-adult discourse and in L2 classroom discourse. The psycholinguistic mechanism by which they are believed to work depends upon the juxtaposition of the learner utterance and the recast. It is claimed that learners have sufficient working memory to hold both utterances, thereby enabling the comparison to take place.

One could expect to find recasts in computer-mediated communication, given that the discourse is often more like spoken than written language in nature. However, as noted above, the growing body of research on CMC has revealed that such communication is unique where more than two interlocutors are involved. Nonetheless, there has been at least one study that documents the provision of negative feedback by learners in a chat room. Pellettieri (2000) found that L2 learners of Spanish can recognize and correct their own errors, as well as incorporate corrections prompted by others into their production in chat room tasks designed to promote language learning. In other words, negative feedback was a consequence of appropriate task design.

When the learning context involves asynchronous communication, it is not yet clear what form negative feedback on learner error should take. Written recasts are one possibility, particularly in the task-based context of e-mail communication (for instance between the Wuhan [smoking prevention program](#) assessors (see example 3, [Table 2](#)) and their L2 Chinese teachers still resident at USC); and some evidence exists for their effectiveness (Ayoun, 2001; Choi, 2000; Doughty & Varela, 1998). While less desirable in many respects, other possibilities include the range of on-record devices for delivering corrective feedback traditionally found in focus-on-forms classroom instruction and in feedback on written work (see, e.g., Chaudron, 1977, 1987). Increasingly, easy to use editing tools (e.g., strike-out) in word processing programs make this kind of feedback at once simpler to provide and perceptually more salient to L2 learners.

MP8: Respect Developmental Processes and "Learner Syllabuses"

Research has long shown the existence of universal processes in SLA, such as L1 transfer, over-generalization, simplification, regularization and stabilization. Surface manifestations of these processes

include common errors and error types, developmental plateaus where L1 and interlingual structures are similar, and so on. There is also strong evidence for various kinds of developmental sequences and stages in interlanguage development, such as the well known four-stage sequence for ESL negation (Pica, 1983; Schumann, 1979), the six-stage sequence for English relative clauses (Doughty, 1991; Eckman, Bell, & Nelson, 1988; Gass, 1982), and sequences in many other grammatical domains in a variety of L2s (Johnston, 1985, 1997). The sequences are impervious to instruction, in the sense that it is impossible to alter stage order or to make learners skip stages altogether (e.g., R. Ellis, 1989; Lightbown, 1983). Acquisition sequences do not reflect instructional sequences, and *teachability* is constrained by *learnability* (Pienemann, 1984). The idea that what you teach is what they learn, and when you teach it is when they learn it, is not just simplistic, but wrong.

Equally well attested are the beneficial effects of instruction in such areas as accelerating passage through the sequences and extending the scope of application of grammatical rules (Pienemann, 1989), in dealing with areas of the L2 grammar supposedly unlearnable from positive evidence alone (White, 1991), and in generally improving accuracy, rate of learning, and level of ultimate attainment (Doughty, 2003; Long, 1988). The question, then, is how to harmonize instruction with the learner's internal syllabus, with so-called "natural" developmental processes. TBLT does this in a variety of ways, first and foremost by employing an analytic, not synthetic, syllabus, thereby avoiding futile attempts to impose an external linguistic syllabus on learners (e.g., the third conditional because it is the third Wednesday in November), and instead, providing input that is at least roughly tuned to learners' current processing capacity by virtue of having been negotiated by them during collaborative work on pedagogic tasks. The learner syllabus is also respected through use of (by definition, reactive) focus on form (MP6, above) and a preference for recasts where the results are comparable with more overt forms of "error correction" (see discussion of MP7, above), as their use implies learner direction to at least some classroom communication. In other words, not only in that course content is determined by student needs, but also in this psycholinguistic sense, TBLT is radically learner-centered. Universal developmental processes and the learner's internal syllabus are clearly and consciously allowed to guide and mediate instruction.

Sadly, under the guise of "resources," technology contributes to the proliferation of traditional language teaching materials, either to accompany synthetic, language-as-object courses newly packaged for online use, or simply marketed as stand-alone tools. Web page after Web page of such resources has been compiled by language teaching organizations and institutes. More specifically, grammar "[clinics](#)," "[doctors](#)," "[gurus](#)," even "grammar cafés," and sites for "grammar addicts" abound (for EFL, especially, but are also appearing for other languages). The basic model is that the user submits a grammar question to a so-called expert (for example, an EFL faculty member at a language center or an individual language teacher) or, worse, to other learners. Regardless of delivery format and ease of use, explicit grammar rules and discussion could only feature in a TBLT course when used (sparingly) as one PP among many for providing (reactive) focus on form or negative feedback. Given that research has demonstrated that the order in which language structure is learned is determined psycholinguistically, not by the various orders in which it appears in language textbooks, it is not to be expected that allowing learners to ask questions to assist them with grammar-based materials could be effective in more ways than that. The following two questions taken from an online grammar clinic illustrate this:

- 1) Hanneke of the Netherlands asks: Why is sheep a countable noun?
- 2) And Andrés of Venezuela wonders: Is it correct to ask "who's driving ITS car ?" if one doesn't know who is the owner of the car ? or would it be better asking "who's driving HIS car ?" ? I would like to know what to do in such a case.

In TBLT, language is never the primary subject matter of instruction, as, unfortunately, it already is in many online language courses and their linked grammar-diagnostic resources. Such materials would be unsuitable for inclusion in distance task-based LCTL courses, just as they are unsuitable for the languages for which they have already been developed. On a more positive note, MP8 is informative in that, when a

learner's stage of development can be ascertained, via, for example, ratings of taped speech samples (see Pienemann, Johnston, & Brindley, 1988), guidelines automatically follow concerning the timing of pedagogic interventions. The teacher is informed about learner readiness for materials facilitating rapid transition to the next developmental stage, and equally, about when *not* to intervene.

MP9: Promote Co-Operative/Collaborative Learning

Research findings in both child L1A (Ochs & Schieffelin, 1979) and child and adult L2A (Gass, 2003; Hatch, 1978; Long, 1983) reveal a facilitative role in language development for collaborative, "scaffolded" discourse across utterances and speakers. Research in general education (e.g., Barnes, 1976; Holt, 1993; Webb, 1991) has documented the positive effects of co-operative, collaborative group work on attainment. Research on cooperative learning and small group work in second language learning provides similar findings (Jacobs, 1998; Liang, Mohan, & Early, 1998; Long & Porter, 1985; Oxford, 1997; Pica et al, 1996). All these lines of work converge on MP 9.

This has been perhaps the most productive research domain for those investigating network-based language teaching (NBLT; Warschauer & Kern, 2000). One, perhaps obvious, finding of recent research is that clear goals for collaborative tasks must be established at the outset of the foreign distance course. If not, then course participants will rapidly lose the motivation to engage in online chat, e-mail, or other forms of communication and will become confused as to how they are to collaborate (Fukuda, Komatsu-Yonezawa, Komori, & Zimmerman, 2001). The end result when collaborations have no clear goals is failure to engage with the technology. Case-study research on students' frustration with distance learning in general have pointed to four major sources of learner dissatisfaction: (a) a sense of isolation, (b) technological problems, (c) minimal or lack of timely feedback from the instructor, and (d) ambiguous instructions on the WWW site, as well as via e-mail (Hara, 1999).

MP10: Individualize Instruction

Work by numerous scholars in general education and in foreign language classrooms has long shown the benefits of tailoring instruction to cater to individual differences in goals, interests, motivation, cognitive style, and learning strategies (Altman & James, 1980; Harlow, 1987; Logan, 1973; Sawyer & Ranta, 2001; Wesche, 1981). Improvements in the measurement of these and other individual difference variables, such as language learning aptitude and short-term memory (see, e.g., Ehrman & Leaver, 2001; N. Ellis, 2001; Grigorenko, Sternberg, & Ehrman, 2000; Miyake & Friedman, 2001), further justify the individualization of instruction in any language teaching program. In TBLT, individualization occurs in the selection of syllabus content, in respect for individual internal syllabuses, and in modifications of the pace at which and manner in which instruction is delivered, as suggested by diagnostic information gathered on individual differences.

It is important to point out that the individualization of instruction in TBLT is not the same thing as the self-directed, autonomous learning that is currently prevalent in approaches to distance learning. In those approaches, the learner is given the responsibility for making decisions in essence about *how* to learn. In TBLT, individualization is achieved by virtue of each MP discussed above, from needs analysis, to elaboration of input, to respect for the learner syllabus. Technology options employed in distance learning may make such individualization easier (e.g., as described above with respect to provision of large quantities of rich input), but the course designer is ultimately responsible for the underlying learning plan (e.g., syllabus design and sequencing decisions).

CONCLUSION

If their enormous potential is to be harnessed, selections among the ever increasing range of technological options in distance learning need to be theoretically and empirically motivated, not simply market-driven, as is too often the case. As a basis for decision-making in the creation of optimal psycholinguistic environments for distance foreign language learning, theory and research in SLA, educational

psychology, and other areas of cognitive science will clearly be foundational. The 10 MPs of TBLT reflect one attempt to integrate interpretations of such theory and research findings into a coherent design for the delivery of instruction.

Given the checkered history of prescriptions for language teaching, the likelihood that all 10 TBLT MPs will turn out to have been well founded is minimal. Thus, designers of distance foreign language courses who draw upon those or other sources should build careful evaluation components into their delivery systems. Several typical characteristics of distance learning programs for the LCTLs, in particular: (a) the typical absence of L2 exposure outside the courses themselves, (b) the relative ease the same technology used for instruction brings to tracking input and learner progress in such environments, as compared to studies of large group classroom language instruction, and (c) the relatively high degree of motivation, maturity and sophistication of typical end-users, combine to make evaluation research of this kind unusually feasible and promising.

NOTES

1. An undesirable increase in the power of the first type of theory will matter little where the second is concerned. (For further discussion, see Long, 2000b.) A mistake made by more than one well-known SLA theorist has been to confuse the two, presenting a SLA theory (well-founded or not) as the basis for a prescription for teaching
2. Most course management software is designed for the teaching of some subject matter, that is, a body of knowledge. While language can be taught as object, this approach is eschewed in TBLT.
3. Adult native speakers do this frequently, using "repeating resources" (Schenkein, 1980), resulting in a "correspondence effect" (Levelt & Kelter, 1982). That is to say, rather than construct each utterance anew, speakers track and use chunks of previous discourse in formulating new utterances.

ABOUT THE AUTHORS

Catherine J. Doughty is jointly appointed in the University of Maryland's Center for the Advanced Study of Language (Associate Research Director, responsible for SLA), and National Foreign Language Center (Project Director, National Flagship Language Initiative). Along with numerous scholarly articles and book chapters, her recent publications include *Focus on Form in Classroom SLA* (1998, Cambridge) and the *Handbook of Second Language Acquisition* (2003, Blackwell).

E-mail: cdoughty@umd.edu

Michael H. Long is Director of the School of Languages, Literatures, and Cultures at the University of Maryland, where he also teaches courses in second language acquisition. He is co-editor of the *Cambridge Applied Linguistics Series* and author of over 100 articles and several books. Forthcoming publications include *Second Language Needs Analysis* (Cambridge) and *Problems in SLA* (Lawrence Erlbaum).

E-mail: mlong5@umd.edu

REFERENCES

- Altman, H. B., & James, C. V. (Eds.). (1980). *Foreign language teaching: Meeting individual needs*. Oxford, England: Pergamon.
- Annett, J. (1969). *Feedback and human behaviour*. Baltimore: Penguin Books.

- Arnone, M. (2001, November 23). Too close for comfort? Some experts fear that ties between Microsoft and Blackboard could diminish colleges' choices. *Chronicle of Higher Education*. Retrieved February 10, 2003, from <http://chronicle.merit.edu/free/v48/i13/13a02701.htm>
- Avrich, P. (1980). *The modern school movement. Anarchism and education in the United States*. Princeton, NJ: Princeton University Press.
- Ayoun, D. (2001). The role of negative and positive feedback in the second language acquisition of the passé composé and the imparfait. *Modern Language Journal*, 85(2), 226-243.
- Barnes, D. (1976). *From communication to curriculum*. Harmondsworth, England: Penguin Books.
- Bartlett, N. D. (in press). A double shot 2% mocha latte, please, with whip: Service encounters in two coffee shops and at a coffee cart. In M. H. Long (Ed.), *Second language needs analysis*. Cambridge, England: Cambridge University Press.
- Berry, D. (1997). *How implicit is implicit learning?* New York: Oxford University Press.
- Berry, D., & Dienes, Z. (Eds.). (1993). *Implicit learning: Theoretical and empirical issues*. Hove, England: Lawrence Erlbaum.
- Blake, R. (2000). Computer-mediated communication: A window on L2 Spanish interlanguage. *Language Learning & Technology*, 4(1), 120-36. Retrieved February 10, 2003, from <http://ilt.msu.edu/vol4num1/blake/default.html>
- Cathcart, R. (1989). Authentic discourse and the Survival English curriculum. *TESOL Quarterly*, 23(1), 105-126.
- Chaudron, C. (1977). A descriptive model of discourse in the corrective treatment of learners' errors. *Language Learning*, 27(1), 29-46.
- Chaudron, C. (1987). The role of error correction in second language teaching. In B. Das (Ed.), *Patterns of classroom interaction in Southeast Asia* (pp. 17-50). Singapore: Regional English Language Centre.
- Chaudron, C., Doughty, C., Kim, Y., Kong, D., Lee, J., Lee, Y., Long, M. H., Rivers, R., & Urano, K. (in press). A Task-based needs analysis of a tertiary Korean as a foreign language program. In M. H. Long (Ed.), *Second language needs analysis*. Cambridge, England: Cambridge University Press.
- Choi, M.Y. (2000). *Effects of recasts on irregular past tense verb morphology in Web-chat*. Unpublished master's thesis, University of Hawai'i, Honolulu.
- Clark, R. E. (1985). Confounding in education computing research. *Journal of Educational Computing Research*, 1(20), 137-148.
- Clark, R. E. (1994). Media will never influence language learning. *Educational Technology Research & Development*, 42(2), 21-29.
- DeKeyser, R. (1993). The effect of error correction on L2 grammar knowledge and oral proficiency. *Modern Language Journal*, 77(4), 501-514.
- Doughty, C. (1991). Second language acquisition does make a difference: evidence from an empirical study of SL relativization. *Studies in Second Language Acquisition*, 13(3), 431-469.
- Doughty, C. (1992). Computer applications in second language acquisition research. In M. Pennington & V. Stevens (Eds.), *Computers in applied linguistics: An international perspective* (pp. 127-54). Clevedon, England: Multilingual Matters, Ltd.
- Doughty, C. (2000a). Negotiating the linguistic environment. *University of Hawaii Working Papers in ESL*, 18(2), 47-85.

- Doughty, C. (2000b, July). *What do computers assist in language learning? Perspectives from SLA research and LT methodology*. Plenary address at IATEFL CALL for the 21st Century, Barcelona, Spain.
- Doughty, C. (2001a). Cognitive underpinnings of focus on form. In P. Robinson (Ed.), *Cognition and Second Language Instruction* (pp. 206-57). Cambridge: Cambridge University Press.
- Doughty, C. (2001b, March). *Principles for CALL pedagogy*. Plenary address at Hawaii Association of Language Teachers, Honolulu.
- Doughty, C. (2003). Instructed SLA: Constraints, compensation, and enhancement. In C. Doughty & M. H. Long (Eds.), *Handbook of second language acquisition* (pp. 256-310). New York: Basil Blackwell.
- Doughty, C., & Long, M. H. (Eds.). (2003). *Handbook of second language acquisition*. New York: Basil Blackwell.
- Doughty, C., & Varela, E. (1998). Communicative focus on form. In C. Doughty & J. Williams (Eds.), *Focus on form in classroom second language acquisition* (pp. 114-38). Cambridge, England: Cambridge University Press.
- Doughty, C., & Williams, J. (1998a). *Focus on form in classroom second language acquisition*. Cambridge, England: Cambridge University Press.
- Doughty, C., & Williams, J. (1998b). Pedagogical choices in focus on form. acquisition. In C. Doughty & J. Williams (Eds.), *Focus on form in classroom second language acquisition* (pp. 197-262). Cambridge, England: Cambridge University Press.
- Dudley-Evans, T., & St. John, M. (1998). *Developments in English for specific purposes*. Cambridge, England: Cambridge University Press.
- Eckman, F. R., Bell, L., & Nelson, D. (1988). On the generalization of relative clause instruction in the acquisition of English as a second language. *Applied Linguistics*, 9(1), 1-20.
- Ehrman, M., & Leaver, B. L. (2001). Development of a profile approach to learning style diagnosis. Unpublished manuscript. Arlington, VA: Foreign Service Institute.
- Ellis, N. (2001). Memory for language. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 33-68). Cambridge, England: Cambridge University Press.
- Ellis, R. (1989). Are classroom and naturalistic acquisition the same? A study of the classroom acquisition of German word order rules. *Studies in Second Language Acquisition*, 11(3), 305-328.
- Fukuda, C., Komatsu-Yonezawa, S., Komori, S., & Zimmerman, E. (2001, March 17). A meta-analysis of a CMC project for L2 Japanese learners. Paper presented at the Hawai'i Association of Language Teachers conference, Honolulu.
- Gass, S. M. (1982). From theory to practice. In M. Hines & W. Rutherford (Eds.), *On TESOL '81* (pp. 129-139). Washington, DC: TESOL.
- Gass, S. M. (2003). Input and interaction. In C. Doughty & M. H. Long (Eds.), *Handbook of second language acquisition* (pp. 224-255). New York: Basil Blackwell.
- Gijsselaers, W. H. (1996). Connecting problem-based practices with educational theory. In L. Wilkerson & W. H. Gijsselaers (Eds.), *Bringing problem-based learning to higher education: Theory and practice* (pp. 13-21). San Francisco: Jossey-Bass.
- González-Lloret, M. (2003). Designing task-based CALL to promote interaction: En Busca de Esmeraldas. *Language Learning & Technology*, 7(1), 86-104. Retrieved February 3, 2003, from <http://llt.msu.edu/vol7num1/gonzalez/default.html>

- Grigorenko, E. L., Sternberg, R. J., & Ehrman, M. E. (2000). A theory-based approach to the measurement of foreign language learning ability: The Canal-F theory and test. *Modern Language Journal*, 84(3), 390-405.
- Guttman, M. (1998). USC's IPR assists China in new smoking prevention efforts. *HSC Weekly*, 4(9). University of Southern California.
- Hara, N. (1999). Students' frustrations with a Web-based distance education course: A taboo topic in the discourse. Manuscript summary. Retrieved February 3, 2003, from <http://groups.yahoo.com/group/rre/message/1125>
- Harlow, L. L. (1987). Individualized instruction in foreign languages at the college level: A survey of programs in the United States. *Modern Language Journal*, 7(1), 389-394.
- Hatch, E. (1978). Discourse analysis and second language acquisition. In E. Hatch (Ed.), *Second language acquisition: A book of readings* (pp. 402-435). Rowley, MA: Newbury House.
- Holt, D. D. (Ed.). (1993). *Cooperative learning: A response to linguistic and cultural diversity*. Washington, DC: Center for Applied Linguistics.
- Hutchinson, T., & Waters, A. (1987). *English for specific purposes*. Cambridge, England: Cambridge University Press.
- Hyltenstam, K., & Abrahamsson, N. (2003). Maturation constraints in SLA. In C. Doughty & M. H. Long (Eds.), *Handbook of second language acquisition* (pp. 539-588). New York: Basil Blackwell.
- Jacobs, G. M. (1998). Cooperative learning or just grouping students: The difference makes a difference. In W. A. Renandya & G. M. Jacobs (Eds.), *Learners and language learning* (pp. 172-193). Singapore: SEAMEO Regional Language Centre.
- Johnston, M. (1985). *Syntactic and morphological progressions in learner English*. Canberra, Australia: Commonwealth Department of Immigration and Ethnic Affairs.
- Johnston, M. (1997). *Development and variation in learner language*. Unpublished doctoral dissertation, Australian National University, Canberra.
- Jordan, R. R. (1987). *English for academic purposes: A guide and resource book for teachers*. Cambridge, England: Cambridge University Press.
- Kersten, A. W., & Earles, J. L. (2001). Less really is more for adults learning a miniature artificial language. *Journal of Memory and Language*, 44, 250-273.
- Kong, D. K. (2002). Effects of task complexity on second-language production. Unpublished master's thesis, University of Hawai'i at Manoa, Honolulu.
- Kramer, R. (1978). *Maria Montessori*. Oxford, England: Blackwell.
- Lapkin, S., Hart, D., & Swain, M. (1991). Early and middle French immersion programs: French language outcomes. *The Canadian Modern Language Review*, 48(1), 11-44.
- Lee, Y.-G. (2002). Effects on task complexity on the complexity and accuracy of oral production in L2 Korean. Unpublished doctoral dissertation, University of Hawai'i at Manoa, Honolulu.
- Levelt, W., & Kelter, S. (1982). Surface form and memory in question answering. *Cognitive Psychology*, 14, 78-106.
- Liang, X., Mohan, B. A., & Early, M. (1998). Issues of cooperative learning in ESL classes: A literature review. *TESL Canada Journal*, 15(2), 13-23.

Lightbown, P. M. (1983). Exploring relationships between developmental and instructional sequences. In H. W. Seliger & M. H. Long (Eds.), *Classroom-oriented research on second language acquisition* (pp. 217-243). Rowley, MA: Newbury House.

Logan, G. E. (1973). *Individualizing foreign language learning: An organic process*. Rowley, MA: Newbury House.

Long, M. H. (1983). Native speaker/non-native speaker conversation and the negotiation of comprehensible input. *Applied Linguistics*, 4(2), 126-141.

Long, M. H. (1985). A role for instruction in second language acquisition: task-based language teaching. In K. Hyltenstam & M. Pienemann (Eds.), *Modeling and assessing second language development* (pp. 77-99). Clevedon, England: Multilingual Matters.

Long, M. H. (1988). Instructed interlanguage development. In L. M. Beebe (Ed.), *Issues in second language acquisition: Multiple perspectives* (pp. 115-41). Cambridge, MA: Newbury House/Harper and Row.

Long, M. H. (1991). Focus on form: A design feature in language teaching methodology. In K. de Bot, R. B. Ginsberg, & C. Kramsch (Eds.), *Foreign language research in cross-cultural perspective* (pp. 39-52). Amsterdam: John Benjamins.

Long, M. H. (1996a). Authenticity and learning potential in L2 classroom discourse. In G. M. Jacobs (Ed.), *Language classrooms of tomorrow: Issues and responses* (pp. 148-169). Singapore: SEAMEO Regional Language Centre.

Long, M. H. (1996b). The role of the linguistic environment in second language acquisition. In W. C. Ritchie & T. K. Bahtia (Eds.), *Handbook of second language acquisition* (pp. 413-468). New York: Academic Press.

Long, M. H. (1997). Focus on form in task-based language teaching. Text from the McGraw-Hill videoconference: Grammar in the communicative classroom. Retrieved February 3, 2003, from <http://www.mhhe.com/socscience/foreignlang/top.htm>

Long, M. H. (2000a). Focus on form in task-based language teaching. In R. L. Lambert & E. Shohamy (Eds.), *Language policy and pedagogy* (pp. 179-192). Philadelphia: John Benjamins.

Long, M. H. (2000b). Acquisition and teaching. In M. Byram (Ed.), *Encyclopedia of language teaching* (pp. 4-5). London: Routledge.

Long, M. H. (in press, a). *Task-based language teaching*. Oxford, England: Basil Blackwell.

Long, M. H. (in press, b). Methodological issues in learner needs analysis. In M. H. Long (Ed.), *Second language needs analysis*. Cambridge, England: Cambridge University Press.

Long, M. H. (Ed.). (in press, c). *Second language needs analysis*. Cambridge, England: Cambridge University Press.

Long, M. H. (in press, d). Recasts in SLA: The story so far. In M. H. Long (Ed.), *Problems in SLA*. Mahwah, NJ: Lawrence Erlbaum Associates.

Long, M. H., & Crookes, G. (1992). Three approaches to task-based language teaching. *TESO Quarterly*, 26(1), 27-56.

Long, M. H., & Crookes, G. (1993). Units of analysis in syllabus design: The case for task. In G. Crookes & S. M. Gass (Eds.), *Tasks in pedagogical context. Integrating theory and practice* (pp. 9-54). Clevedon, England: Multilingual Matters.

- Long, M. H., Doughty, C., & Chaudron, C. (1999-2001). *Task-based language teaching in foreign language education*. Honolulu, HI: National Foreign Language Resource Center. Retrieved February 3, 2003, from http://www.nflrc.hawaii.edu/project_home.cfm
- Long, M. H., & Norris, J. M. (2000). Task-based teaching and assessment. In M. Byram (Ed.), *Encyclopedia of language teaching* (pp. 597-603). London: Routledge.
- Long, M. H., & Porter, P. (1985). Group work, interlanguage talk, and second language acquisition. *TESOL Quarterly*, 19(2), 207-27.
- Long, M. H., & Robinson, P. (1998). Focus on form: Theory, research and practice. In C. Doughty & J. Williams (Eds.), *Focus on form in second language acquisition* (pp. 15-41). Cambridge, England: Cambridge University Press.
- Long, M. H., & Ross, S. (1993). Modifications that preserve language and content. In M. Tickoo (Ed.), *Simplification: Theory and application* (pp. 29-52). Singapore: SEAMEO Regional Language Centre.
- Miyake, A., & Friedman, N. F. (2001). Individual differences in second language proficiency: Working memory as "language aptitude." In A. F. Healy & L. E. Bourne (Eds.), *Foreign language learning: Psycholinguistic studies on training and retention* (pp. 339-364). Mahwah, NJ: Lawrence Erlbaum Associates.
- Negretti, R. (1999). Web-based activities and SLA: A conversational analysis approach. *Language Learning & Technology*, 3(1), 75-87. Retrieved February 3, 2003, from <http://llt.msu.edu/vol3num1/negretti/index.html>
- Newport, E. (1990). Maturation constraints on language learning. *Cognitive Science*, 14, 11-28.
- Norris, J. M., & Ortega, L. (2000). Effectiveness of L2 instruction: A research synthesis and quantitative meta-analysis. *Language Learning*, 5(3), 417-528.
- Ochs, E. O., & Schieffelin, B. B. (Eds.). (1979). *Developmental pragmatics*. New York: Academic Press.
- Ohmayer, E. (1998). Simulation-based language learning: An architecture and a multi-media authoring tool. In R. Schank (Ed.), *Inside multi-media case based instruction* (pp. 1-100). Mahwah, NJ: Lawrence Erlbaum Publishers.
- Oxford, R. L. (1997). Cooperative learning; collaborative learning; and interaction: Three communicative strands in the language classroom. *The Modern Language Journal*, 81(4), 443-456.
- Pavesi, M. (1986) Markedness, discursual modes, and relative clause formation in a formal and an informal context. *Studies in Second Language Acquisition*, 81, 38-55.
- Pellettieri, J. (2000). Negotiation in cyberspace: The role of *chatting* in the development of grammatical competence in the virtual foreign language classroom. In M. Warschauer & R. Kern, (Eds.), *Network-based language teaching: Concepts and practice* (pp. 59-86). Cambridge, England: Cambridge University Press.
- Pica, T. (1983). Adult acquisition of English as a second language under different conditions of exposure. *Language Learning*, 33(4), 465-97.
- Pica, T., Lincoln-Porter, F., Paninos, D., & Linnell, J. (1996). Language learners' interaction: How does it address the input, output, and feedback needs of language learners? *TESOL Quarterly*, 30(1), 59-84.
- Pienemann, M. (1984). Psychological constraints on the teachability of languages. *Studies in Second Language Acquisition*, 6(2), 186-214.
- Pienemann, M. (1989). Is language teachable? Psycholinguistic experiments and hypotheses. *Applied Linguistics*, 10(1), 52-79.

- Pienemann, M., Johnston, M., & Brindley, G. (1988). Constructing an acquisition-based procedure for second language assessment. *Studies in Second Language Acquisition*, 10(2), 217-243.
- Robinson, P. (1981). *Esp (English for Specific Purposes: The present position)*. Oxford, England: Pergamon.
- Robinson, P. (2001a). Task complexity, cognitive resources, and syllabus design. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 287-318). Cambridge, England: Cambridge University Press.
- Robinson, P. (2001b). Task complexity, task difficulty and task production: Exploring interactions in a componential framework. *Applied Linguistics*, 22(1), 27-57.
- Salaberry, R. (2000). Pedagogical design of computer mediated communication tasks: learning objectives and technological capabilities. *Modern Language Journal*, 84(1), 28-37.
- Sawyer, M., & Ranta, L. (2001). Aptitude, individual differences, and instructional design. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 310-353). Cambridge, England: Cambridge University Press, 2001.
- Schank, R. C., & Cleary, C. (1994). *Engines for Education*. Mahwah, NJ: Lawrence Erlbaum Associates. Retrieved online July 16, 2003, from <http://www.engines4ed.org/hyperbook/>
- Schenkein, J. (1980). A taxonomy for repeating action sequences in natural discourse. In B. Butterworth (Ed.), *Language production, volume 1: Speech and talk* (pp. 21-47). New York: Academic Press.
- Schmidt, R. (1990). The role of consciousness in second language learning. *Applied Linguistics*, 11(2), 129-158.
- Schmidt, R. (2001). Attention. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 3-32). Cambridge, England: Cambridge University Press.
- Schumann, J. H. (1979). The acquisition of English negation by speakers of Spanish: A review of the literature. In R. W. Andersen (Ed.), *The acquisition and use of Spanish and English as first and second languages* (pp. 3-32). Washington, DC: TESOL.
- Schwartz, B. D. (1993). On explicit and negative data effecting and affecting competence and linguistic behavior. *Studies in Second Language Acquisition*, 15, 147-163.
- Shavelson, R. J., & Stern, P. (1981). Research on teachers' pedagogical thoughts, judgments and behavior. *Review of Educational Research*, 51, 455-498.
- Shotton, J. (1993). *No master high or low. Libertarian education and schooling in Britain, 1890-1990*. Bristol, England: Libertarian Education.
- Skehan, P. (1998). *A cognitive approach to language learning*. Oxford, England: Oxford University Press.
- Smith, M. P. (1983). *The libertarians and education*. London: George Allen & Unwin.
- Spadaro, K. (1996). *Maturational constraints on lexical acquisition in a second language*. Unpublished doctoral dissertation, University of Western Australia, Perth.
- Stadler, M., & Frensch, P. (Eds.). (1998). *Handbook of implicit learning*. Thousand Oaks, CA: Sage.
- Swaffer, J. K., Arens, K., & Morgan, M. (1982). Teacher classroom practices: redefining method as task hierarchy. *Modern Language Journal*, 66(1), 24-33.
- Versweyveld, L. (2001, January 20). New software tool to discover needle in haystack of medical literature using linguistic analysis. *Virtual Medical Worlds Monthly*. Retrieved February 10, 2003, from <http://www.hoise.com/vmw/01/articles/vmw/LV-VM-03-01-18.html>

- Warschauer, M., & Kern, R. (2000). *Network-based language teaching*. Cambridge, England: Cambridge University Press.
- Webb, N. M. (1991). Task-related verbal interaction and mathematics learning in small groups. *Journal for Research in Mathematics Education*, 22(5), 366-389.
- Wesche, M. (1981). Language aptitude measures in streaming, matching students with methods, and diagnosis of learning problems. In K. C. Diller (Ed.), *Individual differences and universals in language learning aptitude* (pp. 119-154). Rowley, MA: Newbury House.
- White, L. (1989). *Universal grammar and second language acquisition*. Philadelphia: John Benjamins.
- White, L. (1991). Adverb placement in second language acquisition: Some effects of positive and negative evidence in the classroom. *Second Language Research*, 7, 133-161.
- Wilkins, D. (1976). *Notional syllabuses*. Oxford, England: Oxford University Press.
- Wray, A. (2000). Formulaic sequences in second language teaching: Principle and practice. *Applied Linguistics*, 21(4), 463-489.
- Yano, Y., Long, M. H., & Ross, S. (1994). The effects of simplified and elaborated texts on foreign language reading comprehension. *Language Learning*, 44(2), 189-219.