

Teacher-Student Discourse: Mediating L2 Development in an Agriculture Classroom

Jungyin (Janice) Kim
University of Illinois

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This study examines how teacher-student verbal interaction in an agriculture graduate classroom contributes to ESL students' second language acquisition. Audio recordings of classroom verbal discourse between students and a lecturer were collected and triangulated with classroom observations. Through an interpretive (semiotic) approach, teacher-student discourse was micro analyzed and organized under emerging patterns (themes) of discourse. The representative verbal interactions in the study show how a lecturer mediates between the students' English linguistic level, the educational discourse and an understanding of field-specific knowledge (agriculture). Through this process of mediation, the students' verbal contributions begin to reflect the field specific discourse of the educational curriculum. Results suggest that L2 oral communication skills in content-based classrooms are best achieved when the lecturer builds linguistic bridges that connect the educational discourse with the specific discourse of the field. In analyzing verbal interactions in the classroom that are effective in terms of L2 learning, both teachers and students are active participants in the co-construction of language and curriculum knowledge. The study also shows the value of qualitative interpretive approaches in L2 research concerned with teacher development and educational improvement.

[mediation/mode continuum/scaffolding/zone of proximal development/
/ / /]

I. INTRODUCTION

To achieve academic success, it is important for students in higher education in English-speaking countries to have a good command of academic English and of the discourse of their individual disciplines (Less, 2003). Many international graduate ESL students in content-based classrooms in English-speaking countries report feelings of inadequacy and frustration while participating in oral classroom activities such as whole-class and group discussions (Liu, 2001; Morita, 2004). However, in spite of their concerns and the difficulties they face in these classrooms, little research has been devoted to the experiences of matriculated ESL students beyond the language classroom (Liu, 2001). We, as English for Academic Purposes (EAP) professionals, need to expand the scope of our research and consider our educational responsibility to matriculated ESL graduate students as they enter content classrooms in order to assist their smooth transition from general English language learners to subject-specific English users (Murphy, Mendelsohn, Folse & Goodwin, 2005).

Most previous studies of ESL graduate students have focused heavily on writing, without paying much attention to speaking the specific (content-based) English academic language (e.g., Ferris, 1998; Morita, 2004). The importance of speaking the appropriate academic registers in content-based classrooms has increased with the shift in university practice in the early 1980s from a lecture format to an interactive discussion format (Lucas & Murray, 2002). We need to direct our efforts toward conducting more research on academic oral communication skills in order to meet the academic speaking needs of ESL graduate students in content-based university classrooms.

To address these needs, we must also understand what kinds of linguistic registers are often used in the target subject field, how students actually appropriate these registers, and how teachers can assist students in this learning process. Having said this, the researcher begins by asking how teachers mediate language and learning. More specifically, how do teachers build linguistic bridges between the learner's educational discourse and the target academic register? Concomitantly, how do students and teachers co-construct meaning as the teacher mediates in this learning process? Finally, what are the pedagogical implications for SLA?

To explore this phenomenon, particular focus will be placed on the oral communication that occurred between a group of ESL graduate students and a lecturer in a U.S. Agriculture seminar. The role of the lecturer in this study is to show that content-based dialogue between student and teacher can have a dual function: 1) through scaffolding, the teacher's content-based language itself can teach students agriculture knowledge and 2) subject-field linguistic expressions (“*we evaluate/ the roots look premature...*”)

The study attempts to show that learning new language skills is a process that is socially mediated in which students and teachers together are important participants in constructing academic language learning. In order to investigate this phenomenon, the researcher draws on the constructs of mediation from sociocultural theory and mode continuum from functional linguistics. The study also provides pedagogical suggestions for EAP/ESP teaching practices that would better furnish ESL graduate students with speaking the appropriate academic registers required in specific content-based classes.

II. THEORETICAL FRAMEWORK

1. Mediation

The concept of mediation has been noted by theorists such as Vygotsky (1986). Following Vygotsky's definition, the concept of mediation is defined as ways human mental activity is mediated by tools and signs, the foremost tool being language (Vygotsky, 1986). This concept provides a way into understanding a process-orientated learning in a socially situated context (Hall, 1995). Recalling Vygotsky's conceptual framework on learning (Vygotsky, 1986), he notes that learning originates in the social mediation provided by interaction. Moreover, past studies (Ohta, 1999; Swain, 1995) have revealed how oral language acquisition is realized through cooperative interactional processes in which learners learn how to appropriate the language of the interaction for their own goals and purposes. Many of these studies have paid particular attention to language learning through student-student, and student-teacher classroom interaction in K-12 settings (Downer et al., 2012; Scott-Little et al., 2011). However, there needs to be more research that pays particular focus in the collaborative interaction between teacher and students in higher educational settings.

Mediation is an important and useful construct in understanding collaborative interaction. The zone of proximal development, scaffolding and joint construction are a few constructs related to mediation when investigating collaboration in educational settings. For example, the site where social forms of mediation develop is the zone of proximal development (Coughlan & Duff, 1994). The zone of proximal development (ZPD) is commonly referred to as the cognitive distance between a learner's current developmental state and his or her potential developmental state. It also entails what the learner can do when collaborating with (and assisted by) a more experienced learner (Vygotsky, 1986).

Closely discussed with the ZPD theory, the concept of scaffolding has been used by L1 and L2 educators to describe the nature of this assisted performance. The theory is used to investigate the phenomenon of the supported action in ZPD, which not only entails

assisting one to complete a given task but also assisting one to know how to do it as well (Hammond, 2001). Vygotsky's concept of ZPD and its related scaffolding metaphor serves as the theoretical basis for the study of collaboration in many ESL classroom studies. For example, De Guerrero and Villamil (2000) in their study adopted a microgenetic approach to analyze the interaction produced by two intermediate ESL college students as they worked collaboratively in revising a narrative text written by one of them. Although in the first half of the revision session the reader played a critical role as mediator, both reader and writer became active partners in the revision task in which guided support was moving jointly between each other. The authors concluded that in L2 peer revision scaffolding may be mutual rather than unidirectional

Adding to this line of thought, Rollinson (2005) believed that by giving students practice in becoming critical readers, we are at the same time helping them towards becoming more self-reliant writers. His belief is that learners can become self-critical of their work and have the skills to self-edit their work. However, only if the class is adequately set-up and trained can the benefits of the peer feedback activity be fully realized. Even so, there are considerations of age, cultural background, class size, and inter-language level which may significantly influence overall outcomes- be it reading, writing or speaking.

However, several criticisms have been put forward at the traditional definition of scaffolding as a construct of mediation. Reconceptualization has been offered that aim to present an extended and dynamic definition that accounts for the contribution of factors in the learning environment other than the expert. Mascolo (as cited in Knouzi, Lapkin, Brooks & Swain, 2010, p. 25) argues that the standard definition assumes no role for the individual learner/novice and places too much focus on the structuring role of the expert (e.g. teacher). It also fails to reflect the "dynamic, emergent and open-ended nature of development" and depicts learning/development as a fixed, predetermined process. Swain (2000) preferred the term, "collaborative dialogue" and defined the term as "dialogue in which speakers are engaged in problem solving and knowledge building" (p. 97). Building on Swain's definition, Ellis (2008) emphasizes that "reciprocity and contingency between the speakers" is significant in mediated learning (p. 258). Following the argument made by Ellis and Swain on the dialogic nature of mediated learning, this study attempts to illustrate the value of reciprocity and contingency in L2 learning between a student and mediator (lecturer).

2. Developmental Learning through Mode Continuum

The researcher shows the developmental learning of the students' academic register by focusing on a few different classroom discourses. An analysis of the registers that the students learn draws on systemic functional grammar, which follows the work of Halliday

(Halliday, 2003; Halliday & Matthiessen, 2004). The reason for drawing on this theory is because of the need to study the discourse of teaching and learning from the perspective of linguistic theory, which may help explain how language makes meaning.

Functional and interactional linguistic theories illustrate the idea that learners need to learn to use language for various purposes and in a range of situational contexts (Couper-Kuhlen & Selting, 2001). For example, a longitudinal study from Halliday (2003) shows how young learners learn language through the interactions and semiotic events in which the participants participate. Rather than viewing language as a limited set of rules that must be acquired, systemic theorists view language as a set of choices from which the language learner selects according to the given context they are in. That is, from a systemic perspective, the features of language vary based on the context of the situation. Halliday adds that the context is characterized as what is being talked about (content), the relationship between the speakers, and whether the language is written or spoken. These features together, according to Halliday, are referred to as the *register* of the text.

To understand the students' learning of English academic registers, the concept of mode continuum is useful. It shows that the more the learners are interacting together and engaging in dialogue, the more they can take the interaction and dialogue for granted. To elaborate on this idea, Martin (1984) notes, "as language moves away from the events it describes, and the possibility of feedback is removed, more and more of the meanings must be made explicit in the text" (p. 24). In other words, more information should be contained in the language to assist in the learner's language learning development as students become more accustomed to the given learning context they are in. To clarify how mode continuum may be applied in L2 oral speech, the researcher provides four short texts in Table 1. In this table, a group of graduate ESL students discuss their informal methodological approach and findings of their group lab experiment. In each text, subtle changes occur in their academic register. This is because the context in which it is used is different. Note that each text is more explicit than the previous one. In Text A, a student talks about what plants are considered ready for experimentation. In Text B, the same student recounts what he learned about the plants to the lecturer. In this text, the student provides more explicit information because the context has changed. He uses specific registers such as *ripe* and *mature*. In Text C, the student builds a generalized rule he has learned. Text D, by way of comparison, is from a sample lab report in a textbook. The student's language has become even more explicit. Comparing the developmental process from Text A to Text C, the student attempts to appropriate a new academic register in his speech: *alternate nodes*.

TABLE 1
Mode Continuum in the Subject Field of Agriculture

Text	Context
A. "We have to choose the one that can be ready for next stage"	In the small group, a student discusses how they are going to choose which plants for their experiment
B. "Our group learn that this one is the ripe and mature one"	Lecturer joins the group. A student tells the lecturer what he learned
C. "Our search shows the buds that are even ones are the premature ones. The alternate ones are not."	A student tells his group what the general outcome of their research
D. "The alternate nodes of the bud characterizes The plant's maturity"	An entry in a lab textbook about the characteristics of plant maturity.

While this is only a small example, the purpose is to illustrate the different ways language is used in the four texts. As the students begin to share information to a listener (lecturer) that was not a participant in their immediate group discussion, they took the event less for granted. Specifically, the relationship between the speakers becomes more impersonal, and the language towards the end (e.g. Text C) increasingly takes on the characteristics of written language. These four texts illustrate what Martin (1984) refers to as "the general concept of dependency" (p. 27). Martin is noting the idea that as language moves further away from the given event, more and more of the meanings needs to be made more explicit if the listener (e.g. lecturer) is to recover and understand the meanings. Note how in Text C the student's language becomes more explicit when an outsider (lecturer) joins the group discussion to evaluate the students' findings.

This short example of a mode continuum may reflect the process of formal education: students are required to make shifts in different fields of study and learn to move from personal everyday speech toward a more written-like discourses used in specific subject fields. The development of language within any subject in the school curriculum involves learning the technical language, and grammatical patterns that is particular to the specific subject field. As the continuum suggests, the school-related registers tend to be more formal written-like discourse. It also tends to be less personal, more abstract, lexically dense, and more structured than everyday face-to-face language.

III. METHODOLOGY

This study is part of a larger study that utilizes an interpretive approach. When using the term, interpretative in this study, the researcher refers to studies in qualitative research

methods that consider an approach to semiotics (Lazaraton, 1995; Swann, 1995). In other words, it is an approach that places particular focus on the social meaning of co-construction in a given setting.

1. Site

Data were drawn from an agriculture graduate seminar course at a university in USA. The seminar was a process-orientated course where students were responsible for planning weekly tasks to write a proposal for a larger project. Individual and group feedback was provided by the lecturer on a weekly basis. Many of the student projects were interrelated with the lecturer's research focus. This was so that the lecturer could provide students with authentic feedback. The lecturer had previously advised several ESL graduate students in the past and has continued to teach this non-credit graduate seminar course as a way to provide grounds for international student to share ideas about their individual projects in English. The lecturer noted that the introductory graduate seminar was a means to specifically assist ESL students in understanding how to apply the academic language often used in the field of agriculture.

2. Participants

In the graduate seminar, as can be seen in Table 2, 11 out of 12 students spoke English as a second (or subsequent) language. All the students were male and their age ranged from their late 20's to early 30's. Table 2 illustrates the different languages spoken by each student.

Of the 12 graduate ESL students, the majority of the students' background included Japanese, Chinese, and Korean. All of them were born in their home country, and had entered graduate school six months ago with little oral English speaking opportunities in a classroom setting. Usually, the ESL students who had prior exposure to English language courses were quicker to adjust to the use of English in the immediate contexts that required face-to-face interaction. Often times, students with limited oral English speaking opportunities very quickly become adept at using English in here-and-now contexts, where interaction occurs face-to-face and often relates directly to what is occurring in the immediate situations. However, as research has shown, students who appear fluent in speaking English in such immediate context still have a hard time understanding and using registers associated with academic learning in their subject field (Collier, 1989; Cummins, 1996).

TABLE 2
Language Spoken by Students

Number of students (=12)	Languages
1	British English
4	Chinese
2	Japanese
2	Hindi
3	Korean

3. Data Collection

In the graduate seminar, the lecturer organized his teaching so that it would provide a continuous sequence of language learning. Three main events in the seminar are presented as possible developmental stages in the students English learning: conducting experiments in small groups, reporting their findings to the class and lecturer (many students had similar although not identical experiments as part of their project), and finally, organizing the tasks in a written journal format as potential materials for their research proposals.

The study focuses specifically on the second event in which students went around and reported their experiment results to the class as the lecturer provided feedback through teacher-guided reporting (Ellis, 1997). It is during this event that students and the lecturer began to co-construct the more formal register of the academic language of agriculture. The verbal interaction shown in this study reflects snippets of this co-construction.

Data were collected on a whole unit topic per class. A total of 28 classes were observed. One unit consisted of 4 to 5 project discussions and feedback, which lasted about 1.5 hours. Data included audio recordings and transcription of the classroom discussion/feedback between the students and teacher, teacher and student informal interviews, and classroom field notes. Field notes of classroom observations and informal interviews were used as contextual data. The field notes and interviews helped me as a researcher get a better understanding of the classroom dynamic and the context of the speech events of the classroom discussion. The data in this study focuses specifically on the verbal interaction of the speech events.

4. Data Analysis

The data analyzes how students interpret the conversations, which are demonstrated in their participation in various speech events (Cicourel, 1982). Following Cicourel, Gumperz

(1982), and among others, the researcher micro-analyzes the discourse via running commentary on what the speakers are communicating in the verbal interactions. The analysis is based on the uptake or responses to utterances. The study then analyzes the structural organization that underlies the verbal interaction in the speech events.

Micro-analyzing the speech events in a particular time and context have its limitations with regards to internal validity. To directly address the limitations, some of the methodological procedures the researcher employed to establish trustworthiness in this study included: data triangulation (Merriam, 2002), and member checking. The transcriptions were triangulated at two levels and checked with the participants.

In the first level, the researcher documented every teaching and learning event in the classroom over a period of 6 months. This provided the researcher with a holistic perspective on the total data set of transcriptions. The researcher indicated the kinds of activity, the interactional patterns, where the learning events fell on the mode of continuum, and what the students were learning in their subject field. This broad analysis allowed me to define major patterns of discourse and learning. From this analysis, a number of themes emerged. At the second level, the researcher looked for representative speech events that best illustrated the themes. The researcher took the findings back to the students and teacher to cross check if my interpretations accurately captured their intentions. Then, the representative speech events were analyzed in detail and presented under the subheadings (themes) of the findings section: *Reformulation through recasting, hints to making revisions, indicating the need for revision, and reformulating student's personal knowledge.*

IV. FINDINGS

All the figures illustrated below are derived from the reporting sessions that were guided by the lecturer. Both the lecturer and students worked together to recontextualize the current findings of the experiment. With the lecturer's guidance and his feedback, the students input on the discourse of L2 communication began to reflect the discourse of the specific knowledge of the agriculture program. With this in mind, the researcher focus on ways the verbal interactions between students and the lecturer allows for students to utilize a more agriculture-based language. In the following sample texts in the figures, the lecturer mediates the learning of language in many ways, such as, reformulation through the act of recasting, providing hints to the students on ways to make revisions, requesting the requirement to revise, and finally, reformulating the students' personal knowledge.

1. Reformulation through Recasting

The lecturer engaged in mode shifting across different teaching lessons in the seminar. Nevertheless, mode shift also occurred within the discourse by which these lessons were realized. Specifically, they were realized in the moment-to-moment interactions between the lecturer and his students. For example, in Figure 1, reformulation and revision is seen when the lecturer asks the student to discuss what his group had learned about plant growth, and whether it was ready for experimentation. This figure is a typical class discussion in which there is an ongoing process of recapping by the lecturer, who re-represents or recontextualizes the students' learning experience in a way that better fits the pedagogical purpose of the field of agriculture. However, one can see that there is a close similarity between what students actually say and how their version of the reportings is recontextualized. In such cases, mode shifting is seen when the lecturer recasts¹ a student's contribution.

In Figure 1, the students' and the lecturer's expressions are thematically related, even if they are expressed differently: *not good at all/not ready, too small/premature*. Very similar semantic relations and patterns are constructed and repeated: *not good at all/ probably not ready; they are too small/they were premature*. Similar words or phrases grammatically correspond to one another in a similar structure. In this example, the lecturer's response follows the grammatical construction of the student's response. The lecturer reformulates the meaning of the student's response, recodes it and recasts it as *not ready* and *premature*. In this recasting, the lecturer's modeling happens after the student's response and is, thus, contingent upon it in its meaning. Such contingent talk, in terms of semantics, is seen by researchers (Green, Kantor & Rogers, 1991; Webster, Beveridge & Reed, 1996) as an enabling factor in mother tongue and second language development.

¹ The term means the similarity that is seen between what students actually say and how they recontextualize it (Lyster & Ranta, 1997). The researcher uses the term here to refer to any piece of connected discourse where the lecturer rewords the student meaning in a more registrally appropriate way.

Student	Immediate context language	Professor Everyday language	Formal language
Plants not good at all	Like this (professor shows sample plant)		
For now		Plants aren't ready	Probably not ready
I look at them ... and they are too small... we can't use it yet.	(.)	And not ready for next Next stage.	When you checked them they were premature.
	they enough	or ripe	When they are ready, will be developed

FIGURE 1 Mode Shifting

More detailed examination of these recasting shows that more than one kind of reformulation and revision occurs between the lecturer and student. The lecturer's speech also reveals three different points in his contribution. As a means to examine the lecturer's speech, the researcher characterizes these points as *immediate context language*, *everyday language*, and *formal language*. I use the phrase, *immediate context language*, to particularly refer to parts of a discourse that contain exophoric reference (extralinguistic reference) and are dependent on the immediate visual context for their interpretation. *Formal language* represents formal language used in the department of agriculture. *Everyday language* represents informal spoken language particularly familiar to the students. These different forms of language that are being reformulated and revised show a handful of messages that are redundant. They are relevant aspects of discourse in helping L2 learners' comprehension process of their second language (Wong-Fillmore, 1991). Figure 2 (an extension of figure 1) illustrates the reformulation and revision of student speech in which this redundancy is seen.

Line	Student	Professor
1		What did you find?
2	When we checked (.) first few ones, They were not good and ready, so we check again and not ready yet.	
3		I see. Let me see if I can clarify. So you checked a few, they're in line, and you saw they were small
4	Yeah, we did.	
5		Like this one (showing sample plant), the roots were still <i>premature</i> at this stage, so they were not ready, right?
6	(smiles and nods)	So, what would you do next?
7	So, we.. we.. look to bottom part and see Roots are too small to see, we take it out and see this	
8		When you dug out the roots, you saw this?
9	They too umm: small, but we check other plants and they are good	
10		Ok. I see, so you dug out the roots of the first few and realized that ok(.) they're still <i>premature</i> and <i>not ready</i> , and the other ones were <i>developed</i> enough or you mean, are <i>good</i> .

FIGURE 2 Student's Reformulation and Revision

Figure 2 illustrates how the lecturer's discourse offers a micro perspective on how his discourse functions as a linguistic scaffold between the student's current English linguistic skills and the department's curriculum. The columns in Figure 2 reflect the two different discourses at play. The two columns illustrate a bridging of the two discourses and may be interpreted as the ZPD in action. The bridging between the two discourses also presents a linguistic outlook on comprehensible input.

Students learn three different kinds of meaning: lecturer's explanation and demonstration, the description of how to utilize everyday words familiar to students (*ready*, *not good*), and more technical terms (*developed*, *premature*). However, just because certain registers are simplified it does not mean that comprehensibility is contingent upon simplified registers; rather, students are provided access to important technical words in contexts where meanings are easily understood (Line 3, Line 10). The researcher is able to see how such exchanges could potentially facilitate language learning.

However, researchers (Lyster, 1998; Pica, 1988) have suggested that the teacher's implicit recasting (without guiding students on how to actually reformulate their own ideas) could minimize the value of students' utterance. This is because in such cases

students are not required to accommodate the feedback provided by the teacher. Therefore, in Figure 2 when the lecturer actually signals for further clarification (rather than reformulate it for the student), it may benefit the student's second language learning (Line 6 and Line 8). For example, the lecturer may signal for clarification by providing subtle hints, which may assist students on how to modify their communication issues (The researcher refers to this as *hints to making revisions*). It may also benefit second language learning by inviting students to repair their own responses (The researcher refers to this as *requesting the need to revise*). The following two sections illustrate how this is seen.

2. Hints to Making Revisions

In Figure 3 the lecturer hints to the student that clarification is needed. The lecturer provides the student a reformulated version after the student had the opportunity to correct himself. In this setting, Chae is attempting to explain why the roots were not big enough to take apart for the next stage of the microscopic scitology. During the microscopic stage, the roots were taken apart and microanalyzed under the microscope. Here, the lecturer's language mediation becomes less about furnishing new language skills and becomes more about giving hints so that Chae learns to reformulate his own ideas. As seen in the interaction, the co-construction feature of the conversation is important: the lecturer's scaffolding is contingent on the student's intended meaning.

The student's first response (Line 2) is extended but with hesitance. In Line 3 the exchange could have been finalized by the lecturer with him re-explaining Chae's intended meaning. However, the lecturer persists in making requests by a sequence of questions as a means to find the referent of Chae's response "is not good (Line 3; i.e., *what is not good?*). When Chae's explanation is not clear, the lecturer asks more questions to figure out the missing subject in the student's explanation: "what is not ready? (Line 5; i.e., *what do you mean it is not ready for the microscopic scitology?*). When the student fails to respond clearly to this question, the lecturer requests for more clarification: "say more about it," (Line 7). Chae's next response reiterates many of the same content in Line 2, but we notice that Chae explains it with fewer hesitance (Line 8). Yet, one notices that the student makes an abrupt stop during his response: "It difficult to explain clearly" (Line 8). The lecturer reassures him to carry on with his response by making an interpersonal remark: "No. That's fine. You're doing ok" (Line 9). The student's final response is less hesitant and appears more complete. He notes the important fact that the roots will be ready for the microscopic scitology after 2 weeks (Line 10). If we compare Line 2 with Line 10, the student's response appears more thorough and clear. As seen in the transcript layout, the student tends to talk far more than the lecturer throughout the interaction. The lecturer provides the student the opportunity for clarification and this results in increased

clarification of the student's own ideas (see Line 2 and Line 10). As Hall (1998) points out, language learning does not only depend on students' abilities, or on their knowledge and skills or motivation for learning, but is tied to the teacher's motivation for and interest in providing the learner's with "official participatory rights" to engage fully in the opportunities for showing and building on their knowledge and skills in classroom practice (p. 308).

Examining the responses in the sample transcript, the student, in response to Vygotskian terms, is situated in the periphery of what he can do alone. That is, at least at the surface level the student appears less capable of clearly explaining his ideas. However, because of the lecturer's scaffolding, it is the student's own revision and reformulation of ideas that is reflected in the response (rather than the lecturer's). It is only until the end in Line 11 does the lecturer revise and reformulates the student's explanation in a more concise manner. A chance for a greater negotiation of meaning could have happened in this interaction. Researchers in L2 (Long, 1985; Pica, 1988) traditionally have noted that such negotiation of meaning, especially in settings where clarification is requested by the learner, may facilitate second language learning.

When examining Figure 3 in greater detail, the negotiation of meaning slightly increases. Here, instead of the third feedback move in which the lecturer reformulates the student's ideas (as seen in Line 11), the lecturer asks specific questions to the student as a means to draw out more information. This move by the lecturer, according to Wells (1993), is viewed as a kind of pivot to the subsequent verbal interaction. Wells (1993) explains how the division of labor seen in IRF (initiation-response-feedback), in which the talking is mostly done by the teacher, is redistributed where it is the *student* that takes on the responsibility of clarifying their explanation to the audience. In this way the lecturer helps the student extend his initial response in his subsequent move, thus, extending the exchange. In Figure 3, the lecturer does this more than once. As Cazden (1998) had noted, a slight change in the traditional IRF sequence can have a significant effect on the process of the discourse as a whole. For instance, consider what opportunities for language learning would have been lost if the lecturer attempted to fully recast what Chae was trying to say in Lines 3-4 (*is not good?*)

Line	Student (Chae)	Professor
1		ok. Umm: (2.0) what about the status of the(.) microscope (scitology)?
2	yeah-so we already plant the five of that (1.0) yea:h an:d- but they produce shoot(s) but-uh- the root is not-is not good.	
3		Is not good?
4	It's not good/ it's not not-not ready for (.) microscopic -uh-maybe we wi:ll (1.0).	

5		What is not ready?
6	I think we have to wait one or two weeks so, after that (.)	
7		Ok. Ok. Hold on... say more about it, Chae.
8	So- yeah. So, we plant five of the plants. So, just not one, but five plants...you can't see the roots. . . so for um: microspic part- It difficult to explain clearly...	
9		No. that's fine. Don't stop, you're doing ok. I hear ya
10	Ok. So, so, the roots in five plants not ready to pick and see under microscopic for microscopic scitology part. Um: I look and maybe two..maybe? not sure..but two weeks it ready.	
11		Ok. I see. So, the roots are not visible right now to examine yet for the microscopic scitology stage. So, you're saying in two weeks maybe the roots will be visible enough...alright. Have you changed the rest of the population to the other pots?
12	Um: yes.	

FIGURE 3 Professor's Scaffolding Contingent on Student's Meaning

3. Indicating the Need for Revision

In the verbal interaction illustrated in Figure 4, the lecturer illustrates the need to appropriate a more academic register. The lecturer is aware that the students are capable of doing so on their own; thus, he surrenders the responsibility to the students. Figure 4 illustrates how the lecturer's constant request for further clarification may perhaps result in a learner discourse that is longer and more complete.

Line	Student	Professor
	<u>Group 1</u>	
1		ok, alright. Ok. Umm: (1.2) I need to find out about the freeze dryer-what (.) is going on with you guys- >what are you guys doing?
2	Jin: We look at three pots today- it still not ready(.) for checking.	
3		=Can you explain that again one more time?
4	Jin: Ok. In our group we, we only have time to check three pots... to check (.) and even though we see a little of the roots. Maybe still not ready for next stage even if it look ripe.	

5	<u>Group 2</u>	Ok, so umm: what is going on with you guys?
6	Min: We see that roots are not good enough still.	
7		Ok, now can you say that in a way that is more academic-as if you were presenting it to the class?
8	Min: Umm... so. We evaluate all the pots in our group. The state of the roots look premature for microscopic examination-umm evaluation? We looked at all pots, but sufficient time is not enough for next stage.	

FIGURE 4 Student Extends his Language

Examining the text in Group 1, the lecturer's questions are not an evaluation or a direct revision of the student's language. The questions function in helping the students extend and stretch their language. For example, because of the lecturer's help, Jin provides more explanation of his reasoning as seen in the discourse. He is aware that his audience may not share the same knowledge as his group. Examining this even further, he uses the adjunct, *still* (Line 2), to reinforce the fact that he is referring to a prior event in the experiment as a logical conjunction that indicates a causal relationship: *even if* (Line 4). As mentioned before, knowing how to use explicit discourse is often required in the academic registers. Likewise, in group 2, the lecturer's response results in a more extended response as he draws the student's attention to appropriate academic registers (Line 7: *can you say that in a way that is more academic...?*).

4. Reformulating Student's Personal Knowledge

In Figure 5, the interaction took place near the end of the teacher-student guided reporting. Here, the lecturer focused on guiding students to incorporate a more academically appropriate language. At this stage of the session, the student's individual understanding and findings of the experiment are being reformulated in the larger discourse of agriculture.

In order to illustrate how the lecturer mediates learning, the figure shows two separate languages by the lecturer: talk about language itself and talk about evaluating the readiness of the plant roots (agriculture). More specifically, the lecturer's talk takes on two aspects in his language: agriculture and language itself. The lecturer's language helps students understand what it means to make generalizations about learned knowledge (Line 8-9) and its wording (Line 11: *so we can say. . .*). In doing so, the lecturer helps students produce understandings in abstract ways (Line 8. i.e., *Anyone want to make generalization about*

the process so far?), which is not simply based on the immediate context of the interaction. As the interaction develops over time, students learn the structure of constructing generalizations about their knowledge. Talk about language itself by the lecturer becomes less of a focus through this progression. For example, the student's response is clear and complete and illustrates how he is able to appropriate new learning. In talking about language, scaffolding becomes less of a focus as students show they are capable of producing the language on their own (see Line 9)

Figure 5 also illustrates that the pedagogical significance of texts-how they are read-cannot be uncovered without a consideration of their place within the ongoing discourse that has been

built up over time. Any interactional sequence is simply an excerpt of a much larger piece of discourse, namely, the total discourse of the subject or topic to date, referred to by Edwards and Mercer (1987) as the *long conversation* of the classroom. Therefore, the meaning and nature of a particular interaction can only be understood in terms of the situational context and ongoing discourse in which it occurs. Therefore, though in isolation, Figure 5 may seem to illustrate an empty functional drill. However, within the context of the long conversation, it is an example of how the lecturer mediates for students' ways of recontextualizing their personal learning. In doing so the lecturer helps students take a further step toward the language of the agriculture.

Line	Students	Professor: Language	Professor: Language of Agriculture
1			Now, let's say then that I checked all the plants and the roots were not ready..what would you say?
2		You got to think about who you are talking to about the process.	Now-
3	Park: They are . . . premature.		
4			Ok. That's good. But let's imagine that someone in the audience asked for the current status?
5		Ya' know. You have to use(.) complete sentences and the right vocabulary.	
6	Kim: The: current status indicates< that the roots are still in premature stage.		
7			Yes, explains what characterizes the current status of the roots in which
8		Anyone want to make generalizations about the	pot has to be clear. Good.

		process so far? Something we must check before the microscopic scitology?
9	Ru: If you check all the pots and they are premature then we will generalize that all plants are premature for next stage. But some are ripe and can take next stage for more analysis.	
10		Yes. That is true and good to check on.
11		Do we leave the premature pots until it's ripe? What do we do, just maintain the same temperature until its ready? So we can say ...
12	Jung: Maybe look for alternative. Transfer into different pot and change temperature higher.	
13		Ok. Other variables are considered. Good....

FIGURE 5 Students' Reformulation in the Discourse of Agriculture

V. DISCUSSION

Investigating the process of language mediation across a mode of continuum in a graduate seminar allowed me to focus on the construction of linguistic bridges between the academic register of the agriculture curriculum and the language of the learner. This is important in any ESL program where learning new ways on how to use language also builds new content-based knowledge. Specifically, the study illustrates how teachers may mediate language and learning in several ways: mode shifting through recasting, signaling to the students how they can reformulate, showing where a reformulation is needed (but handing the task over to the students), and modeling alternative ways of recontextualizing student's personal knowledge.

Important to such interactions is the concept of contingency; that is, the way one judges the need of assistance required by the learner based on the moment-to-moment understands. Contingency requires interaction to be more oriented toward collaboration: Contingent discourse is anchored within the shared agenda of the participants (Van Lier, 1996) and requires what Wells (1986) refers to the "Janus-like quality" of such interactions (p. 34). In the examples of this study, the discourse that occurs between students and the lecturer

looks both backwards by referring to prior comments as well as forward by connecting those comments to the language associated with the curriculum learning. For example, in Figure 4 the lecturer illustrates the need for the students to appropriate a more academic register. However, he illustrates this need by asking the students to reformulate their ideas in everyday English to more academic English (Line 5 Lecturer: *What is going on with you guys?* → Line 6 Student: *We see that roots are not good enough still* → Line 7 Lecturer: *now can you say that in a way that is more academic-as if you were presenting it to the class*)

The lecturer's responses also illustrate how the ZPD is played out. For example, in Figure 5 lines 11-12, he uses the ZPD as a beginning point to see what students can contribute, but the lecturer extends it by scaffolding the students' linguistic ability that students are expected to use as time progresses (Lines 5-7: Kim: *The current status indicates that the roots are still in premature stage/ Lecturer: Yes, explains what characterizes the current status of the roots in which pot has to be clear*). Researchers (Brown, 1991; Van Lier, 2000) note that if a one is to learn, the learner should be active in doing so, and that the learning activity should show a balance between new and familiar knowledge so that focus can be placed on increasing knowledge. The gap and closeness of fit between the student and lecturer in the example figures in this study provides an insight as to how much the ZPD of the student can inform the response of the teacher. The gap seen in student- lecturer verbal exchange may shed light on what is appropriate in teacher's feedback in classroom discourse- particularly for ESL students in content-based mainstream classroom settings. Lecturer-student interaction, thus, in such settings is one where such research would be useful.

VI. CONCLUSION

Exploring the ways in which students and teachers co-construct meaning also shifts pedagogical questions away from the well-worn debate around traditional/teacher-fronted versus progressive/student-centered pedagogies. It places more focus on the nature of the discourse itself and its mediating role in the broader knowledge framework of the curriculum. The figures in this study show how language learning is essentially a social rather than an individual endeavor. As Cummins (1996) points out, one implication of this view of learning, and one that is particularly relevant in an ESL context, is that learners' achievements should not be seen as simply the result of a learner's innate ability or background but also the nature of the interactions between teacher and learner.

Moreover, in order to gain a more thorough understanding of how verbal interactions may be useful in adult ESL educational settings, perhaps, the model of language-in-context

central to linguistics may offer one theoretical approach. This is so because of its focus on the relationship between context, meaning, and language; its concern with how meanings are made. Register analysis, for example, can show how teacher-student discourse mediates shifts in field (topic), the relationships constructed between teacher and student, and mode (the textual resources where everyday language becomes less dependent on the immediate situation). Analysis of classroom language that draws on this model has the potential to lead to more explicit and linguistically oriented descriptions of constructs of SLA, such as comprehensible input and learner output (and the relationship between them), negotiation, and recasting. It will help describe more accurately the relationship between classroom interactions and language development.

Finally, in terms of the data set, the interactions discussed in this study are not unusual examples. In other words, similar interactions between teachers and students probably occur daily throughout hundreds of classrooms. Yet, considering the classroom interactions, much effective teaching may result from the intuitive rather than the explicit knowledge that teachers hold. But unless such knowledge is propositionalized by being articulated as seen in this study, it cannot be reflected on or fed back into the classroom and into curriculum design.

Furthermore, the qualitative approach to the data analysis in this study may come across as lacking rigor in terms of demonstrating the data set, and sometimes not as well understood and accepted when compared to quantitative research within the field of education. Yet, the qualitative manner in which the verbal interactions were analyzed is that they have the potential to recast teachers' innate understandings as educationally usable propositions that quantitative researchers may overlook. Thus, rather than building generalizations from the findings, the study attempts to make pedagogical implications: focus on language-in-context has the potential to lead to more specific descriptions of constructs of second language acquisition: comprehension input and student output, negotiation of meaning, and the correlation between classroom interaction and language development.

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Examples in: English

Applicable Languages: English

Applicable Levels: Tertiary

Jungyin (Janice) Kim
Dept. of Curriculum and Instruction
University of Illinois
1310 S 6th St, Champaign, IL
Tel: 001(+1) (217)-714-8388
Email: kim544@illinois.edu

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