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# **Interaction and Negotiation in Second Language Acquisition**

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### **Abstract**

An increased interest in the relationship between input, interaction and acquisition is evident in the SLA research within the past 15 years, resulting in refinements to Long's theory of interaction and a growing understanding that interaction is not a predictor of acquisition, but rather a context in which input can be negotiated and modified (Long, 1996; Gass, 1997, 2003; Gass, Mackey & Pica, 1998). Attempts have been made to identify the types of interaction particularly facilitative to acquisition (Lyster & Ranta, 1997; Lyster, 1998) and to empirically study these types of interaction (Loschky, 1994; Ellis, Tanaka, Yamazaki, 1994; Polio and Gass, 1998; Swain and Lapkin, 1998), and efforts have been made to design prescriptive methods for integrating interaction into the curriculum (Van Lier, 1996; Jacobs & Farrell, 2001; González-Lloret, 2003; Hall, 2000). It would appear that SLA classrooms do not provide sufficient opportunity for learners to interact meaningfully (cf. Pica, 1987; Long, 1983). In an attempt to address this problem, an interest in the use of computer-mediated communication (CMC) to facilitate language learner interaction has emerged. Although the research base is still growing, our current understanding indicates that CMC can be used to foster the same types of interaction that are evident in face-to-face settings (Smith, 2003, Blake, 2000; Darhower, 2002; Morris, 2005). Further research in this respect is needed, as well as a model for implementation and further study of interactive negotiation in CMC.

### **Introduction**

The field of second language acquisition (SLA) has changed significantly in the past century, from grammar-translation methods of the early twentieth century, audio-lingual approaches in the 1950s, "designer methods" of the 1970's, and the more recent shift in the field away from behaviorism and structured linguistics to a more cognitive approach. Indeed, even our current theories are continually permutating as they are applied and evaluated in practice. As the paradigm of SLA shifts, the field has begun to focus on socio-cognitive psychology and meaningful, contextual views of language (see Jacobs & Farrell, 2001). As we move into this paradigm of a more social-constructivist perspective on language learning, we are discovering that much of our current understanding of internalization and acquisition focuses on a learner-centric model based on Krashen's Input Hypothesis (1983, 1985). The problem is that much of our current theory of SLA centers on the learner, possibly "at the expense of other potentially relevant social identities" (Firth & Wagner, 1997: 288). This problem lies at the center of the debate surrounding the issue of the emerging emphasis in SLA theory on learner interaction and negotiation in

social contexts. Spearheading this emphasis on the social aspects of language learning is Long's Interaction Hypothesis (1996). In Long's view, the comprehensible input paramount in Krashen's Input Hypothesis is the result of "modified interaction". It is becoming clearer that in order for learners to successfully construct their own learner-language, conversation and interaction in social contexts must play a central role in the acquisition process (Long, 1980, 1996; Pica, 1987; Gass, Mackey & Pica, 1998).

In the following sections the questions of how interactivity has been investigated and in what way(s) interactivity is tied to acquisition are discussed in a review of the literature on the interactionist position to SLA. The reader is provided with an overview of the research supporting the interactionist position and is introduced to the difficulties of implementing meaningful interaction in second language classrooms. A review of literature on interactionist SLA by means of computer-mediated communication is provided along with a discussion of findings and implications, after which the reader is introduced to a linguistic model and theoretical framework for design of interactive CMC.

### **The Interaction Hypothesis**

Long's Interaction Hypothesis was born from a discourse analysis of dialogue transcripts of dyads made up of native speakers (NS) and non-native speakers (NNS) (1980). Long found there was much more interaction between NS-NNS dyads than between NS-NS dyads, and concluded that increased interaction was due to misunderstandings between language partners and subsequent linguistic negotiations and modifications in order to resolve misunderstandings. Of particular note in this respect is Long's discussion of native speakers modifying their language in order to make it comprehensible for non-natives. Such modified input, he claims, is evident in first language acquisition in the form of "motherese" and is realized in SLA by NSs using "simplified codes" such as foreigner talk, child language, pidgins, early second language (L2) forms, telegraphese, and so forth (Long, 1996: 415). He also identifies non-categorical modifications that are specifically targeted at focusing attention to grammatical forms, which are typically well-formed, delivered more slowly than speech to NSs, and often involve simplification and elaboration. Interestingly, these modifications do not result in linguistically simpler forms. Six generalizations were extracted from these findings. First, linguistic simplification tends to increase comprehension; however, simple sentences alone are not always helpful and may even hinder. Second, simplification and elaboration often co-occur, but simplification is not necessarily superior to elaboration.

Third, comprehension is consistently improved by interactional modifications and a combination of simplification and elaboration. Fourth, modifications appear to be of more use to NNSs of lower L2 proficiency. Fifth, isolated input or interactional adjustments are not sufficient for improving comprehensibility of whole texts. Sixth, NNSs indicate a more favorable perception of their own comprehension when they have been exposed to modified speech.

Based on these findings and their corresponding implications, Long proposes the following hypothesis:

It is proposed that environmental contributions to acquisition are mediated by selective attention and the learner's developing L2 processing capacity, and that these resources are brought together most usefully, although not exclusively, during negotiation for meaning. [...]

*Negotiation for meaning*, and especially negotiation work that triggers *interactional* adjustments by the NS or more competent interlocutor, facilitates acquisition because it connects input, internal learner capacities, particularly selective attention, and output in productive ways (Long, 1996: 414, 451-452).

It is through such negotiation for meaning that learners are oriented toward what they understand about the target language and the reality of the target language, or an area of the target language with which the learner is less familiar or unfamiliar (Long, 1996: 452-453). This awareness and the related notion of noticing have been identified as critical steps in L2 acquisition (Gass, 2003). It is important to note, however, that Long makes no claims of a direct link between interaction and acquisition. Interaction may be a facilitator of acquisition, but it should not be seen as a predictor. Take for example the following example:

(1) From Mackey, Gass and McDonough (2000):  
 NNS: There's a basen of flowers on the bookshelf  
 NS: a basin?  
 NNS: base  
 NS: a base?  
 NNS: a base  
 NS: oh, a vase  
 NNS: vase

In this example, it would appear that the NNS has adapted his or her output based on modified input provided by the NS. But has the NNS actually learned the word "vase", or did s/he merely mimic the native speaker? Interactive negotiation for meaning provides a context for modifying input in order to make it comprehensible, but this does not necessarily result in acquisition (Gass, 2003). In addition to this, Long warns that the effects of interaction may not be immediately observable, but rather may surface later in

NNSs' use of L2. From Long's groundbreaking work and the resulting interaction hypothesis, a collection of research has emerged investigating the role of interaction in the acquisition process.

### **Support for the Interaction Hypothesis**

Loschky (1994) experimentally tested Long's interaction hypothesis that both input and interactional modifications facilitate SLA, focusing on whether negotiated interaction facilitates L2 comprehension, whether premodified input facilitates comprehension, and whether greater L2 comprehension leads to greater L2 acquisition. Of three experimental groups, the control group was given unmodified input with no interaction, the first experimental group was given premodified input with no interaction, and the second experimental group was given unmodified input with the chance for negotiated interaction. The groups were rated on their degree of comprehension and their retention of vocabulary items and acquisition of linguistic structures. Loschky hypothesized that compared to the control group and first experimental group negotiated interaction would facilitate learner comprehension in the second experimental group. It was also hypothesized that the first experimental groups premodified input would facilitate comprehension in relation to the other studied groups. The findings indicate that interaction has a positive effect on comprehension; however, it was not clear from the study whether premodified input led to greater comprehension and whether greater L2 comprehension leads to greater L2 acquisition. In a comparable study Ellis, Tanaka and Yamazaki (1994) found similar results. Their findings indicate that interactionally modified input yields better comprehension rates, and that interactionally modified input has a positive effect on subjects' acquisition of new vocabulary. These findings imply that learners who are provided opportunities to interactively negotiate meaning in the target language have a higher probability of comprehending what they hear. The more difficulty a learner has comprehending, the more important the negotiated interaction becomes and therefore the greater the effect the interaction may have.

Polio and Gass (1998) undertook a study to replicate the results of Gass & Varonis' 1994 study in which it was not found that interaction led to better comprehension of NNSs by NSs in an information gap task. The authors note that such findings are contrary to what the interaction hypothesis suggests and that previous research indicates significant effects would be found. In their review of Gass & Varonis' study, problems with Gass & Varonis' research design began to surface. Their sample size was very small and interaction was later found present in some of the groups that had been labeled as non-interactive.

Additionally, the discrepancies in NNS language abilities made it difficult to measure the effects of the study. The researchers adopted a single research question for their study: does interaction yield better comprehension of NNSs by NSs? In a study of 30 NS-NNS dyads made up of non-native mid-level ESL students and native speaker undergraduates, participants were given an information gap activity in which NNSs explained to NSs where to place objects on a board, and a story telling activity in which NNSs were required to describe a series of pictures to NSs. In order to provide for control, each dyad performed one task with negotiated interaction and one without. The results indicate that interaction does indeed have an effect on the comprehension of NNSs by NSs. This suggests that negotiated interaction has a positive effect on not only on NNS comprehension, but also production (see Gass, 2003).

In a four week study of 34 adult ESL learners with beginner and lower-intermediate L2 abilities, Mackey (1999) found that after interacting in 15-25 minute interactive sessions three days a week, learners in the experimental group who were provided opportunities to interact clearly demonstrated significant advancements in their L2 development and were able to produce significantly more higher level linguistic structures in respect to the control group, suggesting that actively participating in conversational interaction positively affects learners' development of more advanced linguistic structures.

In a study of two adolescent French immersion students working together (1998), Swain & Lapkin found evidence of interactive language use as both an application of mental processes and an opportunity for second language acquisition. From the perspective of language as both process and product, the researchers attempted to trace linguistic changes of learners engaged in collaborative dialogue. As opposed to the claim that comprehensible input leads to learning, the researchers took the stance that what occurs in collaborative dialogue is learning, and that learning does not take place outside of performance but within the context of performance. The researchers used data taken from a larger study of four eighth grade French immersion classes that were each undergoing different treatments. The studied class was given a jigsaw task in which NNS-NNS dyads were to work out a story from a set of numbered pictures and then write it out. From this class the researchers focused on the language use evident in the conversations of a single dyad as they performed the jigsaw task. The results provide support for the researchers' view of language as both process and product, in which dialogue can be seen as a means for communicating as well as a cognitive tool. The language evident in the studied NNS dyad's dialogue served both as a tool for their learning about the second language as well as a means to

communicate with one another. The researchers point out the implication of this finding that NNSs' application of L2 knowledge in new contexts may lead to the creation of new, jointly-constructed knowledge.

These studies indicate that negotiated interaction has positive effects not only on comprehension but also production. NNSs provided with opportunities to interact linguistically exhibit a higher probability of comprehending what they hear, and this interaction also affects the comprehension of NNSs by NSs. The literature suggests that actively participating in conversational interaction positively affects learners' development of more advanced linguistic structures, and provides support for the view of language as process and product, a means for communicating as well as a cognitive tool.

### **The Role of Interaction**

Defining the role of interaction in SLA has enhanced our sensitivity to the complexity and multidimensionality of how interaction mediates negotiation for meaning. It has begun to emerge that actual learning may take place during interaction, or interaction may act as a "priming device" that sets the stage for learning (Gass, 1997). In the article *The Role of Interaction* (1997), Gass posits that negotiation is a means for drawing attention to a linguistic form and making it noticeable, thus creating a readiness for learning. Additionally, it is a way for learners to test hypotheses about the target language and receive feedback on their production. Gass, Mackey & Pica (1998) identify this as a key role of interaction in acquisition, and note that the realization of divergence between NNS forms and target forms is what actually becomes a catalyst for learning. Polio and Gass (1998) acknowledge the importance of meaning negotiation by means of hypothesis testing as a way to practice existing knowledge and as a way to elicit additional input. Indeed, such output serves three functions. It enables noticing and hypothesis testing, as well as promotes metalinguistic thinking.

In a study by Mackey, Oliver & Leeman (2003), the authors address hypothesis testing, noticing and metalinguistic thinking by focusing on the role of implicit negative feedback. Such feedback is believed to play an important role in facilitating L2 acquisition. From the comparative perspective of adult-child interaction, the authors address whether NNS and NS feedback differs in respect to the opportunities provided by each for modified output, and whether NNSs respond differently to interactional feedback from NSs as opposed to NNSs. Of 96 NNS with lower intermediate proficiency in English, half of whom were

adults and half children, 48 gender and age matched dyads were created. Subjects were given a one-way information gap task in which one NNS was to describe a line drawing of a park to the partner, and the partner was to write out the description. Additionally, subjects were given an information gap task in which partners were to collaborate to put items into their correct places on a picture of a kitchen. The transcriptions of the first 100 utterances were coded for each task based on nontargetlike utterances, feedback provided, opportunities for modified input, and modified output. The results show that in adult dyads, NSs provided significantly more feedback than NNSs. Significant differences were found in the nature of the feedback from adult dyads, with NNS feedback offering more opportunities for modified output than NS feedback. And although there were differences in type and amount of feedback between NS-NNS and NNS-NNS dyads, the type of interlocutor appeared to have no effect on learners' immediate output in response to feedback. In addition to this, there were no significant age differences found in relation to the amount of feedback partners produced. Significant differences were observed in the nature of feedback and production of modified output in NNS-NNS dyads, and it was found that more opportunities were provided for modified output in adult dyads, but subjects took the opportunity to produce modified output more often in child dyads. From these findings it would appear that feedback plays an important role in the interactive linguistic negotiation process.

A prominent form of implicit negative feedback in NS-NNS speech is the recast. The recast is an utterance which rephrases another utterance by changing one or more components of its structure. A recast follows an ill-formed linguistic structure as a reformulation and an expanding of the structure in some way while retaining the structure's central meaning (Long, 1996: 434). When focusing on immediate learner responses, Lyster and Ranta (1997) found that feedback in the form of recasts is not particularly effective and that other types of feedback better facilitated repair of non target-like utterances. Lyster (1998) showed that there can be confusion as to whether a recast is providing positive or negative evidence, and that it may not be useful for corrective feedback. Mackey and Philp (1998) hypothesized that learners who participate in interaction with intensive recasts would increase in their production of advanced structures if their responses to the recasts were modified. They found that for advanced learners, recasts plus negotiation were more beneficial than negotiation alone and that recasting has positive effects on interlanguage (IL) restructuring, as predicted by the interaction hypothesis; however, such claims are not made for learners of beginning or intermediate linguistic ability. Hall (2000) found that

feedback in the form of repetition, revoicing and recasting provides learners with cognitive benefits as well as positive social consequences. From a cognitive perspective, such feedback facilitates creation of topical connections among speakers, validates learners' concepts and ideas, and draws their attention to key concepts and linguistic forms. From a social perspective, such feedback provides opportunity to build shared knowledge through repetition and paraphrasing and facilitates creation of a sense of community. From these studies it appears that providing learners with opportunities to respond to implicit negative feedback in interactive contexts is an important step towards acquisition.

These studies suggest that interaction may promote learning or may be a priming device for learning. Interactivity draws attention to forms and can help make them noticeable to learners. It additionally provides for metalinguistic thinking and hypothesis testing through output. Two important types of interactivity for SLA are negotiation and implicit negative feedback. One form of feedback is the recast, which may be too ambiguous for lower level language learners to benefit from, but has been shown to have effects on advanced learners. It is hypothesized that such feedback not only helps learners cognitively but also socially.

### **Interactivity in the Second Language Classroom**

The benefits of interactivity for facilitating awareness of differences between inner-language (IL) forms and target-like forms as a catalyst for learning and the importance of meaning negotiation for providing opportunities for hypothesis testing, practicing existing and soliciting existing knowledge raises the question of how we can effectively operationalize interactivity in the second language classroom. Pica (1987) cites empirical findings from Doughty and Pica (1986), Long and Sato (1983), Pica and Doughty (1985a, b) and Pica and Long (1986) regarding the lack of interactive moves between second language learners and instructors in typical classroom discourse and how this lack of interactive moves indicates unequal relationships between discourse partners. Pica maintains that a need and desire for understanding between discourse partners is the social interaction that is most relevant for IL development, and that an environment that fosters need or desire for understanding was not evident in the reviewed studies. Pica's findings suggest that interactional learning is dependent on an environment in which the interlocutor and language learner are equals and in which negotiation for meaning is actively carried out by both parties—not just the learner. However, language classroom discourse is not typically a

two-way flow of communication, but rather focuses on a one-way flow of grammatically “correct” utterances from learners to the instructor. This is not equal sharing of communication, but rather a model in which all communication is channeled through the instructor (Pica, 1987: 10). Instructors do not typically ask questions to clarify learner output, but rather to elicit and evaluate it. Pica found that many language classroom activities actually provide learners the opportunity to avoid interaction that is oriented toward facilitating mutual comprehension, that mutual comprehension is often built into classroom discourse, and that learners’ attempts to negotiate meaning by means of social interaction may be misinterpreted as challenges to the instructor. As long as an instructor is present, it would appear that interactional modification and linguistic adjustment is fairly low. Conversely, a four-fold increase in interactional modification was found in student-centered groups, and learners voluntarily offered information as opposed to having it solicited by an instructor. However, it was also found that activities that *require* learners to share information, as opposed to activities that only *invite* them to do so, have a greater effect on learners interactionally negotiating meaning and modifying linguistic structures (Pica, 1987: 16). From these findings, Pica posits:

It is perhaps not unfair to say that, despite the more active, more meaningful, and less pressured use of the second language in such activities, classrooms are still considered less than optimal environments for successful second-language acquisition, and students continue to be faced with problems in communication when they venture outside (Pica, 1987: 17).

The implications of this lead to the conclusion that language instructors need to adapt their strategies in order to allow for diversified classroom activities, which should emphasize collaboration and equal linguistic responsibilities among discourse partners. Hall (2000) echoes the sentiment that students need to be provided with multiple, varied, meaningful opportunities to interact in the target language, and notes the need for a “language sensitive” curriculum.

Van Lier (1996) addresses this need in *Interaction in the Language Curriculum*. Although there is no clearly defined method of instruction through interaction, Van Lier provides a strategy (figure 1) for constructing a consistent, methodological interactive classroom method which proceeds from principles to strategies to action.

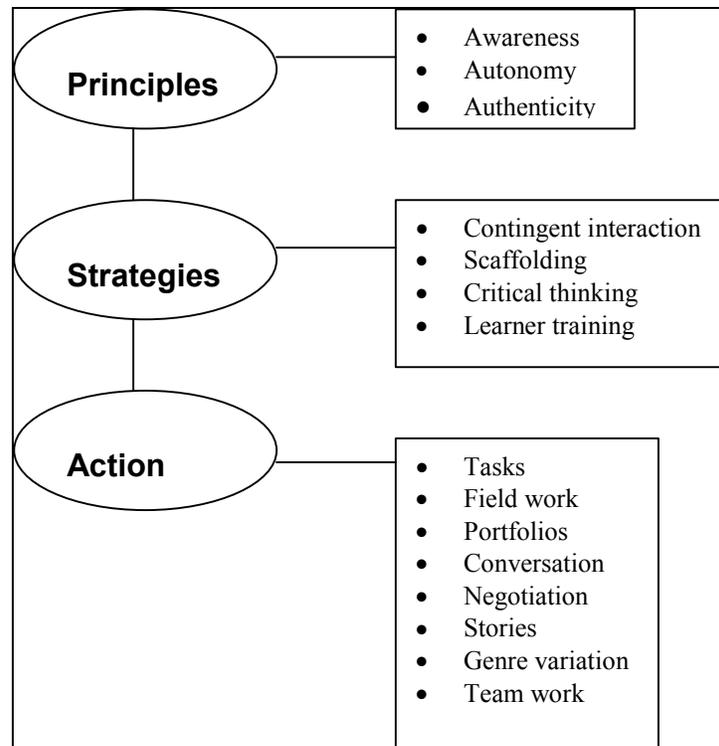


Figure 1: Van Lier's Curriculum Design (1996:189).

In Van Lier's view, learners construct their learner-language when they are in the zone of proximal development (ZPD) (cf. Vygotsky, 1978). Van Lier maintains that it is through socially-mediated interaction based on principles of awareness, autonomy, and authenticity that the learner is lead into the ZPD. For example, when diverse learners interact, the resulting engagement and intersubjectivity of interaction make noticeable differences in perception and interpretation, thus providing occasion for learners to be brought into the ZPD and to construct new knowledge using a variety of different resources such as assistance from more capable peers or adults, interaction with equal peers, interaction with less capable peers, and inner resources (figure 2). For this knowledge construction process to occur, context, scaffolding, and balance of lesson are crucial, regardless of whether the lesson is task-based or content-based. Communicative language use naturally provides feedback, in that attempting to make oneself understood provides an instant evaluation of learners' degree of success. In this light, communicative tasks should be engaging, challenging, and allow for interaction, thus facilitating increased clarity, flexibility, feedback and field interdependency (Van Lier, 1996).

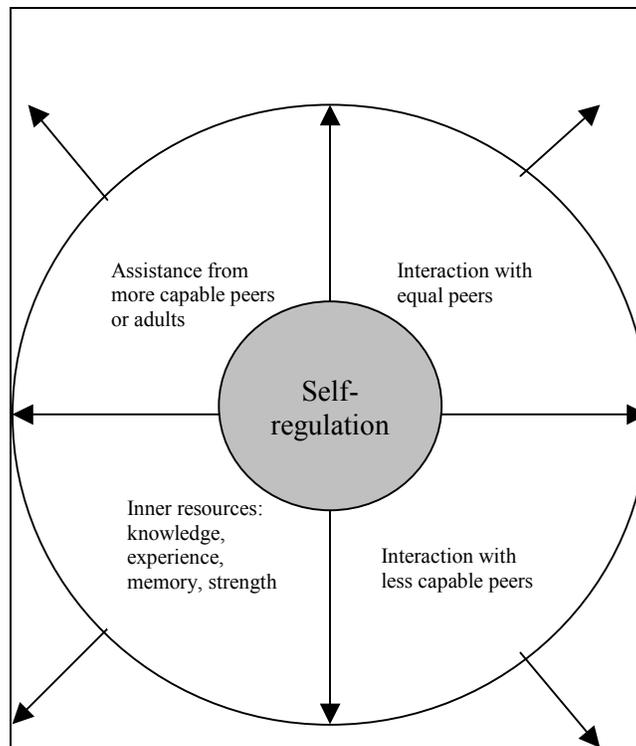


Figure 2: Zone of Proximal Development (Van Lier, 1996: 194)

### Interactivity and Computer-Mediated Communication

Warschauer (1997) suggests the use of computer-mediated communication (CMC) as a powerful way to connect learners and facilitate interactive contexts in which to acquire, learn about, and learn “through” language (477). In addition to facilitation of long distance communication and embedding of hypermedia, CMC provides a means to mediate interaction through many-to-many communication while providing affordances for time- and place-independence. In Warschauer’s view, such communication encourages collaborative learning in the language classroom (1997: 472), links reflection and interaction in that groups are provided occasion for knowledge co-construction, and provides opportunities for equal participation in dialogue. Warschauer’s view is in alignment with the emerging trend in technology use for L2 teaching and learning as elucidated in Salaberry (2001). Of particular note in Salaberry’s overview of classroom technologies used since 1916 is the transition in the field from early attempts to implement computer assisted instruction to the emergence of simple computer-assisted language learning (CALL), and from simple CALL’s permutation into intelligent CALL to the current concentration in SLA on CMC and teleconferencing. Questions that have emerged from the research indicate interest in the effects of CMC

on mediation of acquisition as compared to face-to-face instruction, what affordances of the technology appear to be particularly effective for SLA, how technology can be successfully integrated into SLA curricula, and whether the benefits of technology outweigh the costs (Salaberry, 2001).

A growing amount of empirical research has begun to accumulate around these questions. In a study at the University of Berkeley of 40 intermediate French students, language learners took part in seven synchronous chat discussions over the course of one semester with the aim of investigating the differences between face-to-face and CMC discussion (Kern, 1995). Transcripts of the online discussions were compared with transcripts of face-to-face discussions of the same topics, and it was found that learners in CMC produced more language and their output was more sophisticated than in comparable face-to-face discussions. There were also indications that CMC helped to alleviate communication anxiety. Kern additionally found that due to the increase in learner autonomy which CMC facilitates, teacher control was compromised, and that the fast pace of synchronous chat discussions can impose excessive cognitive load on learners (1995). In a similar study of 50 intermediate students at UC Davis, language learner dyads were given a task in which collaboration with a partner was required, the findings of which suggest that interactive negotiation for meaning in CMC affects learners' linguistic output (Blake, 2000). Because of the text-based nature of CMC, learners are forced to produce output in order to participate in discussion. From the researcher's analysis of the discussion transcripts, it seems that well-designed tasks play an important role in providing opportunities for learners to identify gaps between their inner-language and the target language. The researcher also noted high degrees of "metatalk," that is, learners showed evidence of using reflective language regarding their vocabulary use and understandability. In a 2005 analysis of CMC transcripts from k-5 students in a Spanish immersion private school using Blackboard, Morris found that over 50% of linguistic errors received implicit negative feedback. Of the errors that received feedback, over 60% were repaired. Of note is that all repairs followed interactive negotiation. As a result of these findings, it is hypothesized that the text-based nature of the environment necessitates feedback in order to avoid conversational breakdown due to missing paralinguistic cues. Darhower (2002) studied the interactional features of CMC by analyzing 300 pages of chat room transcripts generated in the course of nine one-hour chat sessions by an advanced Spanish class of 33 students at the University of Pittsburgh. A number of interactional features emerged from this analysis. Discourse in CMC demonstrates intersubjectivity, off-task discussion, social cohesiveness, role-playing and exploration of

alternate identities. Use of L1 was also observed. The findings suggest that learners in CMC use language both for socializing and development of sociolinguistic competence.

### **A Model of Computer-Mediated Negotiated Interaction**

Smith (2003) notes that in order to justify adapting face-to-face activities to CMC environments we must first determine the nature of interaction in CMC and the degree to which such interaction is similar with that reported in traditional studies. To this end, a study was conducted with the aim of determining the extent to which computer-mediated interactive negotiation resembles the model of face-to-face interactive negotiation as described in Varonis & Gass (1985). The reader is referred to Smith (2003: 43-44), as a thorough discussion of the Varonis & Gass model is beyond the scope of this paper. One hour a week for the duration of five weeks, 14 NNS-NNS dyads of intermediate proficiency between 19-28 years old were given jigsaw and decision-making tasks to be carried out in CMC. From an analysis of the transcripts of these sessions, Smith concluded that task type influences abundance of negotiation in CMC and that although Varonis & Gass' model was applicable for the most part, an expansion to the model was necessary in order to better capture negotiative moves in CMC (figure 3).

Based on evidence that interactive negotiation in CMC is similar to face-to-face, it would appear that CMC is a powerful tool for connecting learners in collaborative contexts to facilitate linguistic interaction. As compared to face-to-face discussion, linguistic interaction in CMC appears to be more abundant and exhibits higher sophistication. Moreover, interactive negotiation in CMC may provide opportunities for learners to identify gaps between their inner-language and the target language. It would appear that interactive negotiation for meaning in CMC affects output and modification of output based on feedback, and in addition to this, the nature of CMC may help alleviate learner anxiety and provide occasion for increased learner autonomy.

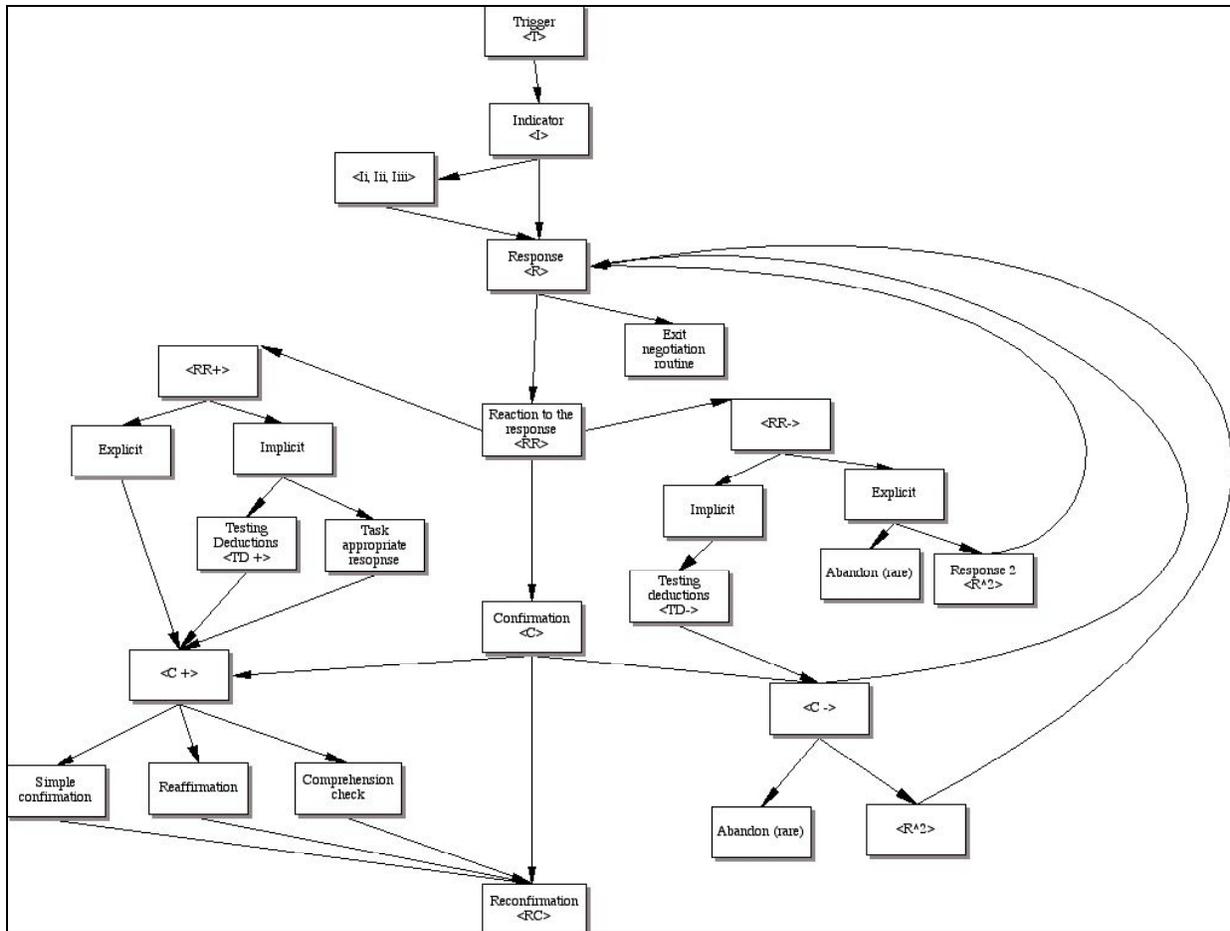


Figure 3: Model of Computer-Mediated Negotiated Interaction (Smith, 2003)

### Designing Task-Based, Computer-Mediated Environments to Promote Interactive Negotiation

The difficulty of providing students collaborative linguistic contexts has been lessened as a result of advances in computer hardware, networking, communication, and graphical technologies—in particular the advent of the Internet. Bringing meaningful contexts that provide opportunity for interactive negotiation to language learners is now possible by means of online virtual environments (see Zohrab, 1996; Tolia et al, 2004). Such virtual environments “can bring language learners closer to the target language community and its speakers while also providing an array of tools for awareness raising activities and critical reflection” (Schwienhorst, 2002: 206). Indeed, this technology may prove superior to the traditional language classroom in affording communicative interactivity (see Rose & Billingham, 1995). However, technological interventions to facilitate interaction and acquisition should not be seen as a panacea. Conversations in virtual environments cannot currently completely substitute for linguistic interaction in the

real world (Jung, 2002). Yet they may provide for new and viable ways of effectively facilitating acquisition of communicative competence.

González-Lloret designed and studied learners using a task-based language learning microworld, *En busca de Esmeraldas* (In Search of Emeralds), in which two NNSs of Spanish use the computer to navigate through a QuicktimeVR simulation of a university building and solve various quests collaboratively (figure 4). The system was designed with the intent to provide rich, elaborate input and encourage inductive learning with a focus on form through implicit negative feedback. The researcher found the language that learners produced while using the simulation was typical for negotiation for meaning with a main emphasis on the task (cf. Pica et. al, 1996; Smith, 2003). Learners using this environment interacted in the target language in ways similar to previous reports, which suggests facilitation of comprehension and possibly acquisition.



Figure 4: *En busca de Esmeraldas* (In Search of Emeralds) main interface

The *En busca de Esmeraldas* environment is an attempt to realize the benefits of task-based interactive negotiation for meaning in alignment with Chapelle's seven hypotheses relevant for developing multimedia CALL (1998). Chapelle's theoretical framework focuses on an environment that provides opportunity for L2 interaction; offers salient, comprehensible input; and presents opportunities for learners to produce output, notice errors and correct them. These foci are in alignment with Smith's model (2003) of computer-mediated negotiated interaction. *En busca de Esmeraldas* appears to be a step in the right direction for implementing computer-mediated interactivity in the SLA curriculum; however, the

environment demonstrates a number of limitations. As learning tasks in this environment are intended for two NNSs collaborating on one computer, there is no opportunity for communication over a distance and little opportunity for NS-NNS interaction. Because learners are required to be co-present and share a single computer terminal, carrying out tasks in this environment is time- and place-dependent. Additionally, the face-to-face nature of the interactive tasks may promote communication anxiety in some learners. These limitations suggest the need for an integration of CMC into such task-based CALL activities. As pointed out previously, while providing additional affordances for increased interactive negotiation CMC has additionally been shown to be an effective tool for addressing limitations such as those apparent in the *En busca de Esmeraldas* environment.

### **Conclusion**

Although the use of computers for facilitating interaction and acquisition holds promise for the field of SLA, it remains to be seen how effective such technological interventions may be. In this light it is prudent to consider Van Lier's model for curricular design (1996). By proceeding from principles to strategies to action, a consistent, methodological, interactive method can be designed. Incorporating Doughty & Long's ten methodological principles for task-based language teaching (2003) and bearing in mind Smith's research on computer-negotiated interaction (2003) provides a model around which we can design tasks that facilitate interactive negotiation for meaning. It is feasible that we can realize these interactive tasks in CMC environments within Chapelle's (1998) theoretical framework for developing multimedia CALL. Through these lenses it is possible to conceptualize such an environment; however, such conceptualization also raises a number of questions. What is the optimal teacher role in such an environment? Which emerging CMC platforms are especially promising for development of such environments? To what degree does interaction in such environments affect comprehensibility of input and output and how does this linguistic interactivity compare to that of face-to-face dialogue?

Enhancement and refinement of the proposed research framework is needed in order to shed light on those interrogatives with the aim of designing computer-mediated language learning environments that facilitate interactive negotiation for meaning. To this end, a review of the CMC literature from the fields of cognitive and educational psychology is recommended along with a product review of current and emerging collaborative CMC tools. Data acquired from this research could prove to be useful in designing a prototype environment, the realization of which could be implemented in the interest of studying what

effects interactive negotiation for meaning in this environment has on comprehensibility, what patterns of discourse are evident in language learner speech, and how discourse in this environment compares to comparable discourse in face-to-face linguistic interaction. Although interest in CMC in the field of SLA is increasing, more research on interactive SLA in computer-mediated communication environments such as that proposed here is needed to address emerging research questions and enhance our continually permutating theories of second language acquisition.

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